School of Engineering and Science

Construction Procurement Framework Incorporating Form Enhancement Modules for the Selection of Standard Form of Contract in Malaysia

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: …….

Date: ……...

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ABSTRACT

The Malaysian construction industry depends on construction contracts, especially standard forms of contract to define and govern the contractual relations of the contracting parties. The main objective of the project is to develop a systematic, repeatable assessment technique as a specific, structured and objective method for standard form review and analysis; to assess the existing, commonly used standard forms in Malaysia; and finally, to develop a formal, logical Malaysian construction procurement framework for the selection of standard contract forms, towards a workable and flexible set of guidelines with suggested form enhancement modules to better cater for effective project contract administration. The form analyses method developed here identifies eight (8) Malaysian attributes for form evaluation alongside their respective guiding parameters forming the backbone for the form analyses technique. These attributes and parameters were weighted and verified via structured questionnaires' survey to five hundred (500) construction industry contract and procurement administrators and form analyses method developed, comprising of the attributes and the calculation technique total evaluation score (TES), was subsequently applied to rate each respective clause in five (5) most commonly used Malaysian standard forms of construction contract. The problems and issues identified in these standard forms were verified by gathering data from twenty three (23) separate interviews made with eighteen (18) key expert practitioners. Data generated confirmed that the existing local standard forms of contract alternatives are indeed short of ideal, even though there have been several recent revisions rolled-out. Findings also revealed that the concept of one-country-one-standard-form may not be workable as the divergence of aims, egos and interests among the typical engineering construction project stakeholders and respective professional bodies and authorities are deeply rooted. It therefore becomes necessary to execute systematic and coordinated form enhancement for all existing local standard forms. Benchmarking method against a form considered as a best-practice ideal was adopted to create an adapted suite of improved standard forms from the available existing options. For selection of standard forms, based on the results of six (6) in depth interviews with separate key prime movers in the construction industry, a combined decision flowchart that compounds decision making mechanisms for the selection of a suitable procurement method, contract type, and standard form of contract selection is developed. The developed framework and guideline for standard form selection alongside the relevant directed enhancement modules provide the Malaysian construction industry with a systematic, comprehensive and efficient selection framework and guideline to select an optimal, fit-for-purpose standard form of contract for Malaysian construction

projects with form enhancement modules to enhance the administration of existing local standard forms of construction contract.

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ABBREVIATION

Abbreviation	Full Name
PWD	Government of Malaysia ~ Public Works Department
JKR	Government of Malaysia ~ Jabatan Kerja Raya
PAM	Pertubuhan Arkitek Malaysia ~ Malaysia Architect Association
IEM	Institute of Engineers, Malayisa
CIDB	Construction Industry Review Board
PWD 203 A Form	PWD 203A (REV. 2007) Standard Form of Construction Contract
JKR Form	JKR Sarawak Form of Contract 2006
PAM 2006 Form	Pertubuhan Arkitek Malaysia Standard Forms of Building Contract 2006
IEM 89 CE Form	IEM Conditions of Contract Mainly for Civil Engineering Works 1989
CIDB 2000 Form	CIDB Form of Contract for Building Works 2000
SO	Superintending Officer

1. INTRODUCTION

1.1 Overview of Contractual Relations in Malaysia

According to Adnan et al (2008), the construction industry is a vehicle through which a nation's physical developments are activated by initiating projects from the blue-print stage to the implementation stage. The realisation of such building projects and the provision of built facilities can inevitably bring much benefit to society as a whole, satisfying the aspirations of a nation and resulting in national economic growth and status enhancement.

However, construction projects are increasingly complex, technologically-fragmented, high-risk, multi-party undertakings that have long been plagued by stakeholder dispute, claims for recompense and litigation (Chong, 2007). Indeed construction seems to require greater and greater interpretation of a myriad of laws and codes and a constant marshalling of its considerable resources to ensure conformance and compliance with applicable regulations; labour, equipment, and materials must be organised, good communication pathways put into place and coordination structures for the multitude of parties involved in the project must be enacted (Dennis, 1982). Singh (2005) suggests that an engineering/construction project in its lifetime, from initial inception to eventual realization touches on a whole spectrum of legal disciplines: contractual, commercial, civil and the like. It is essential to remember that construction projects are first and foremost 'contracts' to build, and that every venture is executed in a contractual environment where the general law applicable is the law of contract (Bevin, 1982).

The fundamental purpose of the law of contract is to enable an achievement of the contractual parties' private ends by providing legal effects to their agreements - reliant on each other and co-ordinating their actions; Othman (2008) states that the law of contract achieves this fundamental purpose through a variety of ways and idealisations, which include facilitating the process of exchange to minimise breakdown, provide sanction(s) for reneging on an agreement, to work out remedies against a party who is in breach, include standard sets of risk-allocation terms for use by contracting parties and above all, regulate transactions according to the ideals of social justice. These fundamentals of the law of contract are applicable not only in Malaysia but also across the other 54 independent nations that make up the Commonwealth, and indeed for most of the developed and newly developing world.

1.1.1 Law of Contract: Malaysia

According to Singh (2002), there are two types of contract law adopted in Malaysia as shown in Figure 1.1 below:

- Written Law
- Unwritten Law (case laws)

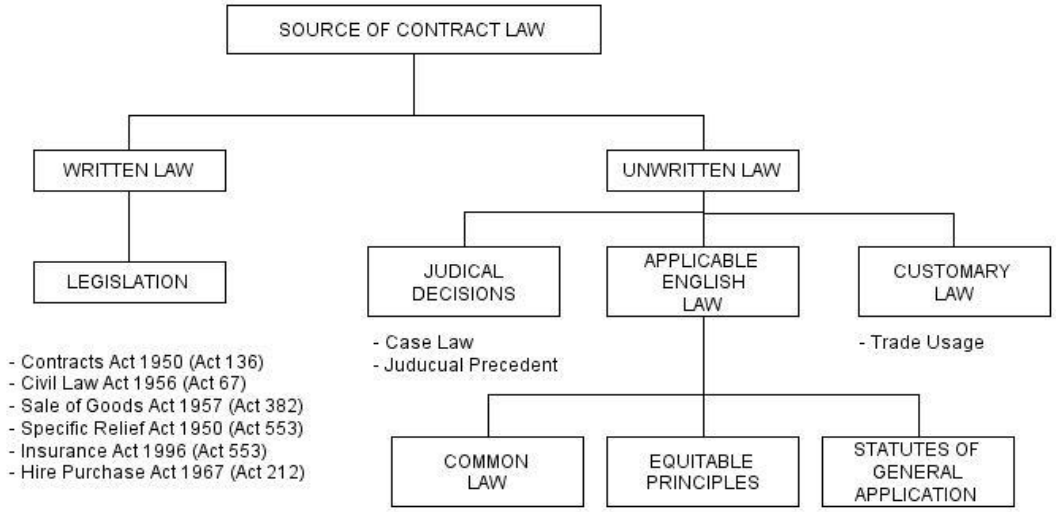


Figure 1.1: Sources of Contract Law (Singh, 2002)

a) Written Law

The bulk of the Malaysian law of contract is contained in the Contracts Act 1950 (Act 136) which is based on the Indian Contracts Act. The revised Act has been extended to Penang, Malacca, Sabah and Sarawak. The general view is that the Act is not a code and that the law on the subject matter dealt with by the Act, is not exhaustive; parties may in fact 'contract out' the provisions of the Contracts Act 1950. The Contracts Act 1950 is augmented for matters such as remedies for the likes of injunctions and specific performance, by the provisions of the Specific Relief Act 1950 (Act 137) (Singh, 2002).

Nurretina (2005) stated that the Malaysian Contracts Act 1950 has its forbear in the Indian Contract Act 1872, thus, naturally the provisions contained in the Act reflect the English model of contract theory of the nineteenth century which was closely related to the development of the free market and the ideals of classical economics. Other relevant statutes applicable to the law of contract in Malaysia include, inter alia, the following:

- Sale of Goods Act 1957 (Act 382)
- Insurance Act 1963 (Act 89); and
- Civil Law Act 1956 (Act 67)

b) Unwritten Law

Unwritten law, especially case law in essence remains an important source of contract law. It is typical for other Commonwealth jurisdictions, for instance Australia, New Zealand, Hong Kong, etc. for novel or like case precedents to help in the interpretation and adjudication of similar local cases (Singh, 2002).

Detail discussion for the Malaysian contracting environment is provided for in Section 2.3. The following presents the discussion of construction contract.

1.1.2 Construction Contract

In light of the fact that construction projects are expensive, complex, and time-consuming undertakings, a structure must be designed in accordance with applicable codes and standards, culminating in working drawings and specification that describe the work in sufficient detail for its accomplishment in the field. Thus, a well-written construction contract that specifies each participant's duties and obligations is required (Chui and Yong, 2010).

The construction industry has long relied on formal contracts to define and enforce the obligations and rights of contracting parties (Sai et al, 2006). It is essential to remember that construction projects are first and foremost contracts.

According to Hinze (2001), a contract has been defined as:

"An agreement, usually between two parties, that is enforceable by law. In some instances there may be a third-party agreement in which the benefit of the contract goes to a third party"

A contract is further defined as:

"The legal act done by agreement of wills between the acquiring entity (investor) and contractor (offeror) to perform construction projects" (Butuza and Hedre, 2010)

A contract is again described as:

"A document that contains many nontechnical provisions such as general conditions, supplementary conditions, and provisions of the agreement that pertain to the conduct of the work; these clauses provide a clear idea of each party's rights and obligations" (Chui and Yong, 2010).

A contract is understood to be:

"A legally binding agreement between two or more persons which creates mutual rights and duties and which is enforceable at law" (Singh, 2002).

McKendrick (2012) stated that:

"*A contract is an agreement giving rise to obligations which are enforced or recognized by law."*

Construction contracts are basically different from major service contracts. There are various types of construction contract. The choice of contract depends on the basis of pricing and the contract strategy that best meets the project objectives (Tatarestaghi et al., 2011).

In addition to the definitions of a *contract* mentioned above, several definitions of *construction contract* have been proposed by a multitude of authors. According to Heap et al. (2011), a construction contract is:

"A written agreements signed by the contracting parties, which bind them, defining relationships and obligations in a particular project."

Whilst the discussion on construction contracts are further presented in Section 2.3.1.1, the following presents the definition of the *construction contracts documents in Malaysia*.

1.1.3 Construction Contract Documents

Knoepfel & Burger (1987) pointed out that a complete construction contract agreement usually consists of the following documents: conditions (general, special, supplementary), drawings and specifications, addenda, an agreement form, and modifications (amendments, change orders, interpretations).

Singh (2005) also reviewed that the types of documentation which constitute the contract documents, which are typically found in Malaysian construction contracting; summarised as:

a) *Agreement or articles of agreement*

b) *Conditions of contract*

c) *Appendix to the conditions*

d) *Drawings and plans*

e) *Specifications*

f) *Bill of quantities*

g) *Schedule of rates*

h) *Programme or method statement*

i) *Miscellaneous documents*

j) *Design and build documents*

Further discussion on construction contract can be seen below in Section 2.3.1.2. It is important to the note that the construction contract documents incorporate the general conditions document that defines the rights and responsibilities of the contracting parties in the project. General conditions of contract are available to the contracting parties, which state the general principles applicable to conduct activities; in all cases, they become part of a contract for construction works. Additional conditions of contract are contained in the complementary parts of the general conditions of contract of fixed term contracts of a given specific procurement entity. Special conditions of contract are the complete document or, amended by the general conditions and supplementary contract applicable to a particular contractor (Butuza and Hedre, 2010).

1.1.4 Standard Form of Contract

The general conditions of a contract are usually compiled as a set of documents known as the standard forms of contract. Standard forms of contract (generally referred to as *standard forms*) are normally in a printed form and published by an authoritative body of the industry that is recognised by government and construction industry parties. These forms set out the terms or conditions on which the contracts between the parties are to be carried out. It is also to be noted that these terms or conditions are deemed to be agreed and are not subject to further negotiation and/or amendment (Singh, 2004).

Standard forms of contract are able to address important aspects of complex legal arrangements as well as providing the means to correct unsatisfactory legal rules and industry practices (Sweet, 1994). As the name implies, the standard forms of contract is a model

contract which makes contractual agreements convenient (Singh, 2002). Therefore, standard forms are generally suitable for a wide range of common projects or works (Singh, 2002).

A standard form of contract can be further defined as:

"A printed form of contract containing standard conditions which are applicable (or can be made applicable by the use of alternatives) to a wide range of projects". (Singh, 2002)

Kwakye (1997) has defined standard forms of contract as:

"Readymade terms and conditions when making a contract. Accordingly, the standards vary from country to country and from one type of project to another."

Gillette (2009) refers to a standard form of contract as:

"A "boilerplate" or adhesion contracts, constitute a category of contracts that are presented to a party for acceptance or rejection without substantial additional negotiation."

Singh (2002) has summarized the characteristics of the standard forms of contracts as being:

- The form set out the terms on which the contract between the parties is to be carried
- They are in a printed form, published by an authoritative body of the industry which recognized by both parties
- The terms are deemed to be agreed and not subject to further negotiation
- The terms are commonly suitable for a wide range of projects

Singh (2002) also stated that the purpose of standard forms can be listed, as seeking:

- To provide the basic legal framework evidencing the legal relationship between the parties, i.e. identifying the rights, obligations and duties, etc;
- To furnish a mechanism for regulating the conduct of the commercial relationship between the parties;
- To put in place the administrative procedures necessary to effect the legal and commercial relationship between the parties for achieving the purposes of the contract; and
- To establish the powers and duties of the contract administrators under the contract between the parties.

According to Robinson and Lavers (1998), the objectives and the content of standard forms may be summarised as follows:

a) To define the work to be executed by the contractor.

b) To define the sum to be paid as consideration, or the formula by which that sum may be determined.

c) In as much as the terms and conditions which would otherwise be implied in the agreement by operation of law are considered in-adequately detailed or wrongly biased, to modify such terms and conditions.

d) In as much as the contract might otherwise be construed as one of strict entirety, to modify the consequences of its entirety.

e) In as much as contractual relationships are governed by statute, to attempt to ameliorate the effects of such statutes.

f) To impose such further specific conditions and procedures as may be deemed desirable including those relating to the settlement of disputes.

g) To identify the officers of the contract and their roles and responsibilities.

To discuss the usage of standard forms in the construction industry, it is important to point out that construction contracts do not necessary have to adopt standard forms as its general conditions; contracts can be drafted 'from-scratch' (also known as a 'bespoke' contracts). In fact, as every project varies, there has been a proliferation of alternative forms of contract, both standard and purpose-drafted. Specific contract drafting would generally be the best blueprint for a specific project with its specific requirements translated to specific terms and conditions. However, specific contract drafting can be time consuming and expensive, requiring a specific legal team to provide legal opinions. According to Clamp et al. (2007), it will be less expensive and generally more convenient to use a standard form than to arrange for one to be specially drafted. Many standard forms have detailed and comprehensive relevant guidance which is based on authoritative legal opinion. The merits and demerits of the use of Standard Form of Contract in the local context can be summarised in Section 2.3.2.1 and 2.3.2.2 below.

At most, every government has its own contract form and more than one contracting agency, and each agency, if of any size or self esteem, has its own standard form (Seppala, 1996). All the standard forms in use locally in Malaysia owe their origins to one or other of the lines or families of contract forms which have evolved in the UK.

The Malaysian construction industry almost universally relies on the use of standard forms of contract conditions in particular sectors (Rajoo, 1999).

The commonly used standard forms of contract, from the many alternatives, in Malaysia can be summarised in the following Table 1.1

Table 1.1: Selection of Standard Forms of Contract in Malaysia

Code	Title
PWD Standard Form of Contract	
PWD 75	
PWD 75/06	
PWD 203 Form (Rev 10/83)	Contract based on drawing and specification
PWD 203A Form (Rev 10/83)	Bill of quantities form part of contract
PWD 203N Form (Rev 10/83)	Contract for nominated sub-contractors where main contract is based upon Form JKR 203 or 203A
PWD 203P Form (1983)	Contract for nominated suppliers where main contract is based upon Form JKR 203 or 203A
PWD DB/T Form (2000 Ed)	Turnkey Design and Build Contracts
PAM Form (Building Contract)	
PAM 1998 Form 'With Quantities'	Contract for Building Construction With Quantities
PAM 1998 Form 'Without Quantities'	Contract for Building Construction Without Quantities
PAM 1998 Sub-contract Form	Contract for nominated sub-contractors where main contract is based upon the PAM 1998 Form
PAM 2006 With Quantities	Agreement and Conditions of PAM Contract With Quantities
PAM 2006 Without Quantities	Agreement and Conditions of PAM Contract Without Quantities
PAM 2006 Sub-Contract	Agreement and Conditions of Pam Sub-Contract With Quantities
IEM Standard Form of Contract	
IEM.CE 1/89	Contract for Works mainly of Civil engineering Construction
IEM.CES 1/90	Contract for Sub-contract for use in conjunction with the IEM Condition of Contract for Civil Engineering Works
IEM.ME 1/94	Contract for Mechanical and Electrical works
CIDB Standard Form of Contract	
CIDB 2000	Standard Form of Contract for Building Works
CIDB.B(NSC)/2002	Nominated sub-contractor
FIDIC Standard Form of Contract	
FIDIC Red Book	Contract for Works of Civil Engineering Construction
FIDIC Yellow Book	Contract for Electrical and Mechanical Works
FIDIC Orange Book	Contract for Design-Build and Turnkey
FIDIC Gold Book	Contract for Construction for Building and Engineering Works Designed by the Employer
FIDIC Silver Book	EPC Turnkey Project
FIDIC Green Book	The Short Form
FIDIC Plant and Design/Build Contract	Contract for Plant and Design/Build for Electrical and Mechanical Plant; Building and Engineering Works Designed by the Contractor

Given the above, it is established that contractual relations in the construction industry in Malaysia is governed by an agreement, namely the construction-contract with the general conditions of contract that is compiled as a set of standard documents known as standard form of contracts. It is noted that the Malaysian construction, instead of using bespoke contracts, almost wholly relies on the use of the standard forms of contract, drafted by the authorities and professional bodies in Malaysia, to provide for the general conditions.

Besides the discussion of merits and demerits of using standard form of contract pointed to in the Section 2.3.2.1 and 2.3.2.2, Section 2.4 extensively covers the various problems associated in Malaysian standard forms of contracting. The literature review in the following chapter also points out that all the forms have fallen short of the principles of an 'ideal' form and further work needs to done to address the problems of standard forms of contract in Malaysia, pointing towards an inherent issue of 'quality'. In addition, with the number of choices of forms available and, given that, that selection is hinged on the 'familiarity factor' of the users to a particular standard form, the 'quantity' issue needs to be addressed. Full review of the problems and issues related to standard forms in Malaysia and the existing selection guidelines is presented below in the Section 1.3's Research Problem.

It is perhaps also worthwhile at this stage to now look at the bigger picture of contract administration and indeed how the standard form of contract is instigated, in the first place, which brings to attention of the concept of procurement. Rashid et al. (2006) states procurement comes from the word procure which literally means "to obtain by care or effort", "to bring out" and "to acquire" and systemise an "organized method, approach, technique, process or procedure', making *procurement* of construction projects vast, because it involves the gathering and organizing of a myriad of separate individuals, firms and companies to design, manage and build construction assets and civil engineering products (Rashid et al, 2006). Therefore, procurement strategies selected will determine the overall framework and structure responsibilities for the contracting parties within the construction process, and is hence said to be an integral part of establishing the said contractual relations. In short, construction contracts, especially the usage of standard forms therefore cannot be separated from the procurement process of construction projects in Malaysia.

The following section describes the typical procurement strategies available in Malaysia.

1.2 Procurement Strategies in Malaysia

Procurement methods address the often complex network of relationships which are formed between clients, consultants and construction companies, to enable a building project to be realized (Clamp et al., 2007). Procurement pathways that are used in the construction industry cannot be divorced from contracts (Gould, 2006). Decisions on preferred procurement methods will lead to conclusions on suitable contract types (Singh, 2007). And the contract types will then influence the standard forms of contract selection.

According to Singh (2007), Malaysian contracts are categorized based on procurement methods such as: traditional; design and construct; management; and, management/relationship hybrids (with other approaches such as alliances virtually non-existent locally). These principal methods are discussed further below.

1.2.1 Traditional General Contracts

Appearing under various labels such as 'General' contracts, 'Employer-design' contracts and 'Design-bid-build' contracts, these contracts are basically characterized by the separation of the design from the production or manufacture elements of the contract (Singh, 2007).

For traditional approaches, there are three main types of contract (JCT, 2006):

- Lump sum contracts – where the contract sum is determined before construction work initiates and the contractor to undertake a defined amount of work in return for the contract sum (JCT, 2006). 'With quantity' contracts are priced on the basis of drawings and a firm bill of quantities while 'without quantity' contracts are priced on the basis of drawings and another document; usually a specification or work schedules (JCT, 2006).

- Measurement contracts – where the contract sum is not finalized until after completion, but is assessed on re-measurement to a previously agreed basis (JCT, 2006). This type of contract can arise because the work which the contractor undertakes cannot be measured accurately for good reason before tenders are invited; design will only be reasonably complete and an accurate picture of the quality required will be available to the tenderer (JCT, 2006). Measurement contracts can also be based on drawings and a schedule of rates or prices (JCT, 2006). A variant of this is the measured term contract under which individual works can be initiated by instructions as part of a program of work, and priced according to

rates related to the categories of work likely to form part of the program (JCT, 2006).

- Cost reimbursement contracts – where the sum is arrived at on the basis of prime (actual) costs of labor, plant and materials, to which there is added an amount to cover overheads and profit (JCT, 2006). Sometimes referred to as a 'cost-plus' or a 'prime cost' contract; the amount or fee added to cover overheads and profit can be a fixed sum, a percentage, or on some other reimbursement basis where the full extent of the work is not known or cannot be designed pre-tender, this is a relatively high risk option for the client and only generally acceptable where the circumstances preclude other alternatives or when a partnering ethos is established (JCT, 2006).

Figure 1.2 shows the contractual relationships under traditional general contract.

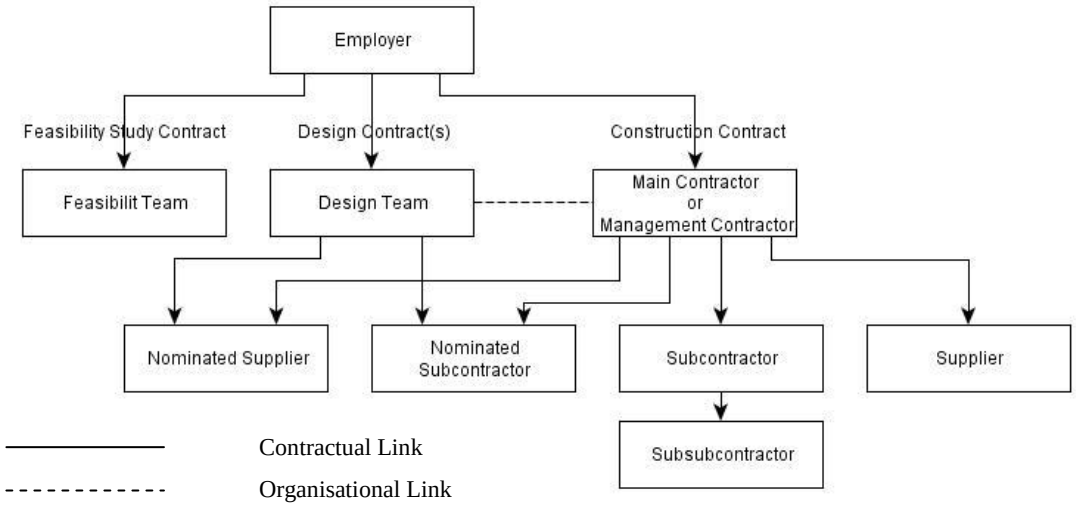


Figure 1.2: Traditional General Contractual and Organizational Links (Cox, 1994)

1.2.2 Design and Build Contracts

A design and build contract, also known as a 'package deal' or 'turnkey contract', is one under which the contractor undertakes both designing and constructing the contract works; which are to be completed in such a way as to meet the requirements of the employer (Cox, 1994).

For design and build there are three main types of contract (JCT, 2006):

- Package deal or turnkey contract – the client settles on a complete package, usually to some standard specification from a commercial firm (JCT, 2006). Such arrangements

sometimes result in a specially drafted contract, but they will usually be based on the provider's standard terms (JCT, 2006).

- Design and build contracts then are where the project documents will be written with the contractor's design obligations relating to the whole of the works in mind (JCT, 2006). These contracts differ fundamentally from traditional 'work and materials' contracts in that they expressly provide for contractor's design obligations and the wording used in contracts which require a material level of design input from the contractor and is often the same as in those which are used for a 'develop and construct' approach (JCT, 2006).

- Contractor's design for specific elements only - strictly, these are not design and build contracts, but traditional 'work and materials' contracts which include for limited design provision relating to an identified portion of the work (JCT, 2006).

Figure 1.3 as shows the contractual relationships under design and build contract.

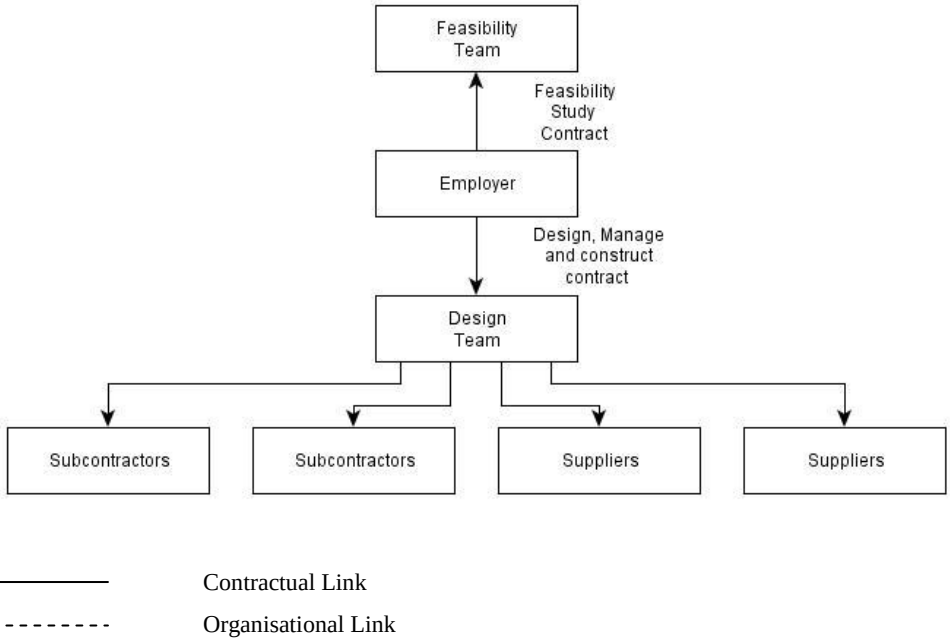


Figure 1.3: Design and Build Contractual and Organizational Links (Cox, 1994)

1.2.3 Management Contracts

A comparatively recent development in Malaysia on large and complex projects has been the emergence of the 'management contractor', whose only role is to manage, co-ordinate and supervise the work of numerous specialists by whom the whole of the construction work is carried out (Singh, 2007).

Management contracts are where the management contractor undertakes to manage the carrying out of the work through works contractors, who are contractually accountable to him throughout both pre-construction phase and construction phase (JCT, 2006). Documentation will start with project drawings, a project specification and a cost plan, and this information will allow the transmutation into documents on which competitive tenders can be obtained for the work packages (JCT, 2006).

Figure 1.4 shows the contractual relationships under management contract.

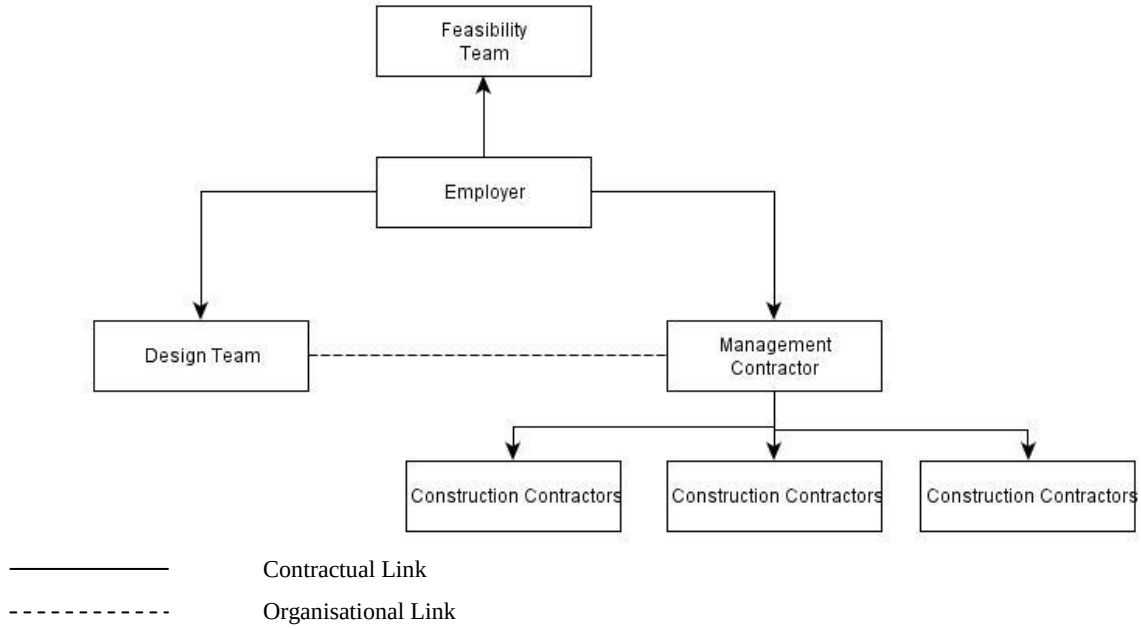


Figure 1.4: Management Contractual and Organizational Links (Cox, 1994)

1.2.4 Construction Management Contracts

According to Singh (2007), construction management contracts are a sub-set of the general corpus of management type of contracts and share common characteristics with management contracts. These have changed recently into an alternative to the latter type of contracts and are being employed mainly on large and complex projects that have numerous trades, users and designers (Singh, 2007). Singh (2007) further explains that a construction management contract is an arrangement under which the employer enters into a direct contractual relationship with each of the specialist contractors; at the same time employing a 'construction manager' to provide managerial and supervisory services for the project. The obligations undertaken by the construction manager in such a case depend upon the terms of the contract by which it is employed (Singh, 2007).

Construction Management then is where the construction manager undertakes to manage the carrying out of the work through trade contractors but the client is involved in the directing of the project, and the contracts with the trade contractors are directly with him (JCT, 2006). The construction management scope of work will be defined in the contract and although the contracts are arranged and administered by the construction manager, contractually the risks are barred by the client (JCT, 2006).

Figure 1.5 shows the contractual relationships under construction management contract.

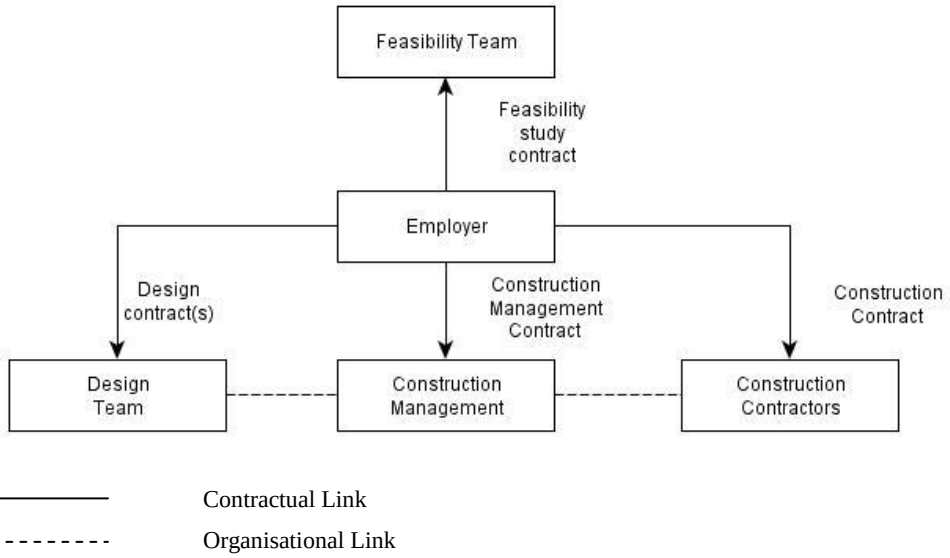


Figure 1.5: Construction Management Contractual and Organizational Links (Cox, 1994)

1.2.5 Hybrids

In addition to the main types of contract strategy described, hybrids that have been developed locally are:

- 'Develop and Construct' contract: This is similar to a design and build contract, but a concept design is prepared by independent professionals engaged by the employer before the design and build contractor is selected.
- 'Design and Manage' contract: This is similar to a management contract, but the contractor is also responsible for detailed design or for managing the design process.

Figure 1.6 shows the contractual relationships under this contract.

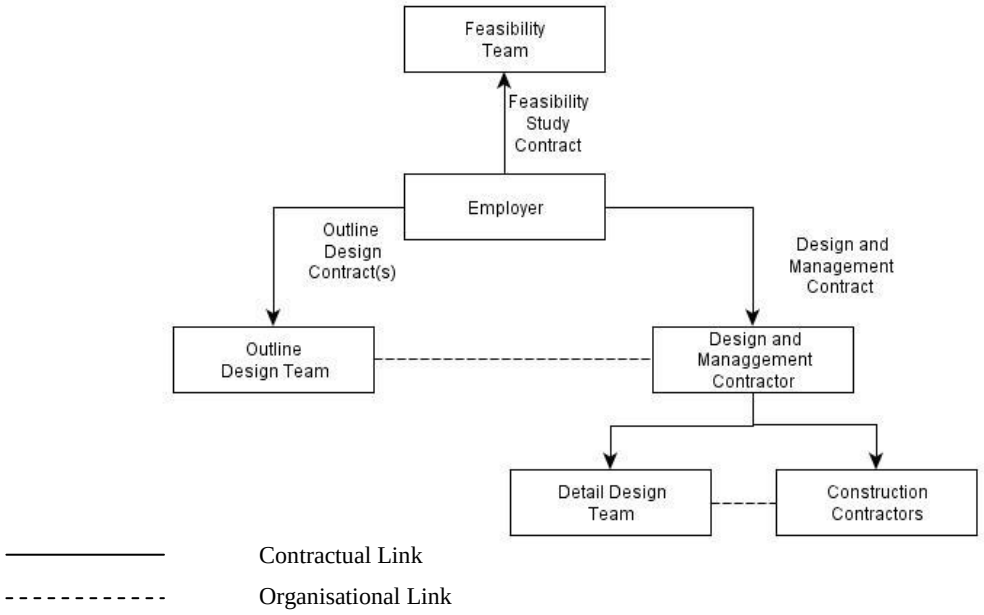


Figure 1.6: Design and Manage Contractual and Organizational Links (Cox, 1994)

- 'Design and construction management' contract: This is similar to construction management but the construction manager is also responsible for detailed design or for managing the design process.

Figure 1.7 shows the contractual relationships under design and construction management contract.

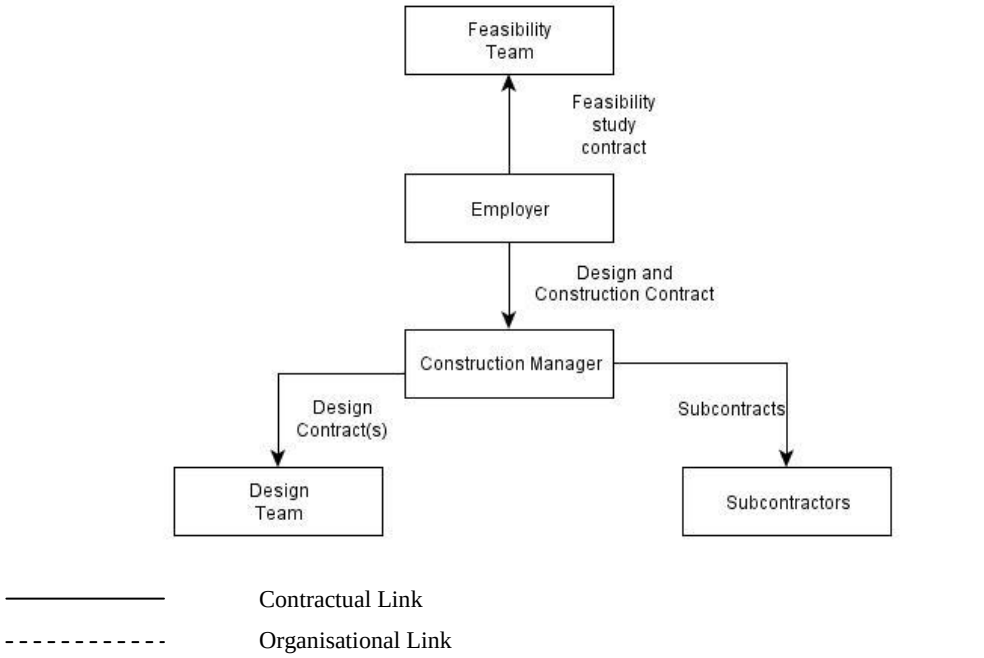


Figure 1.7: Design and Construction Management Contractual and Organizational Links (Cox, 1994)

Based on the definition of procurement strategies above and the detailed literature review presented in Section 2.6 and Section 2.7, it is argued that selection of procurement strategy is fundamental in defining the contractual relations among the contracting parties. However, even at the elemental level, selection of procurement strategy involves the procurement method required, the contract type utilized and the standard form of contract used for the project (Macpherson, 2011). There are suggested to many components towards a best-practice procurement strategy, which demand rigorous decision making of the 'suitable' choice; factor identification is conducted in subsequent sections.

A 'suitable' procurement strategy is claimed to lead to a successful execution of a project; selecting the appropriate procurement system is an essential step in any construction project (Chan, 2002) in order to appropriately establish the said contractual relations, which are more often than not defined by contract types and standard forms of contract. Selection guidelines are unavailable in any detailed way in Malaysia to assist with appropriate selection decisions.

The following section develops this knowledge-gap, and further assesses the need for standard forms analyses and an appropriate procurement strategy towards the selection of an appropriate standard form of contract for construction projects in Malaysia.

1.3 Research Problem

From the extensive literature review on the topic of procurement and standard form(s) of contract presented in Chapter 2's Literature Review, a knowledge-gap in "procurement" and "standard form" research in Malaysia can be established. The following discusses the gap and the problems, leading to the research work carried out by this work and the significance of the research conducted here.

Commonly used Malaysian standard forms of contract are problematic, with a large body of work by various authors pointing out that, even with recent revisions, the existing standard forms fall short in terms of establishing 'good' contractual relations among contracting parties; many problems relate to common insufficiencies such as lack of identity, legalese language, omissions, and deficiencies, which water down effectiveness. Even though several forms enjoy widespread usage and national coverage, all existing local forms are argued (as detailed in Chapter 2 Section 2.4 below) to have inconsistencies and weaknesses. Chapter 2 also shows that, whilst different forms cover various issues to different levels and extents, they do not seem to be able to address the many traditional and long standing contractual problems and issues associated with the application of existing options.

Fragmentation makes matters worse; according to Oon (2002), the various parts of a contract are, more often than not, prepared by different firms or even by different professionals within the same firm. For example, the drawings and the specifications are prepared by the Architect or the Engineer (of civil, electrical, mechanical geotechnical or structural disciplines) whereas the methods of measurement and the bills of quantities are prepared by the building-orientated Quantity Surveyor. This, as is argued in future sections, presents yet another source of potential dispute as invariably contradictions may creep in and ambiguities will surface when the different documents forming the contract are subject to specialist scrutiny. While it may be unfair to expect the current standard forms to be able to cater for all different conditions, scenarios and requirements stemming from all different kinds of projects in the civil and construction industry, to continue with the current practice will not only be somewhat moot (as future elaborations argue in Section 2.3.2.3 and Section 2.4.6), but also potentially hinder the growth of the industry and the nation's development.

Despite the plethora of options, the local construction industry does not seem to be able to address the many traditional long-standing contractual problems and issues associated with the usage of existing standard forms (namely, industry wide disputes concerning non-performance, delays, disputes, late-payment and non-payment); indicating that each of the existing forms continue to lack clarity, comprehensiveness and completeness. In view of the number of forms that the Malaysian construction industry has and the problems associated with each form, the need to produce "better and improved" conditions of contract, is evidenced perhaps in the issuance (and on-going revisions) of the many alternative forms, either in a modified, amended or revamped format; indicating somewhat that the stakeholders (favouring PWD, PAM, CIDB, or JKR) unwittingly adhere and subscribe to the search for and theoretical idealization of a 'best' contract standard (Othman, 2008). Future sections (Section 2.4.1 to Section 2.4.6) shall argue that Malaysian stakeholders think that all the forms have fallen short of the principles of an 'ideal' standard form as described in Chapter 2 Section 2.5.

Whyte & Macpherson (2011) suggest that a large number of alternative standard forms of contract have been developed towards the search for a better standard; however this in turn adds to complexity of the decision process and contract *choice* due to the sheer number of standard form of contract options available. The high number of choices available and the number of decisions to be made makes the decision process a difficult task requiring considerable time (and therefore monetary investment) in order to select a project specific effective standard form of contract

Another point to note is that the various examples of literature on Malaysian standard forms (Chapter 2 Section 2.4 below) do not point to any standardized study carried-out nationwide, over a period of time with a pre-determined set of criteria and standard of measurement, but rather any work that has been done occurs in an ad-hoc manner, with forms-analyses carried out by a plethora of unaligned, albeit interested and concerned, parties; be they drafters of various organizations, arbitrators and legal personnel who had to deal with the disputes stemming from the form/s, or be they academic studies at university level. Most formal studies (as seen in Section 2.4.1 to 2.4.5 and Section 2.8.6) on forms have been done on the one particular form (and often one particular clause) by the relevant bodies of drafters seeking to make improvements to the existing forms, as well as the informal ones carried out by personnel involved in dispute resolutions.

Discussion above supports the need for a more ordered method of form analysis for Malaysian standard forms based on a structured approach that is repeatable with a fixed set of criteria to provide results that can be applicable across the board, for form enhancement and to address the 'quality' issues of the current Malaysian standard forms.

A project in its lifetime from initial inception to eventual realization (and subsequently within the limitation period) touches on a whole spectrum of legal disciplines ranging from contractual, commercial, civil and the like (Singh, 2005). As alluded to above, Ong (2007) states that the common issues and problems associated with the construction process often lie in the ill-considered procurement selection, traditional separation of design from construction, lack of integration/organisation of the project members and poor communication channels, uncertainties in design and construction, changing internal and external environments, project complexity and characteristics and contractual issues.

It is worthy to note that if procurement strategies are not well selected in the first place, the subsequent procedures on selection of contracting and tendering strategies and selection of the forms to be used may be mis-founded and finally the administration of the contract will be difficult; a potential domino effect of inappropriate choices. Choosing the wrong procurement strategy may lead to time and cost overrun and general dissatisfaction (Chan, 2002). Selecting the inappropriate contract type would lead to unsatisfactory completion and lack in control over the overall project (Wang et al., 1996). Choosing an inappropriate standard form of contract for a project will often mean that objectives in terms of time, cost and quality are not fully realized and the likelihood of disputes will increase (Ramus et al., 2006).

Without a clear procurement selection guideline, it is easy to neglect the full range of factors given the number of considerations that must be taken into account. With no structured

approach to contract decision making, contracting parties run the risk of investing vast amounts of time into making correct contact decisions, or, alternatively, they may rush the decision, or neglect to consider important variables resulting in a less than optimal contract being implemented (Whyte & Macpherson 2011).

From the literature review (as seen in Chapter 2 Section 2.7 especially Section 2.7.4), it is suggested here that there is basically no proper procurement guideline in Malaysia, which can systematically outline the procurement process for local Malaysian construction projects. Given the various procurement methods, contract types and standard forms of contracts available, decision making follows an innate, and largely subjective, decision making process. Due to the complexity of the selection procedures, the decision making task has been given only to experienced or senior engineers who draw from their personal experiences to ensure a comprehensive consideration (personalized and subjective) of the relevant factors. In short, without a proper procurement guideline, contractual relations cannot be appropriately established.

It is previously noted that contractual relations are structured with contractual documents and therefore, the contract, especially the standard forms of contract, is pivotal.As mentioned above Malaysia has many alternatives of standard forms available to the construction industry, and whilst it can be advantageous that there are choices available, as the number of forms and their related revisions grow, it gets harder to pick the most suitable standard form.

Rwelamila and Edries (2007) stated that civil engineering consultants are often asked to advise unknowledgeable clients on which standard form of contract to use for construction projects. Form selection is almost always done based on the client's and its respective agents' familiarity to the particular forms, instead of selecting based on predetermined criteria and study of the characteristics of projects and its procurement route. Hence, selection from the large selection of currently available forms by stakeholders is dangerously hinged on the 'familiarity factor' and an unsubstantiated reliance on the 'one-we-always-use'.

Should a form not adequately cover certain issues, instead of selecting another alternative, it is much easier to make amendments to the 'usual' form. According to Oon (2002), most drafters of standard forms of contracts will advise against making amendments to standard forms but based on his experience, amending standard forms seems to be the norm rather than the exception. The reasons for this are many and it seems that this is sometimes the initiative of the architect, engineer or quantity surveyor's firms that prepare the contract documents. The Employer's specific requests can also be a reason. Whatever the reason for making the amendments, the resulting heavily amended document can become a confused maze of

clauses that are often in conflict and can often have the unintended result which the parties may never have contemplated and the full contractual implications do not seem to be considered. For example, using a UK example, in the case of *Balfour Beatty Civil Engineering Ltd* v. *Docklands Light Railways Limited*, two amendments were made to the standard ICE form, resulting in a domino effect for unworkable sets of rules and obligations.

Hinging selection of forms on familiarity has another innate problem, that is, not only are stakeholders generally unwilling to deviate from their usual, they tend to bring their experience and practice from their usual form into the administration of a new project that may call for a different set of forms. This could result in situations on site being improperly managed, which could also turn into disputes and conflicts, delays and cost-blowouts.

Often, selections of procurement strategies including the selection of standard forms to be used are strongly centred on the Client's choice. Without any form of participation from the other contracting party, the culture of 'protecting the employer' has started to take root in Malaysian construction contracting. Resultantly usage of such standard forms in themselves have already deviated from the natural principle of justice of forms-as-agreed-documents as there is a lack of equitable participation from each the principal parties, especially the builder 'contracted' by the client to construct the project.

Malaysian form usage varies between the states, especially in East Malaysian (*Sarawak and Sabah, traditionally referred to as North Borneo represented more than half of the geographical land-mass and separated by some 1,000km of South China Sea*) and West Malaysian states (*the eleven states making the main peninsula bounded by Singapore in the south and Thailand in the north and home to the capital city of Kuala-Lumpur*), adding to the confusion in not only form selection but also contract administration. When a contractor administrator is already well versed in certain forms, that person will have to re-learn if other forms are used or if 'work' is in a different state, which hinders effective contract administering. Problems with selection of standard forms and its relations with procurement strategies are further explained in Section 2.6 and Section 2.7.

The gap in knowledge can be summarised thus far as follows:

1. Method of Form Research is not standardized locally
2. Local Standard Forms commonly used to delivered projects are short of being 'ideal'
3. A formal, logical set of procurement framework to select the most appropriate standard form is not available in Malaysia

While many countries like Malaysia continue to practice the traditional-British model of having different form options, there are those that advocate (through their respective Standards Institutions, one dominant (set of) form(s) nationally. Australia for example seems to advocate one form rolled-out by the Australian Standards (AS) Institution, namely AS-4000 (revised from AS-2124) for its construction and engineering project-work; China too has its own principal Standard Form of Construction Contract. It may be worthy to take note of the possible lessons learned from these processes of formation of 'one' form for one country. As mentioned by Professor Vincent Powell-Smith in 1990 in legal commentary by McInnis (2001), the ASEAN region as a whole should break free from the fetters imposed by standard forms inherited by Europe and evolve a form of its own.

In short, the introduction of new, and the constant revisions of existing, standard forms of contract in construction are somewhat ineffective and increasingly litigious. Without a systematic design and development of a standard guideline that is acknowledged by the principal authorities and agreed, championed and abided by all, the phenomena of form revisions and creations will persist and continue to confuse.

As is mentioned in future sections (Chapter 2, 3 and 4) with the divergence of aims, egos and interests among the stakeholders it is all the more important that Malaysia has a systematic and comprehensive set of guidelines that could cover various procurement routes and different types of construction works and match them with the relevant standard forms to form a good contract. It is perhaps high time that stakeholders go towards one specific, enhanced understanding and framework in order to bring to an end the current practice of inefficient and ineffective re-modification.

Therefore, it is important to have the proper procurement guideline in order to form good contractual relations that can be effectively and efficiently administered, reducing time and money that is currently used to resolve disputes. This project seeks to address the issues discussed above and towards this goal, proposes a number of objectives in the section below.

1.4 Aim and Objectives

The fundamental aim of this research is to develop a procurement framework for Malaysia, which outlines the basis of a workable and flexible set of guidelines toward selection of standard contract forms with suggested enhancement modules that can better cater for effective project contract administration.

The objectives of the project follow from the aim described above:

i. To conduct an in-depth academic analyses on existing standard forms of contract commonly used in the Malaysian construction contracting:
    a) To establish a set of standard form measurement and analysis method;
    b) To assess the forms' contents with the established standard of measurement;
    c) To identify and review the practical issues and problems stemming from the usage of the existing standard forms

ii. To verify the problems and issues identified in the academic analyses with Malaysian form users from the construction industry

iii. To suggest modules for the enhancement of each of the existing standard forms of contract chosen for the study

iv. To conduct an in-depth academic analyses of the local procurement methods, contract types and standard forms of contract in construction industry:
    a) To identify the criteria taken into consideration when making the decision on the procurement method, contract type and standard form of contract to be used.
    b) To verify the relevancy of the criteria identified with the local construction industry.
    c) To establish the correlation between the identified criteria with the selection of available procurement methods, contract types and the standard forms of contract.

v. To develop a guiding framework for:
    a) Selection of procurement methods
    b) Selection of contracting strategies
    c) Selection of standard forms

vi. To propose construction procurement framework that includes guidelines for standard forms selection with suggested enhancement modules that could enhance project contract administration in construction projects.

1.5 Scope of Study

This study will concentrate on the common procurement and contracting strategies and the most common standard form of contracts for construction that are used in Malaysia, governed within the following authority and professional bodies (Ali, 2006):

- Government Department of Public Works (Jabatan Kerja Raya – JKR/PWD),
- Architect Association of Malaysia (Pertubuhan Arkitek Malaysia – PAM)
- Institute of Engineers Malaysia (IEM)
- Construction Industry Development Board (CIDB)

1.6 Research Overview

This research work is described within the following eight (8) chapters:

Chapter 1 gives a general overview on procurement and contracting strategies and standard forms construction contracts as well as the identification of the research problem, aims and objectives of this study, scope of study and the structure of this thesis.

Chapter 2 consists of a literature review conveying other authors' opinions on matters related to this area of study.

Chapter 3 deals with the research methods that will be used to realize the objectives discussed in Section 1.4 above

Chapter 4 puts forward the findings from standard form analyses; and the reviews and validation of the problems and issues in the said forms.

Chapter 5 recommends the improvements to be made to the forms in the form of enhancement modules.

Chapter 6 presents the findings related to the study of procurement and contracting strategies and the selection of standard forms.

Chapter 7 shows the proposed procurement framework and guidelines towards standard forms of contract selection. It also puts forward a program written to enhance the ease of selection.

Chapter 8 outlines the Conclusion of this research as well as the limitation of the research and recommendations for future research and include conclusions drawn from this research and provides recommendations for further research in key areas relating to this research topic.

The structure of the study is further discussed in the following Table 1.2.

Chapter 1 as described above has provided an overview of the contracting and procurement environment where this research work has been carried out. The following Chapter 2 will further established the gap of knowledge in this area of study.

Table 1.2: Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 1	Introduction: 1.1 Overview of Contractual Relations in Malaysia 1.2 Procurement Strategies 1.3 Research Problem 1.4 Aim and Objectives 1.5 Scope of Study 1.6 Research Overview	• Need of Research Work • Direction of Research Work • Scope of study	Chapter 2: Establish the Gap of Knowledge and Research and Method of Research
Chapter 2	Literature Review: 2.1 General Overview of Chapter 2.2 Background 2.3 Malaysian Contracting 2.4 Standard Forms of Contract 2.5 Bench-Mark/Best-Practice/(Ideal) Standard Form of Contract 2.6 Effective Contract Administration 2.7 Procurement Strategies in Malaysia 2.8 Research Method 2.9 Section Summary	Gap in Knowledge: • Method of Form Research is not standardized in Malaysia • Standard Forms commonly used to deliver projects are short of being 'ideal' • A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia Method of research • Quantitative Research Method • Qualitative Research Method Justification of NEC3 as the selected Benchmark	Chapter 3: Determination of research method/s most suited to address the Gap in Knowledge

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 3	Research Method: 3.1 General Overview of Chapter 3.2 Research Approach/Framework 3.3 Literature Review 3.4 Standard Form Analysis 3.5 Qualitative Verification of Form Analysis 3.6 Modules for Enhancement 3.7 Development of Selection Framework 3.8 Procurement Selection Framework 3.9 Logical Flow of Research Work	Form Analysis: • Quantitative Method to establish the attributes of analysis of standard forms • Techniques for Standard Form analysis • Qualitative Research to verify the results of Standard Form Analysis	Chapter 4: Five-hundred (500) Questionnaires survey forms were sent to measure and establish the attributes for form-analysis. A formal form-analysis method is established and used to study the five (5) most commonly used Malaysian standard forms of construction contract. Eighteen (18) key expert practitioners were interviewed across twenty-three (23) semi-structured interviews to verify the results for form-analysis.

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 3 (continued)		Enhancement modules: • A benchmarking method is adopted. • The benchmark selected is NEC3.	Chapter 5: Justification of NEC3 as the selected Benchmark. Benchmarking procedures are designed as follows: • Objective identification of problematic clauses in Malaysian standard forms • Similar/relevant clauses in NEC3 identified & selected • Positive traits in similar clauses in NEC3 used as a benchmark to create Malaysia-applicable enhancement modules
		Construction Procurement Selection Criteria: • Qualitative method to verify & weight the selection criteria selected • Correlation between selection criteria and the procurement method(s), contract types and standard forms of contract via Qualitative Method.	Chapter 6 Selection criteria verified, weighted and correlated with procurement methods, contract types and standard forms in Malaysia via six (6) semi-structured interviewees with key expert industry prime-movers.

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 3 (continued)		Construction Procurement Framework: • Design of Selection Framework for Selection of Procurement Method, Selection of Contract Types and Selection of Standard Forms of Contract • Combined Decision Flowcharts • Combined with Enhancement modules.	Chapter 7: Procurement Selection Framework is designed in the form of decision flowcharts and also presented in visual basic language to enhance the ease of using the framework for Malaysian users.
Chapter 4	Form-Analysis: 4.1 General Overview of Chapter 4.2 The Need for Form Study 4.3 Form-Analysis Method 4.4 Form Analysis - PWD 203A 4.5 Form Analysis - JKR Sarawak Form of Contract 4.6 Form Analysis - PAM 2006 4.7 Form Analysis - IEM 89 CE 4.8 Form Analysis - CIDB 2000 4.9 Section Summary	Chapter 4 presents: • Analysis of construction disputes in Malaysia and the relationship of disputes with standard forms towards further establishing the urgent need for form enhancement • Form Analysis method that needs to be established in order to systematically analyse standard forms with a predetermined set of attributes of evaluation. • Results of the 500 questionnaires sent out, with 152 returns towards analyses to establish the eight (8) attributes of form-analysis • All Five (5) forms tested and analysed with the form-analysis method proposed and presented as 1) Overall Performance, 2) Clause Analysis and 3) Discussion and Verification of Problematic clauses. • Form Analysis reaffirming Malaysian Standard Forms of Contract as short of being 'ideal'. • 23 interviewees carried out with 18 key expert interviewees to verify the results from the form-analysis	Chapter 5 suggests recommendations for a coordinated form enhancement exercise as a way forward to create a suite of Malaysian forms.

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 5	Enhancement Modules: 5.1 General Overview of Chapter 5.2 Summary of Problematic Clauses 5.3 Relevant Clauses in NEC3 and their interpretations 5.4 Enhancement Modules 5.5 Section Summary	Chapter 5 presents the form enhancements modules: • These are established via the benchmarking method with a chosen example deemed close to best-practice. • NEC3 is the chosen as a suitable benchmark. • The suggested set of enhancement modules is set up by benchmarking all the problematic clauses in Malaysian standard forms, reviewed against NEC3's positive traits in the relevant clauses.	Enhancement modules can be used to: 1) Achieve coordinated enhancement to respective Malaysian standard forms reviewed 2) Provide suggestions for future form users to enhance the clauses that have been verified as in need of modification or improvement, in a coordinated structured systematic way, instead of via ad hoc amendment. Chapter 7 subsequently presents a means to establish the correlations seen in Chapter 6. • A construction procurement selection framework is derived (a computer program is designed for the ease of using the framework) and; • When combined with the enhancement modules, it works towards a selection framework that select standard from a suite of Malaysian standard forms.

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 6	Procurement Selection Strategies 6.1 General Overview of Chapter 6.2 Procurement Strategies and Selection Criteria 6.3 Background of Key Expert Interviewees 6.4 Procurement Method 6.5 Types of Contract 6.6 Standard Forms of Contract 6.7 Section Summary	Chapter 6 puts forward the results for: • Selection of criteria identified for the developed local procurement framework • Verification and weighing of Selection Criteria via requisite interviews with key expert local stakeholders • Establishment of the correlation between selection criteria and procurement methods, contract types and standard forms with reference to verification by interview panel.	Chapter 7 presents questions derived to establish the correlations seen in Chapter 6. • A construction procurement selection framework is derived (a computer program is designed for the ease of using the framework) and; • When combined with the enhancement modules, the program works towards a selection framework that guides choice from a suite of Malaysian standard forms
Chapter 7	Procurement Selection Framework: 7.1 General Overview of Chapter 7.2 Procurement Method Selection Framework 7.3 Contract Type Selection Framework 7.4 Standard Forms of Contract Selection Framework 7.5 Combined Decision Flowchart 7.6 Written Program 7.7 Enhancement Module ~ Towards the Warehouse Example 7.8 Section Summary	Chapter 7 presents the correlations in the form of derived questions for the selected criteria with the procurement methods, contract types and standard forms of contract. Decision flowcharts to select the procurement methods, contract types and standard forms of contract are created. Decision flowcharts can be combined with enhancement modules for a systematic standard forms selection and enhancement technique.	Proposed Procurement Selection framework towards selection of standard forms of contract incorporating the enhancement modules A program based on decision flowcharts is written to enhance the ease of selection.

Table 1.2 (cont): Overview of Theses

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 8	Conclusion: 8.1 General Overview of Chapter 8.2 Research Findings 8.3 Recommendations from Research Findings 8.4 Research Constraints 8.5 Recommendations for future research	Chapter 8 summarized the findings of research and put forward the recommendations to fill the gap of research previously established.	Original Contribution to knowledge: The Gap of Research which indicates the following: • Method of Form Research is not standardized • Standard Forms commonly used to delivered projects are short of being 'ideal' • A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia Knowledge gaps addressed by: • A formal form analysis technique is successfully established, tested on five (5) most commonly used Malaysian forms, where results of analysis is successfully verified by industry key expert interviewees. • Forms enhancement is suggested to achieve synchronized form improvements in order to create an enhanced suite of Malaysian Standard forms of contract which • Can be combined with the procurement selection framework designed to select the most appropriate standard forms of contract for construction projects in Malaysia.

2. LITERATURE REVIEW

2.1 General Overview of Chapter

This chapter outlines the opinions and knowledge of other authors in the areas of procurement and contracting strategies. It serves as a guideline to establish the need and the overall direction for the works and presents the research methods that can be adopted to achieve the aim and objectives established above.

The following Table 2.1 summarises the outline of this chapter:

Table 2.1: Outline of Chapter 2

Section	Description	Points Established
2.1 General Overview of Chapter	General overview of the Chapter 2	Need and direction of works
2.2 Background	Critical Success factors for the execution of construction projects.	A good, appropriate contractual relationship is necessary for successful delivery of a project.
2.3 Malaysian contracting	2.3.1 Contracts 2.3.2 Standard Forms of Contracts	Malaysian contracting is governed by construction contracts, which is defined by standard forms of contract. Good contractual relations are thus established via construction contracts, especially standard forms of contract. *Hence, a good contractual relationship is determined by a good standard form for the successful administration and delivery of a project.*
2.4 Standard Forms of Contract in Malaysia	2.4.1 PWD 203A (REV. 2007) Standard Form of Construction Contract 2.4.2 JKR Form of Contract 2006 2.4.3 PAM Contract 2006 (PAM 2006) 2.4.4 IEM Conditions of Contract for Civil Works (IEM 89/CE) 2.4.5 CIDB Form of Contract 2000 2.4.7 Problems Generally with Standard Forms	Problems are perceived to exist in the 'quality' of the standard forms available in Malaysia. A review of Malaysia's most commonly used standard forms indicates that the forms have fallen short of being 'ideal'. Gap in Knowledge established: *(1)There's need for an extensive form-analysis for Malaysian standard forms to be based on (2) a structure to be developed that is repeatable with a fixed set of criteria to provide for results that can be applicable across the board for form enhancement and to address the quality issues of the standard forms.*

Table 2.1(Cont): Outline of Chapter 2

Section	Description	Points Established
		Literature by others leads to establishing the aim and objectives (i), (ii) and (iii) of the research as previously mentioned in Chapter 1 Section 1.4.
2.5 Bench-Mark/Best-Practice/(Ideal) Standard Form of Contract	2.5.1 NEC3 as a Potential Bench-Mark/Best-Practice 'Ideal' Standard Form	This section builds towards an understanding of what constitutes an 'ideal' standard form; the criteria/attributes and the parameters of a bench-mark standard form. It also goes towards justification of using NEC3 as such a benchmark; ultimately to enhance local standard forms, which are currently perceived to be less than 'ideal'.
2.6 Effective Contract Administration	2.6.1 Problems Associated with Selection of a Malaysian Standard Form Option	Effective contract administration requires not only an inherently 'good' form but also the systematic and accurate selection of an appropriate standard form (where currently problems are perceived to exist in the 'quantity' of the existing standard forms available in Malaysia).
2.7 Procurement Strategies	2.7.1 Selection of Procurement Methods 2.7.2 Selection of Contract Types 2.7.3 Selection of Standard forms of contract 2.7.4 Selection Strategies	Form selection starts with the appropriate selection of a procurement strategy. Criteria for the selection of procurement strategies are identified and discussed. Gap in knowledge established: *(3) A formal, logical set of procurement framework(s) to select the 'most' appropriate form-option is not available in Malaysia* Literature by others establishes the aim and objectives (iv) and (v) of the research as previously mentioned in Chapter 1 Sect 1.4.
2.8 Research Method	2.8.1 Qualitative Vs Quantitative Research 2.8.2 Qualitative Research 2.8.3 Data Collection Method for Qualitative Research 2.8.4 Data Analysis for Qualitative Research 2.8.5 Quantitative Research Method 2.8.6 Form Research Method	Research Methods are reviewed towards ultimate adaption as presented in Chapter 3; Research Methodology is presented in order to address data gathering for objective (vi) which proposes a procurement framework that includes guidelines for standard forms selection with suggested enhancement-modules able to enhance project contract administration in construction projects in Malaysia (the realisation of which is deemed to go towards an original contribution to knowledge).

2.2 Background

The construction industry is that sector of an economy which constructs, alters, repairs and demolishes buildings, civil engineering works and other similar structures (Abdullah, 2004). Technological complexity ranges from the familiar, well known materials and trades, through to highly complex facilities involving multiple interacting subsystems (Murdoch and Hughes, 2000). Indeed construction projects are complex and challenging processes, requiring interpretation of conformance with a myriad of laws, codes and regulations, marshalling of considerable resources including labor, equipment, materials, as well as good communication and coordination among multiple parties involved in the project (Dennis, 1982).

All construction projects are executed in a contractual environment. For many years, the construction industry has relied on formal contracts to define and enforce the obligations and rights of contracting parties (Sai et al, 2006). Hinze (2001) further added that depending on the nature and size of the project, the contractual arrangement between these parties may change. In some cases one party may play two roles or even all the roles. These different roles should be clearly understood and carefully evaluated to determine the contractual relationship that should lead to the most effective delivery of the project.

The construction process normally involves three principal participants, namely the owner (or the client), the consultant and the contractor (Chow, 2004). Hinze (2001) explained that the owner is the party that determines when a particular project is needed and secures the funds to allow function. Then, the consultant and contractor are drawn together by a common purpose to build the project (Rashid, 1998). The design, closely adhering to the owner's stated project objectives, will serve as the guidance for the contractor, who will build the project (Hinze, 2001).

Given the above, it is seen that for the successful realization of a civil engineering project, besides coordinating the vast amount of resources, having a good and appropriate contractual relationships among the contracting parties is important. An appropriate contractual relationship is the prime concern of this research; the work aims to understand, define and conceptualize this in the Malaysian context. The first step in the understanding of contractual relationship(s) is an understanding of the local contract law. The following section develops such understanding.

2.3 Malaysian Contracting

Following from Section 1.1 on the type of contract law in Malaysia, it is important to remember that that construction contracts are first and foremost contracts and therefore the general law applicable is the law-of-contract (Bevin, 1982). Robinson & Lavers (1988) suggested that the study of the law pertaining to building and civil engineering contracts in Malaysia would involve consideration of the following:

- The English law of contract and law of tort as received locally;
- Local federal and states statutory rules which override English law;
- Case law (precedent), which provides some definitions and rules, or which may provide only guidance in interpretation problems, and which is in a continual state of development;

The terms of the particular contract (express and implied), which are subjected to common law and statutory rules of interpretation.

Dass (20005) stated the States of Malaya were steadily brought under British colonial rule and the English legal system, resulting in the phase-by-phase imposition of Common Law including the law of contract: initially by the judicial interpretation, subsequently by legislation providing for the general application on mercantile matters, and later by means of Indian-origin discrete contract law legislation- the Contracts Act 1950. The Malaysian Law of Contract is embodied, in the main, in one major statue: the Contract Acts 1950 (Phang, 1998). In Malaysia, the law governing contractual relationship is set out in the Contract Act 1950 which is primarily a codification of the English common law (Lim, 2004), which derives its origin from the Contract Enactments (modeled on Indian Contract Act, 1872) introduced in 1899 in the Federated Malay States (Argawal, 2001).

The Contract Act 1950 is by no means exhaustive of the entire law of contract. According to Sections 3 and 5 of the Civil Law Act 1950 (revised-1972), English law is applicable to Malaysia unless ‘other provision’ has been or shall be written as law. It is clear then, that English law is applicable only when there are ‘no other provisions’, in written law; in the other words, English Law is not applicable, if ‘other provision’ exists in the written law of Malaysia (Argawal, 2001).

Lim (2004) further mentioned that there is consequently a body of Malaysian case laws which supplement the law of contract. Though English cases are presently not binding in Malaysia,

they are persuasive authorities and frequently incorporated into Malaysia Case Law. This is especially so in the specialist field of construction contracts, where it is clear that English decisions on contracts worded identically are of the highest persuasive authority and are likely to be followed by the Malaysian Courts.

It is important to remember, as mentioned by Othman (2008), the fundamental purpose of the law of contract is to enable achievement of the contractual parties' private ends by providing legal effects to their agreements where parties must towards mutual benefit rely on each other and coordinate their actions. The law of contract achieves this fundamental purpose through a variety of ways and idealizations, which include facilitating the process of exchange to minimize breakdown, provide sanction(s) for reneging on an agreement, work out remedies against a party who is in breach or defaults on an agreed progression, include standard set of risk-allocation terms for use by contracting parties and, above all, regulate transactions according to ideals of social justice. Further discussion on construction contracts for contracting parties locally are given below.

2.3.1 Contracts

All construction projects are governed by contracts laid down by the Malaysian Law of Contract and all contracting parties are bound by the contract. Contract can be defined in various ways. William (1992) defined a Contract as "a legally binding agreement between two parties, or an exchange of promises whereby one party undertakes to provide something in return for something else from another party". Generally, legally enforceable promises are contracts (Agarwal, 2001).

Ashworth (1998) quoting Sir William Anson defined a contract as "a legally binding agreement made between two or more parties, by which rights are acquired by one or more to acts or forbearances on the part of the other or others." The essential elements of this definition are as follows:

- Legally binding: Not all agreements are legally binding. In particular there are social or domestic arrangements which are made without any intention of creating legal arrangements.
- Two or more parties: In order to have an agreement there must be at least two parties. In law one cannot make bargains with oneself.

Therefore, one party commits itself to deliver (clearly specified) goods, software or services to a second party, within a certain delivery time and for an agreed price (Veld & Peeters,

1989). In the case of a traditional construction contact, it requires the contractor to build the designed works and requires the employer to pay them. It is normally a massive and complex document (Simon, 1979).

2.3.1.1 Construction Contracts

An engineering construction contract refers to an Agreement, which is enforceable by law, executed between the Employer and the Builder who signs the agreement to become a "Contractor", which together with the design, specifications and quantity documents, form the scope of the intended construction project. In Malaysia, such a contract is a promise or set of promises that is enforced under the Contract Act 1950 (Act 136).

Rajoo (1999) mentioned that like other ordinary contracts, construction contracts are created when two parties or more, either between employers and contractors, contractors and suppliers, or other combinations, mutually agree to a transaction. Therefore, the purpose of contract documents is to express and record unambiguously the matters intended by the parties to the contract via an agreement (Henkin, 1988).

Singh (2009b) states that construction contracts as a class are regarded by Malaysian law, not as a separate category of contracts but a part of the general law of contract and further added that, a construction contract is a contract under which one party (commonly called the Contractor) agrees for valuable consideration to undertake to carry out works for another party (commonly called the Employer) involving design (where applicable), fabrication, erection, alteration, repair or demolition of structures and/or installations on a site made available by the latter. It covers a whole range of contracts i.e. from a simple oral agreement to repair a house roof, to a mega highway contract. Such contracts are usually termed 'building contracts' when they relate to buildings and engineering contracts when they relate to infrastructure, systems and equipment installations. These documents include details of the work which the contractor has offered to construct and the payment which will be made from the Employer to the contractor.

O'Reilly (1999) further explains the function of construction contract as:

- Specifying the work to be done by the contractor (or sub-contractor etc.), including the required quality and time for completion of various parts of the work;
- Defining what amount is to be paid, how any additional or reduced payments are to be computed and when payments are to be made;

- Defining which party is responsible for events occurring outside the parties' direct control which affect the work; such events may include bad weather, access difficulties, local authority restrictions, changes in the law, unexpectedly poor ground, and the like;
- Defining who has responsibility for undertaking the various administrative or dispute resolution functions which may be required, including obtaining consents, giving instructions, making decisions about claims, appointing adjudicators, arbitrators.

Discussion of construction contracts is summarized in Section 1.1.2. Review of the typical construction contract and the extent to which this is comprised of contract-documents, is presented in the following section.

2.3.1.2 Construction Contract Documents

Further on the discussion in Section 1.1.3, Tottertill (2001) states that a typical construction contract will include the following:

- *The Builder's Offer (Tender)*, which when accepted is the contractor's offer to carry out the work for a certain price. The tender will be based on information and documents provided by the Employer, and include the Contractor's proposal for the rates of payment for the different items of work.
- *The Employer's Letter of Acceptance*, which is the letter from the Employer to the Contractor in which the Employer accepts the Contractor's offer to carry out work. This offer and acceptance constitute a legally binding agreement, within the terms which are stated in the Letter of Acceptance. The letter of Acceptance will refer to the Contractor's Tender and any subsequent agreements.
- *The Contract Agreement*, which is the document which confirms the offer the acceptance and establishes the formal Contract.
- *The Condition of Contract*, which is generally based on a standard document, modified to suit the requirements for the particular project.
- *The Technical Documents*, which includes drawings, specifications, bill of quantities and other schedules and give the Employer's technical requirements for the project, together with the detailed calculations which make up the Accepted Contract Amount.

Professor Vincent Power Smith (1990) had defined the term contract document as:

"A document is anything on which marks have been made with the intention of communicating information. Such things as writing, printing, transcripts, drawing and photographs are documents. Many standard forms of contracts define what are to be contract documents".

Bubshait and Almohawis (1994) further stated that the important, if not the most important, part of the construction contract is the general-conditions document. The importance of this document stems from its role in defining the relationships (rights and responsibilities) of the contracting parties in all the projects within an agency or a country. Furthermore, the document spells out the general project rules and relevant commercial terms.

These rules relating to documentation can be and are often standardized in a structured arrangement, as discussed in the following section.

2.3.2 Standard Form of Contract

As mentioned in the preceding section, one of the important documents in forming an engineering construction contract is Conditions of Contract. The Conditions of Contract set out the legal and contractual constraints applying to the contract and these represent the main operative provisions in the contract (Rajoo, 1999). According to Ashworth (1998), the Conditions of Contract seek to establish the legal framework under which the construction work is to be undertaken.

The general conditions of a construction contract are, as the name implies, those terms and conditions of such a general nature that they apply to the work as a whole (Collier, 2001). They are generally suitable for a wide range of common projects or works. These general conditions are deemed to be agreed and are not subjected to further negotiation and amendment (Singh, 2002).

The Standard Forms of Contract also known as the General Documents or the Standard Forms of Conditions of Contract , are the 'rules' governing the execution of the contract (Williams, 1992). Engineering documents tend to be lengthy and usually have to be drafted to a tight time schedule; so much so that, a truism exists in industry that it is often difficult to find the time to examine every possible potential occurrence that might stem from all inclusions. It is common, therefore, to rely to a considerable extent on *Standard Forms* which

have been carefully thought out and used over a number of years or on standard clauses from previous documents which appear to have proved satisfactory (Henkin, 1988).

According to Singh (2002), the standard form also satisfies the 'equitable principle' requiring that similar projects demand similar contracts and similar levels of party responsibilities and obligation. Moreover, the standard form of general conditions allocates risks relatively fairly between the parties. Such equitable apportionment of risk hinders contractors from adding risk premiums and allowances and thereby leads to a fairer commercial transaction between the parties involved in a contract (Singh, 2002).

The complexity of problems surrounding building and civil engineering contracts has led to the development and widespread use of standard forms of contract in many countries of the world (Powell, 1991), and Malaysia is no exception.

Rajoo (2010) stated that the standard form of building contract is one of the key methods of ameliorating a potentially fractious relationship to achieve a common end. It evidences the legal relationship between the parties in contract and provides the administrative procedures necessary for the realization of the legal relationship. Any standard form of contract would need to appreciate and incorporate all the special requirements and circumstances that a project would call for. A standard form of building contract would therefore be useful in expressing the obligation of the parties and a setting out of reasonable clarity, the scope of the project (Rajoo, 1999).

In Malaysia, standard forms are normally in a printed form and published by an authoritative body of the industry; a body which is recognised by both parties. In fact, most of the standard form contracts are generally written or commissioned by government agencies for use on contracts that they sponsor, or by a professional institution which takes it upon itself to represent its private sector clientele by producing one for adoption by its member practitioner (Robinson and Lavers, 1988). Gilberth (1983) also stated that, owing to the important role of the general conditions, coupled with their intended applicability in all the projects within an organization or even a country, standardized forms of general conditions have been developed by different professional bodies and are in wide use throughout the construction industry.

An overview of standard forms of construction contract is summarized in Section 1.1.4. Having established that standard forms are firmly rooted in the Malaysian construction industry, the following section seeks to explore in more detail the benefits or otherwise in their usage.

2.3.2.1 Advantages of Using Standard Forms

According to Singh (2004), the wide use of standard forms reflects recognition of the advantages of using standardized general conditions. As Chan (2006) mentioned, with standardization comes familiarity and familiarity is often held out as advantageous. The use of standard forms of contract for civil engineering projects has long been standard procedure; all parties in the construction industry are familiar with the structured relationships and obligations that result from adherence to a standard form of contract.

One of the main advantages is the potential for improvement. By using the same standardized conditions over a long period of time, the clarity, fairness and efficiency will be identified and subsequently corrected (Bubshait & Almohawis, 1994); the authors further commented that standardized conditions lessen the possibility of misunderstanding, undue compensation, the likelihood of change orders, and the occurrence of claims or litigation arising out of contractual performance.

Gilberth (1983) mentioned that another major advantage of using standardised conditions is the familiarity of the contracting parties with the relevant provisions of the contract. Such familiarity will reduce the time and effort needed to prepare and review the contract documents, and will contribute to reducing the bid-price contingencies.

Broome & Hayes (1997) further added that with familiarity with its contents, the contracting parties will be aware of both its strengths and weaknesses, and the suitability for their own specific purposes. This will reduce the occurrence of dispute and misunderstanding.

Sweet (1994) mentioned that standard forms are vital for three (3) separate reasons in that they:

- provide a consensus as to allocating risks and responsibilities, remedies and administrative practices;
- make the negotiation process more efficient and less costly; and
- As useful connector between different entities acting together on a project.

Robinson and Lavers, (1988) stated that standard forms (such as UK RIBA/JCT forms, Singaporean forms of SIA70, Malaysian standard forms of PAM and PWD and the like) have obvious advantages namely that:

- Respective standard forms were originally drafted by experts;

- If successful, standard forms enjoy a long life during which they are revised periodically to close the loopholes that are inevitably exposed in litigated disputes and thus they become increasingly reliable;
- Similarly, over their life span they accumulate a body of case law which provides authoritative interpretation and explanation of their detailed provisions;
- They become familiar to practitioners, so that they may be used to advantage and known pitfalls avoided: their terminology gradually becomes part of the everyday language of the industry and tends to shape attitudes and relationships towards a readily recognizable pattern.
- Standard forms provide a basis for academic study and analysis leading to better understanding by way of a body of textbooks and discussion articles in professional journals.

Singh (2002) stated that the positive reasons justifying the use of such forms can be further summarised as follows:

- The form has been arrived-at via a process of negotiation between the various sectors of the industry and as a result acts as a compromise between the various powerful interest groups.
- They have been widely adopted because experiences have shown that they facilitate the conduct of trade and have addressed the common pitfalls and shortcoming.
- The form satisfies the equitable principle requiring that similar projects demand similar contracts.
- The standard forms allocate risks relatively fairly between the parties. Such equitable apportionment of risk obviates contractors from adding risk premiums and allowances and thereby leads to a fairer commercial transaction between the parties.
- Most such forms are time tested and practitioners are aware of their workability, limitations and drawbacks. This familiarity leads to administrative and cost efficiency and minimize possible claim and disputes.
- Over the year these forms have accumulated a body of case law and judicial pronouncements as to the interpretation of the various provisions and stipulations which leads to certainty in their implementation; and,
- Employment of Standard Forms avoid the necessity of the parties indulging in a long winded and time wasting process of negotiating the relevant contents of the legal and

commercial framework which they intend to put in place. An 'off the shell' / 'ready-made' formula is available for the possible adoption by the parties.

According to Sweet (1994), standard forms of contract are able to address the important aspects of complex legal arrangements as well as providing the means to correct unsatisfactory legal rules and industry practices. They have been widely adopted as they are proven to facilitate the relationship of the participants and address objectively common areas of potential disagreement in engineering projects.

The practice of standard forms in Malaysia has traditionally included a formal series of steps to be taken to resolve disputes through arbitration and, more recently adjudication as in PAM 2006 (where PAM 2006 is Malaysian standard form of contract described in detail in subsequent sections), which reduces substantially the backlog of construction cases, brought to litigation in Malaysia's formal courts.

In short, standard forms of contracts are perceived as a standardised tool in construction contracting able to connect the different entities in order to work together on a project. It does away with time consuming and complex and expensive drafting of contract documents for each and every new project. And thus, provides a standard reference for all in the industry.

Standardization, whilst good at a formalization of relationships, does however often fail to cover all eventualities in the new complex projects. The following section discusses the disadvantages of using standard of forms of contract.

2.3.2.2 Disadvantages of Using Standard Forms

Despite the widely accepted advantages identified above, various shortcomings stem from the usage of standard forms. As suggested by Iyer et al (2008) with the increase in size and complexity of projects, the conditions of contract and its standard clauses are becoming more complex and difficult to comprehend, which in turn increases the number of disputes and causes delay in the settlement of disputes. This is largely due to the fact that most traditional contract forms are single disciplined (building or civil or mechanical or electrical) while in fact projects today involve multi disciplinary activities, rendering it difficult to fully apply the forms without amendment. Even though revisions occur, completeness and comprehensiveness is still lacking in standard forms as new elements incorporated result in even more complicated and difficult to understand clause modifications.

Clarity is perceived as a concern. Many regard clarity as less than optimum in a majority of the standard forms of contract available; various studies argue that standard contracts and the antiquated language used are difficult to understand. Bunni (2003) in his study, revealed that 86% of the sentences in FIDIC standard form(s) of contract can be understood by only 4% of the population, where understanding of the clauses requires individuals to have an IQ of 130 or more.

One of the main criticisms against the standard form is that, the wide use of archaic legal language and sheer bad draftsmanship leads to a likelihood that decisions are anomalous and difficult to be realized and that subsequently, those who might be best able to comprehend the clauses, namely conflict resolution judges, are themselves unfamiliar with construction or engineering technology or the way building projects are traditionally operated and administered (Wallace, 1970). In addition, standard forms generally favor the sponsoring organization, and they reflect assumptions that may not be merited for specific technical applications (Gilberth, 1983).

Wallace (1970) further condemned the fact that familiarity is often a prerequisite to the smooth usage of standard forms; where such familiarity is required to correctly interpret badly drafted, ambiguous contracts. He further argued that the absence of any such judicial knowledge (familiarity) is the greatest single cause of "difficult" decisions that are apt to cause dispute (Wallace, 1970).

The RIBA form, for example, historically amassed difficulties due "the unnecessarily amorphous and tortuous" provisions of contract; Wallace (1970) stated that "it seems lamentable that such a form be used to govern so many and such important activities throughout the country" and that it is "deviously drafted with what in parts can only be a calculated lack of forthright clarity".

Similarly, recent studies show concern over clarity. Broome & Hayes (1997) commented that the FIDIC conditions, which originate from ICE conditions, are "quite obscure" on "the way in which an appropriate sum (for expenses arising from instructions or variations) would be calculated "with parties to a contract being advised by one eminent lawyer to "seek to clarify what is intended" before entering into a contract. They also state that "JCT, ICE and FIDIC conditions have long sentence length, poor layout and contain many redundant legal expressions. Broome and Hayes (1997) show, for example, that clause 65 (6)(c) of the ICE conditions contains a sentence of 252 words with no punctuation, as well as many other syntax 'fouls'."

Lack of clarity might well be the reason that the standard forms of contract are often literally left in the drawer, allowing decisions to be arbitrarily made based on past experience; Broome and Hayes (1997) argues that it is an undeniable fact that a great number of construction projects are successfully accomplished without trying refer to the standard form of contract, where defined responsibilities and obligations are more likely to confuse than clarify.

Both Henriod (2003) and Bunni (1986) state that the lack of comprehensibility of standard forms fo construction contract has resulted in a history of court cases to interpret ambiguous clauses and settle resultant conflicts.

Another disadvantage of many standard forms is argued to be the lack of clearly defined design objectives and a disregard of the modern principles of risk allocation and project management (McInnis, 2001).

Singh (2002) stated that the opponents of standard forms proffer a host of disadvantages to the adoption of standard forms in Malaysia; principal disadvantages include:

- Standard forms contravene the very cornerstone of the law of contract i.e. the doctrine of freedom to contract.
- Owing to the multitude and the varied nature of the contracts encountered in the engineering / construction industry it is a fallacy to have a standard form covering all eventualities.
- In situations where such contracts have been used, these have been more likely due to possible “arm-twisting” or “economic” duress rather than consensus between the parties.
- The belief that the standard forms fairly apportion risks between the parties is in reality a myth as the parties are rarely bargaining at arm’s length.
- Most of the standard forms are drafted in legalese i.e. complex legal language beyond the comprehension of the parties and the normal contract administrators.

According to Singh (2002), the *perceived advantage* of familiarity may well be an excuse for contracting parties unwilling to get out of their ‘familiar’ comfort zones, leading further to misinterpretations of revisions and reliance on outdated versions. In fact, the familiarity phenomena become a mode of complacency where often, stakeholders do not even bother to interpret clause-content revisions or updates.

It is noted that the disadvantages in an uptake of standard forms may potentially lead to construction party dispute. In fact, disputes are almost inevitable in the fulfillment of construction contracts (where ambiguous contract clauses are perceived to exist); where construction projects are of significant magnitude or time span, the propensity for dispute is even greater (Hellard, 1987). The following section extends this argument and examines whether standard forms are a root cause of construction disputes.

2.3.2.3 Construction Disputes Caused by Standard Forms

Two major factors can be argued to cause dispute in the industry, namely:

a) The contract conditions, where owners, contractors, designers, and the various construction stakeholders readily recognize and are quick to admit publicly that a 'perfect' set of contract documents simply does not exist (Hohns, 1979).

b) Lack of 'perfection' in the contract documents, such that Motsa (2006) argues that imperfect contract documents are a major cause of dispute. Mosta makes a number of assertions: Document errors become the fault of the owner when they cost the contractor un-bid or unforeseeable dollars. Documents errors become the fault of the designer when the judgment of its peers and the custom of the industry find errors that are gross and inexcusable. Document errors become liabilities when someone who has a right to rely on the professional, is severely hurt or damaged. The misunderstanding of the contract document can cause serious dispute among members of the team, who misunderstand the responsibilities and obligations contained in the document. The shorter the period allowed for design, the more addenda's that are required, and the more the opportunity for errors. Motsa (2006) summarises his argument in the following figure.

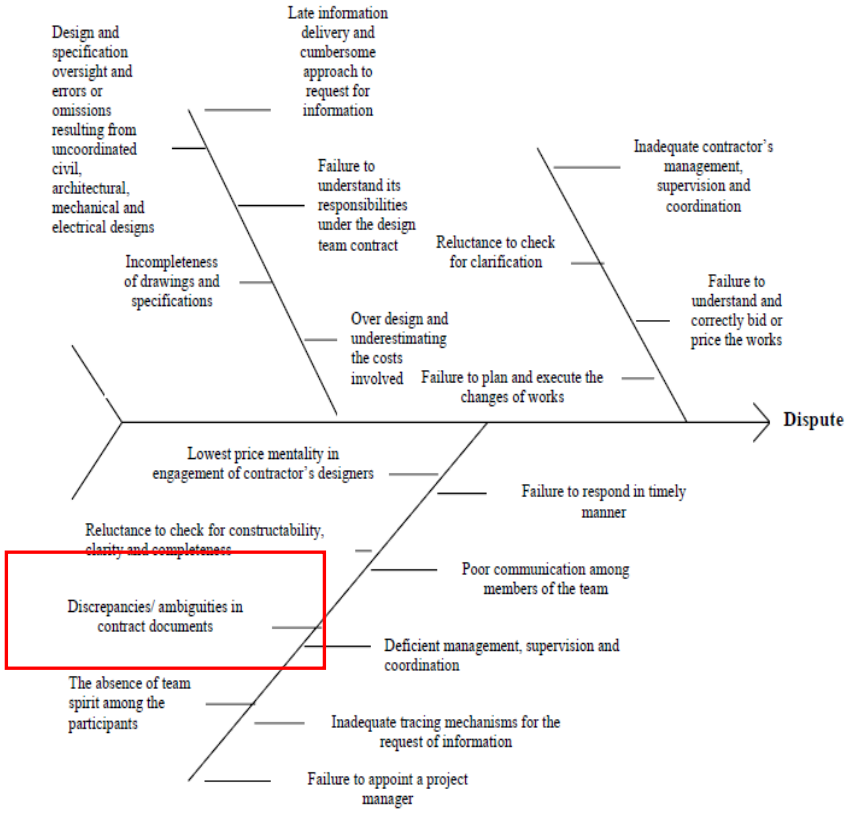


Figure 2.1: Fish Bone Diagram Showing All Major Causes of Construction Disputes (Motsa, 2006)

Koh (2005) further support Motsa by stating that causes of construction dispute contributed by clients are: deficient/poor management, supervision and coordination efforts on the part of the project; ambiguous contract documents; and reluctance to ensure constructability, clarity and completeness of construction process documentation.

Motsa (2006) further argues that the inherent contradictions, poor English, antiquated provisions, and all types of ambiguity and confusion which can 'boggle' the very best technical and legal minds are also the causes of disputes. Broome and Hayes (1997) also agreed that clarity is one of the main reasons why some disputes are submitted to the courts. It may be argued then that: most disputes arise from poorly drafted or inadequate documentary definition(s) of the rights and obligations of the respective contracting parties (Robinson and Lavers 1988).

Hellard (1987) further added that the complexity of the contract documents is one of the contributors to the contractual problems such as conflicts. The contract does not address

problems which frequently occur in practice, and stacks almost all unforeseen risks on the employer (client), thus favoring the contractor or vice versa.

Murdoch and Hughes (2000) believe that the first factor defining the nature of a construction dispute is the terms of the contract. The argument is compounded by Rajoo (1999) and Motsa (2006), that contract documents are one major origin of dispute. In addition, Fenn (1997) identified the following factors as causes of construction disputes caused by clients:

- **Discrepancies / ambiguities in contract documents**
- Failure to respond in timely manner
- Poor communications amongst members of the team
- Inadequate tracing mechanisms for request of information
- Deficient management, supervision and coordination efforts on the part of the project
- Lowest price mentality in engagement of contractors and designers.
- The absence of team spirit among the participants.
- Reluctant to check for constructability, clarity and completeness.
- Failure to appoint a project manager

A survey of more than 300 construction disputes in the USA (Mix, 1997) leads to the conclusion that dispute causes can be largely traced to five sources:

- **Errors, defects or omissions in contract documents.**
- Underestimation of the cost – by the client, the contractor, or both.
- Changes in conditions, (e.g. unforeseen ground conditions).
- Claims from end-users (legal rights of owners and tenants).
- People involved in the construction process.

Indeed in Ontoria, Canada, Bristow and Vasilopoulos (1995) identified five primary causes of claims (and subsequent dispute and rejection of claim):

- **Ambiguous contract documents.**
- Unrealistic expectations by the parties.
- Poor communications between project participants.
- Lack of team spirit among participants.

- Failure of participants to deal promptly with changes and expected conditions.

The Centre for Public Resources Inc. (1991) in its publication Preventing and Resolving Construction Disputes suggests that the ten most common specific causes of construction disputes are:

- **Contract provisions, which unrealistically shift project risks to parties who are unprepared to cover those risks.**
- **Ambiguous contract documents.**
- Contract administrators who prefer to buck a dispute to a higher level or to lawyers rather than take responsibility for resolving the problem at the source.
- Unrealistic expectations of the parties, particularly employers who have insufficient financing to accomplish their objectives.
- Contractors who bid too low.
- Poor communications between project participants.
- Inadequate contractor management, supervision and coordination.
- Failure of participants to deal promptly with changes and unexpected conditions.
- A lack of team spirit or collegiality among participants.
- A "macho" or litigious mind-set on the part of some or all project participants.

Having established that contracts and standard forms are indeed a key source of construction dispute, research outlined by Hellard (1987), presents the *elements* of standard forms which cause dispute and assesses the types of disputes and conflicts seen in contractual (mis)relationships, namely:

- Time related disputes (delayed processes)
- Financial matters (claims and payments)
- Standards of workmanship (designs and manual works)
- Relationships and people's conflict in the industry
- Each bullet-point a standard form of contract clause in its own right.

According to a research carried out in Malaysia by Asniah (2007), contract document errors are one of the major sources of disputes; indeed most disputes touch on payment (clause) disagreements, as summarized in Figure 2.2 below.

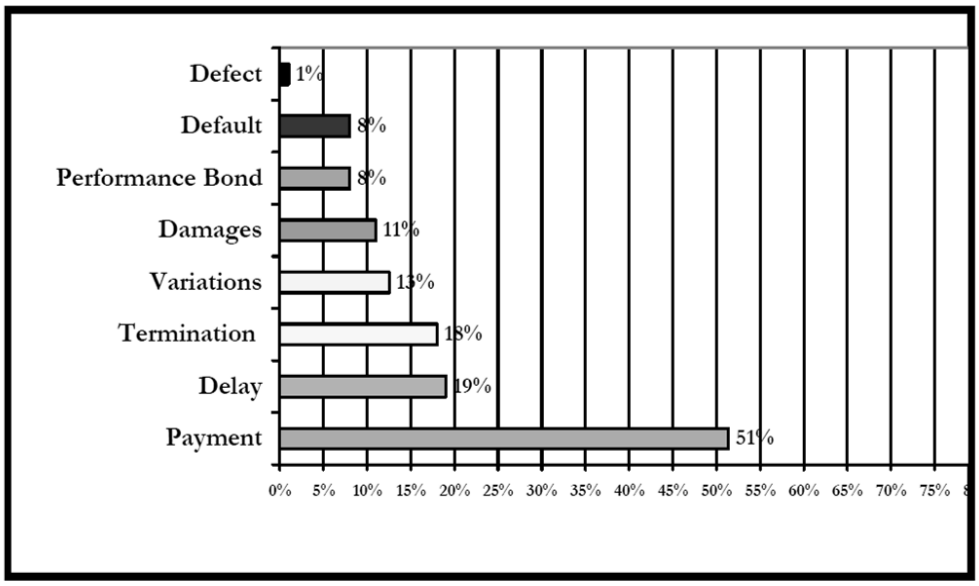


Figure 2.2: Nature of Construction Disputes (Asniah, 2007)

From the bar chart shown in Figure 2.3 below, major disputes involve variation of agreement (33%). This dispute occurs more often as a result of the addition of variation-term conditions, in the existing contract (Asniah, 2007).

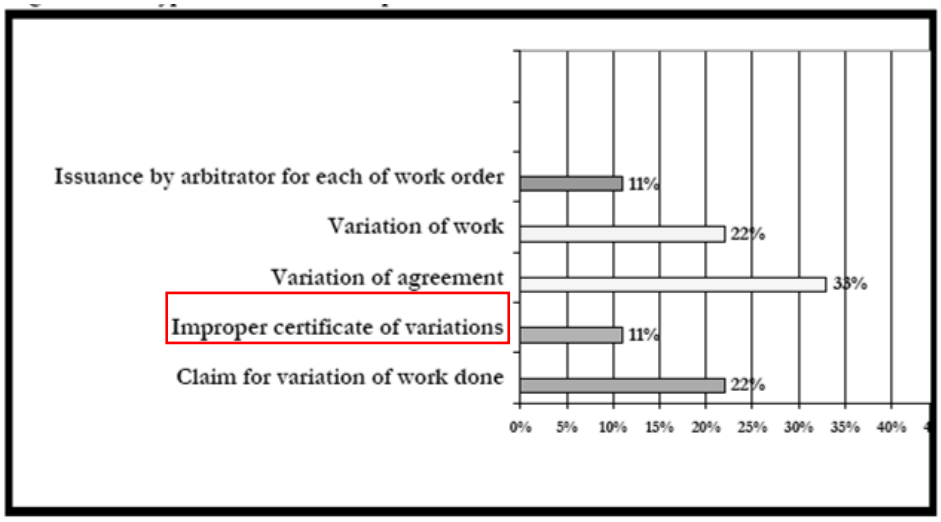


Figure 2.3: Types of Variation Disputes (Asniah, 2007)

Given discussion above in Section 2.3 which encompasses both international and Malaysian construction contracting, it is argued here that successful project performance and dispute-free completion is largely governed by construction contracts, which are defined by the respective standard forms chosen. Construction standard forms of contract, establish the basis upon which parties become legally bound in the realization of a construction project.

Based on the specific standard form used, the contracting parties and the contract administrator(s) should be made aware of their rights and obligations in unambiguous terms. Standard forms of contract must then be legally 'correct and clear' for proper judicial interpretation. Resultantly, contracts (and clauses) that are perceived to be ambiguous and lack clarity, lead to confusion and inefficiency in project administration, and result in an ineffective establishment of roles, obligations and responsibilities. These can cause 'unwarranted disputes' (Noushad, 2008) in the construction process, as is seen in the discussion above in Section 2.3.2.3. It follows therefore, that good contractual relations and relationships may be built by, and should be administered through, the use of suitable standard forms of contract.

Literature in Section 2.3.2.3 establishes that the current practice of using standard forms and their clauses not only has many demerits; the standard forms themselves are also a source of construction dispute. The literature argues that there is a relationship between standard forms and construction disputes, not only in Malaysia, but internationally; the literature also suggests that a good standard form is pivotal in establishing good contractual relations and an efficient building process.

The following section focuses now, more specifically, on the standard forms of contract typically used in Malaysia to give a better understanding of Malaysian standard forms and whether they serve their intended purposes towards establishing good contractual relations for Malaysian building industry stakeholders, and the extent to which they assist in the smooth realization of construction projects.

2.4 Standard Forms of Contract in Malaysia

The Malaysian construction industry almost universally relies on the use of standard forms of contract in the public and private sectors related to building and engineering (Rajoo, 1999). The common standard forms of contract for construction that are used in Malaysia seen in previous Table 1.1, are governed by a number of principal public-authority and professional bodies (Ali, 2006), namely:

- Government Department of Public Works (Jabatan Kerja Raya – JKR),
- Architect Association of Malaysia (Pertubuhan Arkitek Malaysia – PAM)
- Institute of Engineers Malaysia (IEM)
- Construction Industry Development Board (CIDB)

- PUTRAJAYA, and other major private organisations.

Ali (2006) associated the above mentioned authority and professional bodies with various types of standard form of contracts for construction as follows:

i. Government Projects

- JKR 203 A with Bills of Quantities
- JKR 203 with Drawings and Specifications
- JKR 203 N for Nominated Subcontractor
- JKR 203 P for Nominated Supplier
- PWD Form DB/T (2000Edn) for Design and Built or Turnkey project
- PUTRAJAYA Form of Contract for general construction

ii. Private Building Construction

- PAM 98 with Bills of Quantities
- PAM 98 without Bills of Quantities
- PAM 98 Nominated Subcontractor Form
- CIDB Standard Form of Contract for Building Works (2000 Edition)

iii. Private Engineering Construction

- IEM.CE 1/89 Form for Civil Engineering Works
- IEM.ME 1/94 Form for Mechanical and Electrical Works
- IEM.CES 1/90 Form for Subcontractor for Civil Engineering Works

Malaysia is made up of thirteen states and three federal territories, consisting of two regions separated by some 640 miles of the South China Sea; the eastern states of Sarawak and Sabah, are located on the island of Borneo, whilst the western states and the capital city of Kuala-Lumpur are located on a peninsula, bordered by the countries of Singapore in the south and Thailand in the north. Traditionally and historically the eastern and western states favour different standard forms of contract.

It is also noted that PWD 203 series of standard-forms is used in the eastern state of Sabah, whilst the JKR Form of Contract 2006 dominates the other eastern (and geographically largest) state of Sarawak (Lim, 2004; Ting & Whyte, 2009). The Public Work Department (PWD) series forms of contract such as PWD 203A (revised from the PWD 203) and JKR

Form of Contract 2006 (revised from the PWD 75) are the de facto standard forms of contraction contract used by the majority of Malaysian public sector. As in many other countries, there is an ever mushrooming range of standard form of contract alternatives in Malaysia and, as in other countries, quantity of options does not necessarily indicate quality; necessitating review. The following section discusses the principal standard forms of contract used for construction and engineering in Malaysia, and summarises literature that assesses the forms and their respective merits and demerits.

2.4.1 PWD 203A (REV. 2007) Standard Form of Construction Contract (PWD 203A)

The PWD (Public Works Department) forms of contract are the principal standard forms of construction contract used by the Malaysian public sector. There has been in recent years increasing usage of the PWD forms with amendments by the private sector also, especially in civil engineering construction (Lim, 2004).

According to Singh (2009a), there are a range of variations of standard forms available related to PWD Malaysia, for both engineering and building works undertaken on the basis of traditional general contracting (detailed above in Table 2.2).

The origin of PWD 203A and 203 forms of contract can be traced to the English RIBA/JCT family, or more precisely the 1931 RIBA form, jointly produced by the RIBA, NFBTE and IOB. Subsequent to 1983, the PWD has issued several ad hoc alterations by way of addendums No 1 to 6. These alterations amongst others included the correction, revision and substitution of certain clauses in the form (Lim, 2004). Steps were initiated a number of years ago to revise these forms and these resulted in tupdated PWD Forms (Rev. 2007) which were officially launched relatively recently. (Singh, 2009a)

The latest revised PWD 203A Form (Rev. 2007), becoming referred to as PWD 203A consists of 78 clauses, with the basic philosophy of the earlier Forms maintained (Singh, 2009a). The PWD 203A and 203 forms of contract are produced both in Bahasa Malaysia (the language of Malaysia) and English language versions. In Government contract practice, both versions are incorporated into the contract; the Bahasa Malaysia version will take precedence in the event of an ambiguity or discrepancy. The Public Works Department has also produced a JKR Guide on the Administration of Public Works Contracts which is an extrinsic document for use by government officials, but not a document forming part of the official contract documents. This document is deemed a helpful document to understand the purpose

of the inclusion of certain provisions in the PWD forms of contract but cannot strictly be used to aid interpretation in the event of ambiguity or discrepancy (Lim, 2004). It might be suggested perhaps that a document that clarifies the main document, might immediately indicate clarity issues at the outset.

2.4.1.1 Problems Associated with PWD 203A

Noushad (2008) pointed out that the recent 2007 editions made content and conceptual changes, but did nothing significant to improve on drafting, structure and style; as far as drafting, structure and style is concerned, the PWD contracts such as the PWD 203, 203A, or the Design and Build option are argued by Noushad (2008) as having little improvement.

Noushad (2008) pointed out the reasons for not significantly improving the structure and style of any of these traditional contracts is either because of an inability to address appropriately plain language requirements and/or because drafting bodies have not allowed enough resources either in time or money or in enhancing the comprehension-quality of legal drafting (skills) by being unable to provide training resources for legal drafters..

Cheong (2009) gives an overview of PWD 203 (Rev. 2007), and discusses the main differences between the updated PWD 203 (Rev. 2007) in comparison with the PWD 203 (10/83) and divides his review into three categories as follows:-

i. Differences in interpretation of contract;

- There is no longer any Article of Agreement as there is already a binding contract when the LA is signed by both parties to the contract.
- "Works" has been contractually defined as including temporary works thus indicating that the SO is responsible for directing and supervising both permanent and temporary works.
- Time is now of the essence under the contract meaning that time is now a fundamental term entitling the SO to terminate the contract if it is not completed by the contract completion date.
- The contract is now to be interpreted entirely or modified by others clause in the Contract or entry in the Appendices.
- Amendments, modifications and waiver of the contract provisions shall only be valid if made by mutual consent and through written supplementary agreement. This

supplementary agreement shall be read as an integral part of the contract and the original Contract shall remain in full force (clause 67).

- Any provision which contravene any statute shall be fully severable (clause 70)
- Any failure to enforce a party's right within stipulated timeframe would not constitute a waiver (clause 71)
- New clause 26 providing measurement rules for valuation of provisional quantities.

ii. Employer's rights, obligations and powers;

- New Clause 52 empowering the Government to terminate the contract based on national interest. National interest is not defined under the contract. It is to be determined by the Government. This clause resembles a "termination by convenience" clause allowing the owner to avoid a default based confrontation using the excuse of national interest.
- New clause 53 empowering the Government to terminate on corruption.
- New clause 12 empowering the SO to order the Contractor to produce a Works programme and revised it where necessary.
- New clause 50 empowering the Officer named in the Appendix to the conditions of Contract to order suspension of works.

iii. The contractor's rights, obligations and powers.

- New clause 9 stipulating the express positive assertions by the contractor upon which the government have relied upon in entering into the contract, breach thereof, which may render the contract voidable at the option of the Government.
- New clause 10 spelling out the common law obligations of the contractor to construct and complete the work with due diligence; to exercise reasonable skill and care in carrying out the works; and to act in the interest of the Client.
- New clause 12 obliging the contractor to submit a Works programme and revised it when so instructed by SO.
- Contractor is obliged under new clause 22 to ensure that any design s proposed by them are fit for the purpose intended and to provide a Design Guarantee Bond to that effect.

- Detailed rules under clause 36 obliging to the Contractor submit proposals for testing and inspection of works and carrying it out.
- New clause 37 obliging the contractor to pay all charges and overtimes fees for the machinery used directly in connection with the contract and to furnish all evidences, invoices and lists of construction plants, whether hired or otherwise.
- New clause 45 obliging Contractor to render assistance to any persons authorized by the Government to investigate any accident, failure or other events in connection with the Works including giving access to all specifications, designs, records and any other information.
- New clause 50 obliging the contractor to suspend or resume works when instructed by the officer named in the Appendix to the conditions on contract. Contractor is also under a duty to mitigate losses.
- Contractor is obliged to opt for Performances Bond in form of Bank Guarantee or Performance Guarantee Sum (Clause 13).
- The production of cover notes for the Workmen compensation insurances is no longer a condition precedent to commencing works (Clause 16).
- The Contractor can now serve the notice for loss and expense "as soon as practicable but not later than 90 days after practical completion of works" (Clause 44).
- The Contractor is now entitled to Extension of Time for suspension of works or delays as a result of late payments (Clause 43).
- Clause 69 places the obligation on the contractor to pay stamp duty.

Cheong's (2009) analysis of revisions indicates clarity improvement for some clauses, alongside some new ambiguities for other clauses.

Singh (2008) also comments that the basic philosophy of the earlier forms has been maintained. However, there has been some change in the format and content of most of the main Forms. Most of the Forms have been expanded content wise to include additional clauses. Furthermore, the format of some of the Forms, in particular, the JKR 203, 203A and DB have been altered. Content-wise, the said Forms have been basically revised and in most cases altered to address the relevant procedural and legal shortcomings.

According to Singh (2009a), generally, the parties' (be these the Employer's, Main Contractor's or Sub-Contractor's) obligations and liabilities have been further enhanced, in

clearer language. In terms of risk allocation, in tandem with the previous Forms, the bulk of the risk is transferred to the Contractor (including the Sub-Contractors) though, for a change, procedurally specific time periods for the Contract Administrator/ Employer to fulfill certain obligations have been stipulated. Another major change is the removal of Marginal Notes from all the new Forms.

In summary, despite some improvements in content, style and formatting, the Forms are still perceived to be cluttered with legalese, with omissions and deficiencies and in some cases, simplistic 'cut and paste' amendments, which appear perhaps to water down the effectiveness of the said Forms.

Singh (2009a) further made the following concluding comments for the PWD 203A Form of contract as below:

- There is no consistency in drafting philosophy and content between the various Forms. Even terms for the similar situations differ e. g. use of Termination of Contract in Forms 203 &203A and Termination/ Determination of Employment in Forms 203N and 203P, etc.;
- Each Form appears to be revised on a " stand alone" basis e. g. see the differences between Forms 203 & 203A, DB, 203N and 203P, and often on a "cut and paste" arrangement;
- The language used is full of legalese and gobbledygook. Language is not plain enough for the ultimate users to easily read, readily understand and properly and efficiently apply the provisions;
- Overuse of the words "shall" without defining its exact as to whether it is intended to be mandatory or directory in nature; thereby leading to unclarity in interpretation and eventual implementations;
- Use of redundant that are already statutorily defined and also well understood by the public e. g. sub-clause 1.2(b) " the singular means the plural and vice versa, ", etc;
- Overuse of "proviso" instead of simple words such as "it" or "when" leading to uncertainty as to their intended effect e. g. does the proviso introduce a condition precedent or condition subsequent?, etc;
- The layout and design of each form is inadequate and inconsistent. Although the previous marginal heading have been removed, the sub-clauses have not (except oddly for some provisions in the 203N and 203P Form) been given proper headings.

These compromise proper navigation of each document by the readers and prevents ease of reading;

- The numbering system within and between the different documents is neither logical nor consistent, bearing in mind these are prepared by the same body and checked by a legal authority of the likes of the AG's department;
- Punctuation again exhibits both deficiency and inconsistency; thereby compromising the construction to be afforded and efficiency in implementation;
- Inefficient and underuse of definitions leading to wordiness and redundancy e. g. see clause 48.1 JKR 203A where the term "any defect, imperfections, shrinkage or any other fault whatsoever" is repeated at least 5 times instead of being explained as " the term defect shall mean any defect, imperfection, shrinkage or any others fault whatsoever", etc;
- Predominant use of terms and expressions that are inherently vague leading to lack of clarity, precision and disputes as to interpretation e. g. forthwith, reasonable, satisfactory, etc.; and
- Absence of inclusive or gender-neutral language in direct contrast to contemporary style of drafting such documents.

Singh's (2009a) analysis might suggest that the new version has been unable to improve the desired clarity.

In implementing the PWD 203 & 203A (Rev. 2007) in construction industry, Singh (2009a) stated that the main changes of clauses in PWD 203 & 203A (Rev. 2007) still have the principle deficiencies and need extra attention when apply PWD 203A A new provision stipulating that time whenever mentioned shall be of essence of the Agreement; the legal ramifications of which is a moot-point.

In addition to the above, in term of EOT provision, Entrusty (2006) stated that most of the standard form of contracts in Malaysia, i.e. PAM 98/JKR PWD 203/IEM /CIDB 2000, do not clearly express the provisions in dealing with 'float'. Thus, the consequences that are contained in the provisions of these contracts can be interpreted differently depending on the wordings of the respective EoT provisions.

Besides that, Entrusty (2003) also comments that most standard forms of construction / building contract have a provision for the retention of a certain percentage of the amount due to the Contractor. The main purpose of retention monies is to serve as a protection mechanism for the Employer from the Contractor's failure or default in his performance under the

contract e.g. rectification of defective work. But there is no provision for retention monies under JKR/PWD Form of Contract (203A – Rev 10/83).

Not all standard forms of contract contain expressed contractual remedies of payment-default – PWD Forms of Contract is one that does not. It is therefore necessary for the innocent party where he has no express contractual rights of determination to establish repudiation by the other party or breach of legal condition if he wishes to terminate the contract at common law (Ang, 2006).

Goh (2009) stated that the PWD 203A has a lack of explanation for the insurances for foreign workers. Based on the local Standard form of contract such as PWD 203A (REV 2007), PAM contract 2006 (with Quantities) and CIDB 2000 Form, only the CIDB 2000 Form contains the Safety Provisions. The others 2 forms merely imply the compliances of safety and health matters in Indemnity Provision, Insurances Provision, and Workmen Provision.

Goh (2009) further mentioned that the Sequences of the Clauses, from pre-construction stage to post construction stage in PWD 203A and PAM 2006 are quite poor and could be improved by rearranging the Clauses, as seen in the CIDB 2000 Form.

From the result of Goh's (2009) comparison made among the selected standard forms of contracts such as PWD 203A, CIDB 2000, PAM 2006 and AS (2124-1992), only CIDB 2000 and AS (2124-1992) are more procedural. The rest of the contract forms are poor in procedural requiring the contractor to take full responsibility for the safety operation and method of construction to be complied.

Each document which forms part of the contract cannot stand alone during interpretation. Therefore, the Bill of Quantities should be read in conjunction with other contract documents, indeed they are mutually explanatory. In terms of any conflict or inconsistency, CIDB and FIDIC state that the documents should be interpreted according to the priority set in their clauses respectively. However, this sequence of analysis is not provided in PWD 203A, hence it would be possible for the contract users to argue over which document is prevailing in the interpretation (Tang, 2009).

In summary, the PWD forms are currently less than 'ideal' at present.

Further review of an alternative major Malaysian government form, the JKR Form of Contract 2006 follows below.

2.4.2 JKR Form of Contract 2006

The JKR Form of Contract 2006 is the standard form of contract which dominates the largest states of Malaysia, Sarawak, in the civil engineering construction works. It was first revised in May, 1961; consisting of 45 clauses or conditions that are generally necessary for the construction projects. PWD 75 revision started as early as year 2000, but Version 2006 was only launched in 2007 (Sia, 2004). PWD 75 is succeeded by JKR Form of Contract 2006 which contains 5 parts and 49 clauses Many private and governmental organisations are currently still using the older version due to reasons such as unfinished projects, familiarity with old forms and in some cases, surprising limited awareness of the existence of the new form (Ting & Whyte, 2009).

2.4.2.1 Problems Associated with JKR Sarawak Form of Contract 2006

There are few detailed academic studies carried out on PWD 75, which was the predecessor of JKR Form of Contract 2006. Generally, Sia (2004) states that there are some clauses lacking in procedures and time frames found in the PWD 75 General Conditions of Contract. Such matters are critical and necessary to be dealt with so as to produce a fair and proper set of conditions of contract in the construction projects.

One of the major changes outstanding relates to definitions. Words such as "variation", "practical completion", "inclement weather" and "site" presented major problems in the interpretation of PWD 75. They require definition to avoid confusion, misinterpretation and dispute. Words such as "Engineer", "Works" and "Day" also need to be revised to suit the current construction industry. Clauses regarding insurance are also regarded as one of the major setbacks of this form. 'Insurance policy' has changed over the years and the clause regarding insurance is outdated.

Sia (2004) pointed out that certain clauses in the PWD 75 such as Local and Other Authorities Notices and fees (clause 6), Injury to Persons and Property (clause 24), Insurance (clause 25), Dates for Possession and Completion (clause 26), Determination by Employer (clause 30), Nominated Sub-Contractors (clause 31), Nominated Suppliers (clause 32), Independent Contractors (clause 34) and Antiquities (clause 42) seem to be ambiguous and incomplete and need to have some further details or rearrangement so that they could be more clearly defined and easier to be understood.

Clauses such as Clause 8 on materials, Clause 17 on unfixed materials, Clause 20 on assignment, Clause 35 on certificates and payment and Clause 42 on antiquities are also considered as unclear and confusing (Ting, 2007).

Sia (2004) added that there are clauses lacking procedures and time frames, such as Schedule of Rates, Drawings, Specifications, etc (clause 4), Surety (Clause 5), Inspection of Work (Clause 9), Defects under Completion (clause 19), Dates for Possession and Completion (Clause 26), Programme of Work (Clause 27), Delay and Extension of Time (Clause 29), Certificates and Payments (Clause 35), Emergency Powers (Clause 39) and War Risks (Clause 40). Furthermore, it is found that procedures of claims for loss or expenses are not included.

Sia (2004) commented that the General Conditions of Contract of this form is in need of change in order to meet the rapid development in the local construction industry in Sarawak over the past 10 to 15 years. Ting (2007) further argued this by concluding that the clauses in P.W.D. 75 are archaic and need to be revised to suit today's construction industry. The clauses are arguably either unfair; require more explanations; require additional clause; confusing or it lead to misinterpretation.

Sia (2004) and Ting (2007) both concluded that PWD 75 is "overly client-friendly/biased". This is perhaps manifest in the perceived degree of unfairness and confusion related to PWD. 75.

The extent and depth of existing standard forms of contract review/update and amendment presents a problem. Gaps between reviews, revisions and date of drafting and re-launching can be too far apart, rendering some many Malaysian standard forms and their revisions out-of-date even before they become available (Ting & Whyte, 2009).

Ting & Whyte (2009) commented that stakeholder participation in review bodies, given the large traditional emphasis on public infrastructure development often find government bodies such as the Public Work Department as somewhat over represented, making the forms inherently biased to the client, disregarding issues such as appropriate risk allocations, dispute resolutions and management issues of the project, which raises the question on the credibility of public forms and the need to improve the situation. As public works comprised some of the biggest projects in the Malaysian construction industry, it is critical for the forms used to be effective in carrying contract administration issues. This critique further points out the weakness in the current state of affairs with usage of JKR Sarawak Form of Contract 2006.

The distinction between forms used in the *public* and *private* sectors should be noted. The public sector, dominated by government-funded projects, sees persistent usage of government forms (as above).

The private sector however, prefers the use of forms such as the PAM 2006 series, and the IEM 89/CE series of forms, (in lieu of CIDB 2000, which sought originally to be a 'one-industry/all-sectors/one-form' to replace outdated/biased forms, but has yet to gain popularity).

The following section discusses such *private sector* Malaysian standard forms of contract and again seeks to review merit and demit in respective utilisation.

2.4.3 Pertubuhan Arkitek Malaysia Standard Forms of Building Contract 2006 (PAM 2006)

The Pertubuhan Arkitek Malaysia (PAM) standard forms of building contract are the most widely used in the Malaysian private sector construction industry; with an estimate of 90% of building contracts in the private sector based on a PAM form. The antecedent of the PAM contracts, The Malaysian 1969 Standard Form of Building Contract, or more commonly referred to as the 'PAM/ISM 1969 Form' spells out the roles, obligation and consequences involved, with the intention to mitigate conflicts and to achieve a common end (Rajoo 1999).

The PAM forms' history from inception (PAM/ISM 1969) to its penultimate form (PAM 1998) has found each revision plagued with criticism (discussed in following Section 2.4.3.1), resulting in a metamorphosis of form after form.

1n 1969, the Pertubuhan Arkitek Malaysia (PAM) and the Institution of Surveyors Malaysia (ISM) jointly sanctioned the issue of the Malaysian Standard Form of Building Contract (PAM/ISM 1969 Form) closely modeled on the English Standard Form (JCT 1963 Form) published in 1963 by the Joint Contracts Tribunal. It turned out that the JCT 1963 Form was subjected to a considerable judicial criticism (generally accepted as justified) and its many defects have resulted in it being condemned by judicial and other legal opinion. Not surprisingly, in 1980, the JCT 1963 Form was formally withdrawn and a new and complex JCT 1980 Form was issued by the United Kingdom, adding to the plethora of competing 'standard' forms of building contracts and sub-contracts that exist in the country. Until 1998, the construction industry in Malaysia at least in respect to building works has been obliged to use PAM/ISM 1969 Form, it being the only local standard form available for building works. As it was modeled on the JCT 1963 Form, the many criticisms leveled against the JCT 1963

Form could be leveled against it as well. Furthermore the PAM/ISM Form did not have the benefit of the improvements that the JCT 1980 can be said to have been provided after the JCT 1963 Form revision (Dato' VC George, cited in Rajoo 1999).

The PAM/ISM 1969 forms which were to be used for private sector building works undertaken through the general contracting procurement method comprised of the followings:

- PAM/ISM 69: Standard Form of Building Contract with Quantities;
- PAM/ISM 69: Standard Form of Building Contract without Quantities; and
- PAM NSC 70: Standard Form of Contract for Nominated Sub-contractors to be used with PAM/ISM 69.(Singh, 2002)

The extensively revised PAM 1998 Form was meant to revise and update and replace the anachronistic and archaic PAM/ISM 1969 that were in use for 30 years (Rajoo 1999 & Singh, 2002). It follows the same, arrangement by arrangement of clauses as the PAM/ ISM 1969, but on an expanded basis of reinforcing the contractor's obligation to his work under the contract properly, and the employer's obligation to pay promptly and completely for the work done (Rajoo, 1999).

- The PAM 1998 Forms suite includes, the following PAM Standard Forms variants:
- The Malaysian Standard Form of Building Contract (PAM 1998 Form 'With Quantities');
- The Malaysian Standard Form of Building Contract (PAM 1998 Form 'Without Quantities' edition); and
- The PAM 1998 Sub-contract Form (to be used for nominated sub-contracts where the main contract is based upon the PAM 1998 Form.

PAM 1998 Forms are used essentially for (Singh, 2002):

- Private sector projects;
- Building works; and
- Contracts undertaken through Traditional General contracting ('TGC') procurement route.

The PAM 1998 Form was extensively employed for the building industry in Malaysia but was subjected to criticism by a segment of the said industry. The aforementioned necessitated a

further review which culminated in the drafting and implementation of the latest revised Form entitled "The PAM CONTRACT 2006" (Singh 2009).

PAM 1998 is replaced by the 2006 version officially launched in April 2007. According to Singh, the various provisions in the new forms have reworded, reshuffled and amalgamated. The risk allocation for time, money matters and quality issues and dispute resolution between contractor, employer and consultant team has been shifted significantly. The PAM 2006 have an exemption clause which would require the consultant team to advise their employers on whether to use the Forms and make necessary revisions in order to ensure that the employer is not worst off if he had used some other forms (Singh, 2009).

The PAM 2006 Forms consist of:

- Agreement And Conditions Of PAM Contract 2006 (With Quantities);
- Agreement And Conditions Of PAM Contract 2006 (Without Quantities);
- Agreement And Conditions Of PAM Sub-Contract 2006 (With Quantities)

However, the real-life effectiveness of its latest form, the PAM 2006 contract, is yet to be recorded due to its novelty in the industry.

2.4.3.1 Problems Associated with PAM 2006

In lieu of examining the comments on PAM 2006 alone, it is essential to examine the comments on its predecessors first as problems faced by the latter have 'domino effect' repercussions to the drafting of its subsequent forms.

Engineers did not find the PAM forms suitable for their applications in the engineering and infrastructure fields. Early attempts to modify the PAM/ISM work to meet the particular applications did not generate much success as evidenced in the lack of enthusiasm in such usage and the litany of disputes generated. (Singh, 2002)

The feedback for PAM 1998 indicated that the PAM form is not without its shortcomings albeit that to a large extent it addresses and put right the defects of PAM/ISM 1969 and remains to be the popular and the preferred choice of the building sector for the last 10 years (Ting and Whyte, 2009).

Although PAM 2006 contains some contemporary provisions, they are more procedures requiring the contractor to strictly adhere to time provisions with the attendant loss of rights or incurring of liabilities. It is further mentioned that PAM 2006 limits the rights of

employers while reducing the risks borne by the contractors. This reallocation of risks proportionately increases the employer's exposure and burden in terms of claims and payments while providing more possible grounds for disputes between the contractor and the employer (Singh, 2009).

Principal changes of the PAM 2006 as postulated by Singh (2009a) are:

- Though the general arrangement of the clauses as in the previous PAM 98 form has been maintained, both the format and content has been appreciably altered.
- Some changes undertaken have brought the new Form more in tandem with contemporary developments, although these are still relatively deficient in some material aspects.
- Definite time periods for the principal procedural matters have been stipulated even for the Architect and the Employer.
- The contractor and employer's obligation and liabilities have been now set in much clearer language and the roles and responsibilities of the Architect expanded and amplified.
- Prima facie, as compared with previous PAM Form, in particular, the Employer's obligations and liabilities have been appreciably enhanced with its rights relatively reduced or "watered-down"
- In terms of risk allocation, there is a significant transfer of the risk involved in the contract to the Employer as compared to the previous PAM 98 Form. Notwithstanding it being touted as a more "balanced" Form in terms of risk allocation, in the context of the local building industry, it appears to be now more "Contractor friendly".
- Despite some improvements in style and formatting, the Form is still cluttered with deficiencies, material omissions and provisions difficult to comprehend and implement by an average practitioner.
- Overall, the Standard Form that has undergone major revisions touted to address the alleged shortcomings of the previous Form and to make it a frontrunner for the local building industry, save for some welcome changes, it falls short of expectations. Consequently, it may need another major revamp depending on how it is accepted by all the main players in the industry especially the Employers.

Singh (2009a) further made the following concluding comments for the PAM 2006 Form of contract:

- The layout and design of the Form is inadequate and confusing. Like provisions dealing with similar issues should have been collated and drafted consecutively e.g. provisions dealing with financial matters such as variations, payment, etc. should have been set out in close relation to each other instead of being all over the Form;
- In the absence of being privy to the drafting philosophy, the Form appears to be just a revision and reformulation of the previous PAM 98 Form with the layout being maintained but additions/amendments made on a "cut and paste" basis. It would have been more appropriate to undertake a wholesale revision and reformatting of the previous PAM 98 Form to bring it in tandem with other contemporary Forms of COC;
- The revisions have not generally taken into account contemporary developments in the industry e.g. the recommendations of documents such as the SCL protocol on the Delay and Disruption have not been given due consideration, etc; thereby defeating the aim of the local industry being on par with international developments/ practice;
- Predominant use of terms and expressions that are inherently vague or smacking of legalese leading to lack of clarity, precision and disputes as to interpretation;
- The Form could have been structured such that it would have been given the parties especially the Employer greater flexibility and more options in using the Form; which being a Standard Form cannot fit into the varied uses that are likely to be encountered in practice.

In addition, a recent study by UNIMAS indicates that some provisions of the PAM 2006 forms remain unclear and incomplete when it comes to issues such as working delays and hours, possession of site, commencement of work (Ling and Ting, 2009) and it remains rather silent on occupational health and safety and quality issues on site. Another study here shows that the PAM forms' content continue to pale in comparison with other forms such as CIDB and FIDIC in terms of completeness, versatility and clarity (Quay and Ting, 2009).

The same study further shows that familiarity remains imperative in the usage of PAM forms. An observation that strongly vindicates this point in the study is that some smaller projects still continue to use the alarmingly outdated PAM/ISM 1969 forms, and with architects leading building projects, they will most likely adopt the PAM form.

Ting (2009) also concluded that the PAM 2006 did not live up to the expectation to be the 'perfect' form since PAM 2006 remains first and foremost a form for building works and hence loses out on versatility required across civil engineering and civil works construction.

In addition, Quay (2008) also mentioned that the quality provisions for the PAM form are lightly covered and that the form is heavily reliant on the Contract Administrator's (i.e. Superintending Officer's and Architect's, respectively) decision for gaps of provision. He further elaborated that this will overall lead to a dissatisfaction should there be disputes. As such, the standard forms therefore cannot remain ambiguous or silent in any respect. This leaves room for undesirable interpretations and hence leading to disputes which eventually affects the quality of Works.

Quay (2008) further contended that the statement-like approach largely held by PAM form is outdated. It is said that this approach gives too much room for interpretations and that there is no proper guidance of procedure that is thoroughly conveyed as well as too many provisions require the users to imply the meanings.

Beyond the PAM 2006 form, which is an architectural form, engineering standard forms of contract for forms require review, and are discussed below.

2.4.4 IEM Conditions of Contract Mainly for Civil Engineering Works 1989 (IEM 89 CE)

While PAM Forms are suitable to be used for private sector building works projects, IEM Forms are used extensively for engineering and infrastructure projects in the private sector in Malaysia. The Institute of Engineers Malaysia (IEM) publishes IEM Conditions of Contract for Works mainly of civil engineering construction, 1989 (IEM 89 CE), variants include: 1990 IEM Standard Conditions of Sub-Contract for use in Conjunction with IEM Conditions of Contract for Civil Engineering Works; and, 1994 IEM Conditions of Contract for Mechanical and Electrical Works. The IEM Forms for civil works, however, do not cover building contracts as there is a desire not to duplicate the existing PAM Forms. IEM Forms remain fundamentally forms for civil engineering construction projects. IEM forms to date are undergoing yet another revision, which will be introduced in 2013.

2.4.4.1 Problems Associated with IEM 89/CE

According to Singh (2002), the IEM standard form is beginning to rectify the seemingly confusing situation of modification of the ICE forms, IMECHE forms, JCT forms and to a

lesser extent, FIDIC forms to solve the rigors and pitfalls of the JKR forms and the unsuitability of the PAM forms for primarily engineering and infrastructure projects which lead to much uncertainty and disputes in the local engineering industry.

Oon (1992), on the other hand, opined that IEM 89 CE is the result of hybridization of various form. This though not without its strength, may be the cause of what he states as:

- abounding inconsistencies;
- a lack of central and coherent theme/ philosophy; and
- a lack of an identity, an IEM identity

Oon (2002), a practicing construction lawyer with engineering background, later went on to carry out a study on IEM 89 CE and did an extensive commentary on each clause the form. Even thought Oon's *method* of form *study* is unclear, it was seen that clauses are generally lacking of consistencies, time frames and procedures and definitions and usage of inappropriate terms.

According to the Entrusty Group (2006), The IEM 89 CE does not clearly express the provisions in dealing with 'float'. Thus, the consequences that are contained in the provision of the contract can be dependent on the wording of the respective EoT provisions.

As mentioned the IEM 89 CE, does not cover building contracts as there is a wish not to duplicate the existing PAM Forms (Ting & Whyte, 2009). According to Lim (2007), the usage of the IEM 89 CE is limited to peninsular west Malaysia only. He also stated that these forms are often compared with PAM forms with major differences in areas such as:

- Valuation variation by QS
- Control over nominated sub-contractors
- Power of Architects and Engineers
- Parties to the contract
- Inclusion of Special Provisions to Conditions of Contract

In term of Notification of delay and application for extension of time, the IEM 89 CE does not stipulate the timeframes within which the contractor is to notify the E/A of a delay and apply for an extension of time (Lim, 2007).

IEM 89 CE can then be seen to be less than ideal. Indeed IEM issues with ambiguous time frames are further discussed in the review of another Malaysian standard form of contract, that of the CIDB Standard form of Building Contract, which is presented for a review of its relative merits and demerits in the following section.

2.4.5 CIDB Form of Contract for Building Works 2000 (CIDB 2000)

In order to cope with the rapid growth and changes in the construction industry in Malaysia, the Construction Industry Development Board Malaysia (CIDB) felt the need to initiate the drafting of a new all-encompassing standard form of construction contract. A drafting committee was established in 1997 to produce a (CIDB) standard form that sought to suit all stakeholders in the Malaysian construction industry; parties consulted firstly reviewed other available options, namely:

- Standard Form of Building Contract – *Institute of Surveyors Malaysia*
- Standard of Design and Build Contract – *Master Builders' Association of Malaysia*
- Standard Form of Civil Engineering Contract – *Institute of Engineers Malaysia*
- Standard Form of Contract for Industrial Processes – *Association of Environment Consultants and Contractors of Malaysia*

The Construction Industry Development Board (CIDB) Malaysia following extensive consultation with its Procurement Policy Committee then introduced its own standard form of contract deemed relevant to all the various sub sectors of the construction industry. This form is known as CIDB Standard Form of Contract for Building Works: 2000 Edition (CIDB 2000). The CIDB Standard Form of Contract for Building Works was firstly published in 2000 and is the first of the series of construction contracts that will be published by CIDB. It is one of the latest 'from-scratch' new standard form of conditions of contract published for the Malaysian construction industry.

The CIDB Standard Form of Building Contract is a standard form which covers all necessary aspects in building contract. The CIDB 2000 form contains 51 clauses and 6 optional modules. These optional modules are provided to cater for different situations or requirements of a particular contract. The CIDB 2000 Forms contains options of either contracts based on drawings and specifications, or for contracts based on Bills of Quantities. The user needs to delete the appropriate section of the form.

According to Ting and Whyte (2009), CIDB Form of Building Contract 2000 (CIDB 2000 form) is one form in the Malaysian construction industry which is potentially radically different from other forms such as PAM as it emphasises the need for a unified form of contract. According to Wong (2002), CIDB 2000 is said to "streamline contractors by providing an elaborate framework for the effective and efficient administration of contact so as to reduce uncertainties with its associated costs and delays".

Although it appears that CIDB's intention is to make the usage of their forms commonplace and to replace PWD Forms, for at least the moment, the CIDB 2000 is not widely used in the Malaysian construction industry. Whether or not these CIDB Standard Forms will ultimately replace the existing PWD Standard Forms begets no precise answer (Singh, 2002).

2.4.5.1 Problems Associated with CIDB 2000

Based on academic analysis, Quay (2009) commented that CIDB 2000's structure is the best in comparison to PWD, PAM and FIDIC. The significant amount of bullets and point forms in their quality clauses makes the spelling out of quality clearer. The type of materials required is also clear. On top of that, the provision of quality plan makes it easier to adopt the type of quality required on site.

Quay (2009) further stated that CIDB 2000 form caters for multiple options and scenarios by which steps are allocated for the varying problems that may arise. This is more advantageous since consequences are laid out early rather than having to wait for the Contract Administrator's decision. Resourcefulness is clearly adapted here.

According to Goh (2009), CIDB 2000 form is the only Malaysian Standard Forms of Contract which covers most of the aspect in Safety and Health. CIDB 2000 form of contract is the most comprehensive form amongst all the local construction contract forms, which stipulates the right of the contracted parties and provides clear guidelines and procedures. It also contains occupation safety and health (OSH) clauses.

However, CIDB 2000 form is still not accepted, nor widely applied. The majority of the construction industry considers the CIDB 2000 form of contract as apparently 'too new' and untested, when compared with other forms which have a longer history of usage. Due to the conservative thinking of most of the Malaysian construction participants, they are reluctant to use a new form which they are not familiar with.

The respondents interviewed in a study carried out by Ting et al (2010), argued that the CIDB 2000 clauses reflects better a more timely payment of work done. The respondents also argued a general point of caution that, in practice, the determination, definition and qualification of a Superintending Officer (SO), and consequently their power for certification, may be more open to debate than the CIDB authors envisaged.

According to Ting et al (2010), comparing CIDB 2000 with PWD 75, CIDB Clause 42 sub clauses 10, 11, 12 and 13 go beyond Clause 35 of the PWD 75, to give additional provisions related to, respectively: remedy for default in payment; recovery deductions recorded as payments; delays in certification; and, quality in respect to the Final certificate. The respondents to this study argue that this seeks to reflect an intention to clarify the interests of the contractor. The respondents to this study in overall comment that general comparison between PWD 75 and CIDB 2000 highlight that the later document attempts to identify, review and clarify a perceived imbalance of risk conceded by Contractors. The academic analysis suggests that this form provides a more appropriate balance of risk between the parties.

However, many industry practitioners comment that CIDB 2000 is perceived as too *contractor-friendly*, offering less protection to the Client than the more traditional PWD 75 (Ting et al, 2010).

In a study by Chan (2006), respondents were asked about their views on the merits of the CIDB 2000 form Contract and its degree of usage. One respondent opined that CIDB Standard Form of Contract is quite well drafted but it has not been widely used due to the long presence of PAM Form and PWD 203A being the "tried and tested" forms in the industry as well as the presence of other in-house forms of contract.

Another respondent commented that it addresses certain fear or injustice for contractor. He further highlighted the CIDB Standard Form of Contract as compared to PAM Standard Form of Contract such as systematically structured with procedures laid down, more balanced risk allocation, language of the contract being simpler and the form is more up to date (Chan, 2006).

Notable differences between PAM 98 and CIDB 2000 are the attending of Superintending Officer (SO) and provision option of part of the works to be designed by the Contractor. According to Wong (2002), CIDB 2000 is said to "streamline contractors by providing an elaborate framework for the effective and efficient administration of contact so as to reduce uncertainties with its associated costs and delays".

Chan (2006) also pointed out in her study that a few other respondents however felt the CIDB 2000 is *less friendly* and *too procedural* with *too many clauses* in the contract. Despite this one respondent claimed that in doing comparisons of Standard Forms of Contract in the local construction industry, he found the CIDB form to be the fairest amongst the other standard forms of contract in the market.

Tang (2009) commented that in terms of clarity of provisions, CIDB Standard Form of Contract has better arrangement under one explicit clause compared to FIDIC Form which establishes the usage of Bills of Quantities in separate clauses. He further complimented CIDB Standard Form which provides the clause references to which certain provisions in the Bills of Quantities clause are pursuant, thus eliminating the likelihood to overlook any essential matter or procedure. Furthermore, CIDB Standard Form covers most of the essential procedures with regard to Variation.

Oon (2002) also stated that in contrast to other standard forms in Malaysia, CIDB 2000 provides additional security to Contractor in case of non-payment by the Employer. This triple mechanism of interest, suspension and determination, together with a demand made on the payment bond (if Option Module E is adopted) go a longer way compared to all other standard forms in Malaysia in proving greater security to the Contractor in securing payment.

On drawback with the CIDB form, in Oon's (2002) opinion, is that it would be preferable if the decision to terminate the contract were a mutual decision of both the Contractor and the Employer and not one which is imposed by one party onto another. Only CIDB 2000 provides for the situation when the Employer wishes to terminate the contract in the absence of any default of the Contractor.

2.4.6 Problems Generally with Local Standard Forms

As seen throughout Section 2.4's discussion of Malaysian standard forms of contract, problems are found in each standard form commonly used, which points to an inbuilt **'quality'** problem in the standard forms. Comments by various authors point out that even with recent revisions, the standard forms may still fall short in the quality aspect of the form in terms of establishing 'good' contractual relations among contracting parties. As seen in various arguments, many problems relate to common insufficiencies: lack of identity, legalese language, omissions and deficiencies, which water down effectiveness.

It is seen that even though several forms have merits with some being more popular than others, all the forms have inconsistencies. PAM forms do not cover issues such as site

possession and working days and hours; different forms allocate distribution of risks differently with PWD forms being approved by the Attorney General Chamber deemed as client friendly, while CIDB has not achieved the desired usage level due to other dominant forms. Different forms also cover various issues to different levels and extent and do not seem to be able to address the many traditional and long standing contractual problems and issues associated with the usage of existing options.

In view of the number of forms that the Malaysian construction industry has and the problems associated with each form, the need to produce "better and improved" conditions of contract, is evidenced in the issuance of these forms, either in a modified, amended or revamped format; indicating somewhat that the stakeholders (favouring PWD, PAM, CIDB, or JKR) unwittingly adhere and subscribe to the philosophy search for and theoretical idealization of contract law (Othman, 2008). It seems that the stakeholders also think that all the forms have fallen short of the principles of an 'ideal' standard form

Another point to note is that the various examples of literature on Malaysian forms do not point to a any standardized studied carried nationwide, done over a period of time with a pre-determined set of criteria, but rather these studies have been done in an ad-hoc manner, with forms-analyses carried out by a plethora of interested unaligned parties; be they drafters of various organizations, arbitrators and legal personnel who had to deal with the disputes stemming from the form/s, or be they are academic studies at university level.

This supports the need for a more ordered method of form analysis for Malaysian standard forms based on a structured approach that is repeatable with a fixed set of criteria to provide results that can be applicable across the board, for form enhancement and to address the quality issues of the current Malaysian standard forms.

If the Malaysian construction industry is to continue its current practice of using standard forms of contract to realize project design solutions, it is imperative that the problems stated here are addressed. These problems with standard forms of contract in Malaysia are summarised in Section 1.3. And in order to deal with the problems and issues currently seen in the usage of standard forms, it is important to understand the antecedents of a 'best-practice' standard form.

The following section addresses opportunities for the identification of a bench-mark/best-practice standard form of contract.

2.5 Bench-Mark/Best-Practice/Ideal Standard Form of Contract

It is essential that some of the attributes of 'good' standard forms are looked into so that future contracts may inherit in these exemplary attributes. Uff (1974) reported the difficulty in achieving the ideal contract by stating that:

"*In (1964), the Banwell report (H.M.S.O) recommended that a single standard form of contract for the whole construction industry was both desirable and practicable, and that standardization of sub-contract conditions should follow. Unfortunately, these admirable objectives have not yet been achieved*."

In July 1994, Sir Michael Latham identified thirteen (13) principles, which should be included in an "effective form of contract in modern conditions":

- A specific duty for all parties to deal fairly with each other, and with their subcontractors, specialists and suppliers, in an atmosphere of mutual co-operation.
- Firm duties of teamwork, with shared financial motivation to pursue those objectives. These should involve a general presumption to achieve "win-win" solutions to problems which may arise during the course of the project.
- A wholly interrelated package of documents which clearly defines the roles and duties of all involved, and which is suitable for all types of project and for any procurement route.
- Easily comprehensible language and with guidance notes attached.
- Separation of the roles of contract administrator, project or lead manager and adjudicator. The project or lead manager should be clearly defined as client's representative.
- A choice of allocation of risks, to be decided as appropriate to each project but then allocated to the party best able to manage, estimate and carry the risk.
- Taking all reasonable steps to avoid changes to pre-planned works information. But where variations do occur, they should be priced in advance, with provision for independent adjudication if agreement cannot be reached.
- Express provision for assessing interim payments by methods other than monthly valuation, i.e. milestones, activity schedules or payment schedules. Such arrangements must also be reflected in the related subcontract documentation. The

eventual aim should be to phase out the traditional system of monthly measurement or re-measurement but meanwhile provision should still be made for it.

- Clearly setting out the period within which interim payments must be made to all participants in the process, failing which they will have an automatic right to compensation, involving payment of interest at a sufficiently heavy rate to deter slow payment.
- Providing for secure trust fund routes of payment.
- While taking all possible steps to avoid conflict on site, providing for speedy dispute resolution if any conflict arises, by a predetermined impartial adjudicator/ expert.
- Providing for incentives for exceptional performance.
- Making provision where appropriate for advance mobilization payments (if necessary, bonded) to contractors and subcontractors, including payments in respect of off-site prefabricated materials provided by part of the construction team.

Bubshait and Almohawis' (1994) research on evaluating the general conditions of a construction contract, present eleven (11) elements that 'good' general conditions should have and they are listed below:

- *Clarity:* the ease with which the language of the general conditions can be understood, and the absence of ambiguities;
- *Conciseness:* the degree to which the general conditions are free from unnecessary (superfluous) information;
- *Completeness:* the degree to which the general conditions cover all contractual aspects;
- *Internal consistency:* the level of conflict (if any) between clauses of the general conditions;
- *External consistency:* the level of conflict (if any) between a clause in the general conditions and other related regulations;
- *Practicality:* the feasibility of implementing the requirements of the general conditions;
- *Fairness:* the degree to which the general conditions are fair to the contracting parties;

- *Effect on quality:* the degree to which the general conditions promote the meeting of the project's established requirements of materials and workmanship;
- *Effect on cost:* the degree to which the general conditions promote the completion of a project within the estimated budget;
- *Effect on schedule:* the degree to which the general conditions promote the completion of a project within the allocated time duration;
- *Effect on safety:* the degree to which the general conditions promote the completion of a project without major accidents or injuries.

In addition, Brockbath (2000) observes that an important feature of any 'good' contract is that it describes what is to be done or what materials are to be furnished with sufficient clarity and enough detail to make evident of what is wanted. The terms of contract must be complete, and the various obligations must be described with sufficient definiteness to enable a court to determine whether or not these obligations have been performed.

Henkin (1988) mentioned that the language used, in a good form, should be precise and accurate, so that every phrase has a clear meaning and phrases are interconnected in a manner which will not give rise to ambiguity. One of the most important causes of lack of clarity is the presence of ambiguity, i.e. of language capable of more than one meaning. Ambiguous words are not to be confused with homonyms, which are words with different meanings but which are spelt alike.

Wright and Fergusson (2008), stated that the language of ECC is "beautifully simple" with no more than 40 words per sentence. It is easily translatable, has a structure which improves the understanding of parties to the contract, and helps reduce the confusion and disputes commonly caused by complicated traditional contracts (Wright and Fergusson, 2008). To prevent disputes starting in the first place, clear English is required, not a long history of case law on that particular clause or phraseology (Broome and Hayes, 1997). Thus, Broome and Hayes (1997) suggested that clarity, in good contracts, can be achieved by:

- using simple and commonly occurring language and avoiding legal jargon;
- using identical phrases where possible;
- excluding contract specific data so that there is no need to change, delete or add to the core conditions of contract;

- setting out duties and responsibilities clearly and precisely, using engineering terminology common to all disciplines wherever possible;
- not attempting to paraphrase existing law;
- settling for clarity above fairness in minor matters which would involve complicated text; and
- omitting matters which are more effectively covered in the technical specification.

In a research study carried out by Chong and Rosli, (2010) into the (restriction of) clarity in Malaysian standard forms, a number of key parameters were identified, listed in the following Tables 2.2 and 2.3.

Table 2.2 Clarity Parameters (Chong and Rosli, 2010)

Item	Problems of (/restricting) Clarity
C1	Sentence is too long, example ([Cutts, 2004] , [Candlin et al., 2002] and [Henkin, 1988])
C2	Too many passive voices (Cutts, 2004)
C3	Repetition of words ([Cutts, 2004] , and [Candlin et al., 2002]
C4	Complexity of noun phrases (Henkin, 1988)
	(e.g. the Government shall in no circumstances be liable to...", Clause 29 a)
C5	Too many "shall" (Henkin, 1988) (e.g. "No work shall be done on…", Clause 18)
C6	Negative style of language ([Cutts, 2004] and [Candlin et al., 2002]
C7	Poor explanation on procedure or process (Broome and Hayes, 1997
C8	Controversial as legal terms (Duhaime, 2007)
C9	Ambiguous word or sentence caused more than one
C10	Poor words formation, e.g. grammar in the contract (Cutts, 2004)

Table 2.3: Legalese Parameters (Chong and Rosli, 2010)

Item	Legalese Problems (restricting clarity)
L1	Too many legal terms or phrases ([Cutts, 2004]
L2	Specialised vocabulary or legal jargon (Cutts, 2004
L3	Unnecessary length and complexity (Rameezdeen and Rajapakse, 2007)
L4	Overly complicated, dense, repetitive, and outdated (Candlin et al., 2002)

In the Malaysian context, Singh (2004) states that the cardinal purpose of contract management is to ensure that the formal agreement (contract) entered into between the parties is controlled and administered such as to achieve the parties' objectives as expressly and impliedly contained in their contract. It is of utmost importance that the following principal purposes are achievable or actually achieved in a typical contract:

- The legal framework or transaction to be entered into by the parties is suitable for their needs and is properly planned vis-à-vis the particular circumstances of the project. It should also cater for contingencies or unforeseen circumstances envisaged including remedies for defective performance.
- The legal framework is formalized efficiently in terms of time, cost and resources involved and is clear, concise and reflects the true intentions of the parties.
- The contract entered into by the parties is efficiently and fairly administered to ensure that:
- The parties perform their respective obligations/ duties under the contract fully.
- Each party to the contract receives the full benefit due under the contract.
- The contract is completed within the time frame and cost agreed to between the parties.
- The quality of the finished product as agreed upon by the parties is not compromised in terms of material, workmanship and design (as applicable).
- Disputes and contentious issues are minimized or resolved completely without having to resort to litigation or arbitration.

The above discussions set the framework for understanding of a bench-mark/best-practice more 'ideal' standard form of contract. Based on the arguments by various authors presented above, a set of attributes and the parameters used to measure 'good' forms can be developed; these antecedents for a bench-mark good form are discussed further in Sections 3.5.2 and 3.5.3 in the following Chapter 3.

The next section extends the discussion of the potential for a bench-mark/best-practice 'ideal' standard form, and the extent to which it may begin to be used as a reference point to enhance existing Malaysian forms.

2.5.1 NEC3 as A Potential Bench-Mark/Best-Practice 'Ideal' Standard Form

According to Lewendon (n.d), the New Engineering Contract (NEC) originated under this name in 1991 and changed to NEC ECC with publication of the second, and current, edition in 1995. The ECC is a procedurally based contract, requiring the parties to take certain actions in certain circumstances.

According to Potts (2008), the NEC 3rd Edition shall adopt the common label of NEC3. Gerrard (2005) lists the current published NEC contracts as:

NEC Engineering and Construction Contract (ECC), 2nd Edition 1998

- NEC Engineering and Construction Short Contract (ECSC), 1st Edition 1999
- NEC Engineering and Construction Subcontract (ECS), 2nd Edition 1995
- NEC Engineering and Construction Short Subcontract (ECSS), 1st Edition 2001
- NEC professional Services Contract (PSC), 2nd Edition 1998
- NEC Adjudicator's Contract, 2nd Edition 1998
- NEC Partnering Option X12

The NEC 3 was an ingenious product of Barnes (1986) with clearly articulated drafting objectives of flexibility; clarity and simplicity; stimulus to good management; role integration; risk allocation; role of co-operation at law and the NEC 3; and prevention of dispute. The NEC 3 has sought to introduce some salient aspects of clarity related to its interpretation of:

- Language
- Mutual Trust and Co-operation
- Supporting Materials – Guidance Notes and Flowcharts
- Employer to be the Core of the Process (through Project Manager)
- Separation of the Role of Designer cum Contract Administrator
- Role of Supervisor
- Role of Adjudicator
- Early Warning Procedures
- Accepted Programme
- Work Acceleration
- Compensation Events
- Dispute Resolution

The NEC 3, with its menu of main and secondary options can be used for any procurement method and is flexible in terms of how much design the Contractor takes responsibility for

without the need for cumbersome design portion supplements. The Contract has a clear and objective requirement for a detailed programme with method statements and regular updates which provides an essential tool for the parties to manage the project and to notify and manage the effect of any problems, delays and the like.

The suite of contracts contain Early Warning provisions whereby the Contractor and Project Manager have a duty to notify each other if either become aware of any matter which could:

- increase the total of the prices
- delay completion
- delay meeting a Key Date or
- impair the performance of the works in use

According to Lewendon (n.d), NEC ECC procedures give the opportunity for both parties to jointly provide more robust control and achieve increased certainty of project cost outcome. This positive management approach encourages co-operation and provides a good basis for the use of partnering arrangements, leading to a reduction in disputes. This compares with the generally reactive management approach in traditional forms of contract with problems being dealt with in a less structured way. This does not reflect against the traditional forms merely that the required management procedures in ECC are more robust and require people to interface on matters sooner.

The NEC ECC seeks to be written in plain, readily understood, commercial English. This has caused some unease to new users, perhaps because of what industry practitioners have become used to, over a long period of time.

In the study of NEC 3, Eggleston (2006) stated that NEC 3 intends to achieve three prime objectives:

i) Flexibility:

Flexibility is perhaps the most ambitious of these objectives. Thus, the Engineering and Construction Contract aims to be an all purpose contract for all construction and engineering disciplines at home or abroad. It offers this through a combination of uniquely drafted provisions and a complex structure of options. Four distinctive features are presented:

- Discipline specific terminology and references to be the practices of particular industries are avoided. Reliance is placed on a framework of general provisions written largely in non-technical language

- Responsibility for design is not fixed with either the employer or the contractor but can be set at any amount from nil to total with either party
- Primary options give a choice of pricing mechanism from lump sum to cost
- Secondary options allow the employer to build up the provisions in the contract to suit his individual policies

ii) Stimulus to good management;

As noted above, much of the inspiration for the development of NEC 3 contacts came from a belief that existing forms of contract no longer adequately served the best interests of the parties. The argument was put that expanding procurement strategies, changing practices in contracting, and developments in project management required contracts to focus as much on management as on the obligations and liabilities of the parties. So NEC 3 contracts lay great emphasis on communications, co-operation, programming, and the need for clear definition at the outset of various types of information. Reports from users of NEC 3 contracts suggest that improvements in project management are being achieved and that job satisfaction for those involved is better than with traditional contracts.

iii) Clarity and simplicity;

The approach adopted by the drafting team towards the objective that NEC 3 contracts should be expressed more simply and clearly than existing forms of contract was to start from scratch rather than to build on old foundations. So NEC 3 contracts are intentionally and conspicuously different from other standard form in style and structure. They are written in non-legalistic language using short sentences and avoiding cross-references. Familiar phrases such as ‘extension time’ and ‘variations’ are absent as it the regular use of the word ‘shall’ to signify obligations. However, there is a price to pay for this brevity. Taken by themselves, the contracts are, at least for first time readers, more of a mystery than a model of clarity and simplicity. Fortunately, there are guidance notes and flow charts to assist in general understanding and the application of the contract.

In July 1994, Latham issued a historic report called *Constructing the Team* commonly referred as the Latham Report, stating that the NEC 3 should be adopted in both private and public sectors and should become the national standard contract for the UK. Latham also believed that “widespread use of the NEC 3 will reduce the number of disputes in the engineering and construction industry”.

The influential and highly respected Latham report clearly then, does indeed identify NEC as *almost* the bench-mark, best-practice, potential ‘ideal’ form.

Latham (1994) concludes that the NEC 3 "contains virtually all of these assumptions of best practice" but goes on to suggest seven (7) amendments to map against the 13 desired principles. The seven (7) modifications of the NEC 3 suggested by the Latham Report are as follows:-

i. A change in the name of the NEC 3 to the 'New Construction Contract' because it can be equally used for building projects.

ii. A provision of a secure trust fund as a core clause to provide greater confidence for Contractors and Subcontractors.

iii. A review the payment periods, especially to Subcontractors

iv. A statement within the NEC 3 on fairness, mutual trust and co-operation between the parties involved.

v. An express provision to that none of the core clause can be amended and that the use of the NEC 3 subcontract is mandatory.

vi. A full matrix of consultants' and adjudicators' terms of appointment should be published.

vii. A simpler and shorter minor works document.

Broome and Hayes' (1997) much-lauded research on New Engineering Contract compared the clarity of traditional construction contracts and the New Engineering Contract. This paper discusses clarity and style of drafting in construction contracts based on research carried out by the Project and Construction Management Group at the University of Birmingham into the efficacy of the New Engineering Contract.

In study of NEC ECC, Broome and Hayes (1997) found that the clarity of the NEC ECC outperformed other forms of contract in a number of ways:

- Ease of understanding.
- Clearer text.
- Clearer risk allocation – all possible contract changes (compensation events) are listed precisely so that both the employer's and contractor's risks are clearly displayed.
- Clearer roles – each party's duties and responsibilities are clearly defined.
- Clearer procedures – flowcharts map out the procedures for all parties for all events. This eliminates illogical or open-ended procedures.

- Reduced sources of conflict – the drafting is more precise.
- Reduced gamesmanship – the scope and rewards for playing contractual games is reduced.
- Clearer payment for change – a list of pre-agreed contractor costs for resources (Schedule of Cost Components) is used to pay contractors for compensation events.
- Clearer guidance – the ECC is accompanied by Guidance Notes that provide a narrative to explain all clauses and options.

Wright and Fergusson's research on the benefits of NEC ECC form of contract is based on a New Zealand case study. Their work examined by the mean of a case study the effectiveness of the project and process method detailed in the NEC Engineering and Construction Contract (ECC), as developed and published by the Institute of Civil Engineers (ICE), and makes recommendations regarding its future use. The performance of the ECC with that of a conventional form of contract delivered by two separate contractors to the same employer on the same site in similar timeframes in New Zealand provided a unique opportunity for comparison.

The objective was to determine if the benefits claimed by the proponents of the NEC ECC were realized and to understand the factors which need to be considered to ensure successful use of this form of contract and to understand if any changes are needed to make the contract more effective in the NZ environment.

It was found that although not yet the ideal contract, the New Engineering contract (NEC), and more so its successor the Engineering and Construction Contract (ECC) have been *widely and highly commended* for its achievement of clarity as compared to other contracts. According to Wright and Fergusson (2008), NEC seeks to be more preventive measure rather than cure. The actions required by the parties to the ECC are designed to be solution oriented rather than problem focused, in contrast to traditional forms of contract which pay little attention to teamwork.

The NEC then may indeed be a good way forward for a bench-mark ideal standard form and an example for other forms to look into for future form improvement purpose.

The general philosophy on which this aspect of NEC is based is that it should serve the long-term interests of the engineering construction industry and its clients, and that this is most likely to be achieved or facilitated by risk allocations and procedures for risk assessment

which are equitable (Perry, 1995). According to Perry, all these risk allocation have been adopted in the NEC family contract which makes it desirable such that:

- Risks should be allocated to the party most able to control them
- Risks which are outside the Contractor's control should usually be allocated to the Employer
- Risks should not be allocated to a party who may be unable to sustain the consequences if the risk occurs
- Risk allocation should encourage good management by the party who carries the risk
- The party who is not carrying the risk should be motivated to manage the consequences of the occurrence of the risk in an effective and equitable way
- Where the impact of a risk is small (either in terms of its size relative to other risks or in terms of the party's ability to sustain the consequences of its occurrence) the parties tend to become indifferent about the way it is allocated.

According to Potts (2008), NEC3 has been used for over 6000 contracts world-wide from small projects to large internationally known projects such as Channel Tunnel Rail Link. It has established itself as the number one form of contract that helps avoid delays, disputes and ultimately extra costs. It has been endorsed by the UK Office of Government Commerce (OGC) which recommends the use of NEC3 by public section construction procurers on their construction project.

Apart from that, NEC 3 have gain worldwide trust in governing the interest of all parties within a particular project. The NEC3 has been recognised as ‘setting the benchmark’ by a UK government select committee. Entitled ‘Construction Matters’, the House of Commons’ business and enterprise committee report published in July 2008 is the result of a year-long review of the UK construction industry, the first such enquiry to be carried out by a government select committee.

With the various positive comments above, NEC3 even though not an ‘ideal’ standard form as yet can be argued to be close to a best-practice/benchmark as is available.

Given the above, it is argued here, that any form enhancement work for Malaysian standard forms of contract (argued as necessary by previous sections that have established that current local forms fall short) can look to NEC3 for reference and benchmark. Benchmarking against

NEC3, is addressed by this current study, and is further explained in Sections 3.7 and Chapter 5 in the following chapters.

It is worth noting here also that potential adoption of the actual version of NEC3 in Malaysia is highly unlikely; firstly, given that the minority of international clients who do not use local forms might be expected to continue to use FIDIC (such as the very small proportion of World-Bank sponsored endeavours), and secondly and certainly not least, as a result of the Malaysian precedent for completely rejecting any and all *new* forms, made all the more apparent by the almost complete (informal) national rejection of the new CIDB 2000 form, albeit that it was instigated by the highly respected construction industry development board of Malaysia.

Thus whilst adoption of NEC3 is not considered an option for Malaysia, enhancement of local forms using best-practice NEC attributes is however logical and potentially desirable.

Having discussed at length the standard form of contract, as a key document that influences project realization, it is perhaps worthwhile at this stage to now look at the bigger picture of contract administration and indeed how the standard form of contract is put into place, in the first place.

The following section describes contract administration from a broader perspective, and this then leads on discussion of how one particular standard form of contract is placed by the stakeholders in the first place.

2.6 Effective Contract Administration

In order to achieve excellence and success in construction projects, it is paramount to practice effective contract management, by ensuring that the planning, organizing, co-ordination, monitoring and control of the project from inception to completion (Ong, 2007). It involves the understanding and management of the roles, responsibilities, obligations, powers and liabilities of the contracting parties, as well as the administration of the contract provisions, procedures and practices as expressed and implied under the contract (Ong, 2007).

Gardiner (2005) also stated that there are three essential elements for project success throughout project execution and delivery which are:

a) The creation of all required plans supporting the project:

- Scope management plan

- Work plan and timeline
- Resource and budgetary plans
- **Procurement plans and contract strategy**
- Risk management plans
- Quality management plans
- Document management plans
- Project control plans
- Human Resource management plans

b) The mobilization and organization of all resources required by the project.

c) The establishment of an infrastructure to support those resources and ensure that effective communication can be maintained across the network of project stakeholders.

Ong (2007) further states that the ten essential elements or ingredients needed in formulating and facilitating effective contract management to achieve project excellence and success are:

a) A good understanding of the client, its objectives and priorities.

b) A detailed appraisal and understanding of the project nature and characteristics.

c) A proper and structured appraisal and management of the project risks.

d) Selection of a suitable project team (Design or Construction).

e) **Use of a suitable Building Procurement System.**

f) **Use of a suitable Contractual Arrangement.**

g) Having an effective organization structure that allows efficient communication channels and is capable of adapting to changes.

h) Maintaining effective monitoring and control systems capable of identifying and responding to changes.

i) Maintaining proper information recording and retrieval systems

j) Emphasis on the importance of good commercial, business and human relations.

Clamp et al. (2007) stated that for a construction project to be realized successfully, determination of appropriate project procurement is required, which describes the often

complex network of relationships which are formed between clients, consultants and construction companies. Love et al. (1998) asserted that project procurement determines the overall framework and structure of responsibilities and authorities for participants within the building process.

The above suggests that alongside selection of a suitable standard form of contract, contract administration must focus on form administration, and for ease of effective contract administration, a good standard form is vital. It is therefore important to appreciate the entire procurement procedure of a project which starts way before contract administration via a standard form of contract. In actual fact, it is the start of procurement, during the early stages of planning and development, that determines the contractual relations and that this is reflected in the procurement strategies selected in a procurement selection procedure.

The following recognizes that the procurement strategy adopted by the client and the client's representatives that influences choice of the standard form of contract (often long before the builder and the other stakeholders have become involved); the section below describes the issues associated initial procurement paths that are apt to influence the selection of the standard forms of contract in Malaysia.

2.6.1 Problems Associated with Selection of a Malaysian Standard Form Option

The previous discussion of standard forms in Malaysia and their associated merits and demerits established that there are in fact a plethora of standard forms of contract options available to be used as formal tools for contractual relationship between the parties in the Malaysian construction industry (Ting et al, 2010). This section now discusses the issues related to how one option might be chosen over another option.

Choosing an appropriate standard form of contract for engineering and construction works is one of the most important matters at the procurement stage. Selection of the right form of contract is argued to be part of an innovative thinking process necessary to address efficient project delivery. Identification of a best most suitable standard form of contract to improve the construction process is as important to Malaysia as it is for the rest of the international community, perhaps more so given Malaysia's newly developing status and its long held wish to achieve fully developed nation status by 2020.

SCALA (n.d.) stated that an essential skill of a Contract Administrator is the *selection* and management of the building contract. For each project, key criteria must be considered and risks allocated, before a form of contract can be selected from a range of alternative options.

According to Clamp et al (2007), choice of the actual forms of contract to be used should depend on those circumstances surrounding the particular project, which need to be taken account of. The words and procedures described in the contract form need to adequately cover situations and foreseeable events which might arise during the carrying out of the work. The choice of form needs therefore to be based on an analysis of the intended work, and not be the result of prejudice, doctrinaire allegiance, or just simply clinging to the familiar. Some contract arrangements, particularly on major developments which might involve novel procurement or projects of considerable complexity, and could well require the use of specially drafted forms.

However Clamp et al (2007) stated that the tendency in recent years has been introduce option clauses and supplements to make these forms more adaptable for use in a wider range of situations. The need to respond to recent legislation and changing practices in the construction industry, has also brought about a considerable increase in the number of hybrid-forms which might also be subsequently categorized as standard, following prolonged use. As a result there is now a considerable choice on offer, and the decision about which form, or even which combination of options is likely to be the most appropriate, becomes increasingly difficult to make.

With different choices of standard form of contract available and the number of decisions that are needed to be made, makes the decision process a difficult task requiring considerable time and therefore money investment in order to select an effective one (MacPherson, 2011). In arriving at which standard form of contract to use, it is essential to decide on which procurement strategy is most suitable, which tender process is most suitable, which type of contract is suitable relating to the procurement strategy and which form of contract to use for a given package of work (MacPherson, 2011). Without a clear contract selection guide it is easy to neglect the full range of factors given the number of considerations that must be taken into account (MacPherson, 2011).

Ong (2007) stated that the common issues and problems associated with the construction process often lie in the ill considered procurement selection, traditional separation of design from construction, lack of integration/organisation of the project members and poor communication channels, uncertainties in design and construction, changing internal and

external environment, project complexity and characteristics, as well as contractual and commercial matters. Rwelamila and Edries (2007) stated that civil engineering consultants are often asked to advise unknowledgeable clients on which standard form of contract to use for construction projects. Without a clear standard form of contract selection guideline it is easy to neglect the full range of factors given the number of considerations that must be taken into account

According to Whyte & Macpherson (2011), a large number of alternative standard forms of contract have been developed to address this concern; however this in turn adds to complexity of the contract choices and the decision process due to the sheer number of standard form of contract options available. The high number of choices available and the number of decisions that to be made makes the decision process a difficult task requiring considerable time and therefore monetary investment in order to select an effective standard form of contract. With no structured approach to contract decision making, constructions run the risk of investing vast amounts of time into making correct contact decisions, or, alternatively, they may rush the decision, or neglect to consider important variables resulting in a less than optimal contract being implemented (Whyte & Macpherson 2011).

In addition, as mentioned above, Malaysian form usage varies between the thirteen states especially in the eastern (north Borneo) and western (peninsula) Malaysian states, adding to the confusion in not only form selection but contract administration. When a contractor administrator is already well versed in certain forms, the person/s will have to re-learn if other forms are used, or if they'd 'work' in a different state, which is apt to hinder effective contract administering. While it may be unfair to expect the current standard forms to be able to cater for all different conditions, scenarios and requirements stemming from all different kinds of projects in the civil and construction industry, to continue with the current practice as mentioned in previous sections, will not only be somewhat futile, but also potentially hinder the growth of the industry and the nation's development.

With the large number of alternatives available, alongside their respective problematic areas, and the bigger issues of seeking to establish a high **'quantity'** of standard forms, the *need* to have a systematic guideline towards appropriate form selection is established. These problems with selection of standard forms of contract in Malaysia are summarised in Section 1.3.

The following section discusses procurement strategies and its relationship with ability to choose a standard form of contract.

2.7 Procurement Strategies in Malaysia

Procurement comes the word procure which literally means "to obtain by care or effort", "to bring out" and "to acquire" and system is about "organized method, approach, technique, process or procedure', making procurement of construction project a vast scope because it involves the gathering and organizing of myriads of separate individuals, firms and companies to design, manage and build construction products (Rashid et al., 2006).

Types of procurement methods and contract types and their relationship are summarised above in Section 1.2. The following discusses the issues related to the selection of procurement strategies in more detail.

2.7.1 Selection of Procurement Methods

NSWG (2008b) started that by selecting an appropriate procurement method, it will assist in obtaining best value for money and managing procurement risk. It will make effective use of both government and private sector resources, and balance critical factors of value for money, cash flow rate, timeliness, quality of design and quality of construction. It also reflects the desired allocation of risks between the construction contractor(s) and other service providers, and the agency for which the work is being constructed.

According to Wee et al. (2011), an effective procurement system would ensure the highlighted weaknesses in the Malaysian procurement system from "The Red Book" (The Putrajaya Committee on GLC High Perfomance, 2006) which is as follows:

a) Failure to buy products in the right quantities, and at the right specifications, and prices, resulting in higher total cost of ownership.

b) Inefficient and ineffective procurement processes, resulting in long cycle times

c) Opaqueness and ambiguity in the procurement process, resulting in leakages and corruption

d) Inadequate infrastructure to support procurement, including flaws in organization and governance.

e) Nonexistence or ineffective vendor development programs.

Consequently, selection of the most suitable procurement method is critical for both clients and project participants, and is becoming an important issue within building industry (Love et al., 1998).

Previous Section 1.2 has described the available methods in detail. Essentially, the three general methods of procurement are; traditional or conventional approach which divides theory design and construction to two different elements, design and build which combine both elements mentioned earlier, and management where either the client or contractor takes the responsibility of central management (Clamp et al., 2007).

The following Table 2.4 gives an overall comparison on the general procurement methods, which include speed, complexity, quality, flexibility, certainty, competition, responsibility, risk and summary.

Table 2.4: Comparison of the General Procurement Methods (Clamp et al., 2007)

	Speed	Complexity	Quality	Flexibility	Certainty	Competition	Responsibility	Risk	Summary
Traditional	Not the fastest methods. Desirable to have all information at tender stage. Consider two stage or negotiated tendering	Basically straightforward, but complications can arise if client requires that certain sub-contractors are used.	Client requires certain standards to be shown or described. Contractor is wholly responsible for achieving the stated quality on site.	Client controls design and variations to a large extent	Certainty in cost and time before commitment to build. Clear accountability and cost monitoring at all stages.	Competitive tenders are possible for all items. Negotiated tenders reduce competitive element.	Can be clear-cut division of design and construction. Confusion possible where there is some design input from contractor or specialist sub- contractors and suppliers.	Generally fair and balanced between the parties.	Benefits in cost and quality but at the expense of time.
Design and build	Relatively fast method. Pre-tender time largely depends on the amount of detail in the client's requirements. Construction time reduced because design and building proceed in parallel.	An efficient single contractual arrangement integrating design and construction expertise within one accountable organization.	Client has no direct control over the contractor's performance. Contractor's design expertise may be limited. Client has little say in the choice of specialist sub-contractors.	Virtually none for the client once the contract is signed, without heavy cost penalties. Flexibility in developing details or making substitutions is to the contractor's advantage.	There is a guaranteed cost and completion date.	Difficult for the client to compare proposals which include for both price and design. Direct design and build very difficult to evaluate for competitiveness. No benefit passes to client if contractor seeks greater competitiveness for specialist work and materials.	Can be a clear division, but confused where the client's requirements are detailed as this reduces reliance on the contractor for design or performance. Limited role for the client's representative during construction.	Can lie almost wholly with the contractor.	Benefits in cost and time but at the expense of quality.

Table 2.4 (cont): Comparison of the General Procurement Methods (Clamp et al., 2007)

	Speed	Complexity	Quality	Flexibility	Certainty	Competition	Responsibility	Risk	Summary
Management	Early start on site is possible, long before tenders have even been invited for some of the works packages.	Design and construction skills integrated at an early stage. Complex management operation requiring sophisticated techniques	Client requires certain standards to be shown or described. Managing contractor responsible for quality of work and materials on site.	Client can modify or develop design requirements during construction. Managing contractor can adjust program and costs.	Client is committed to start building on a cost plan, project drawings and specifications only.	Management contractor is appointed because of management expertise rather than because his fee is competitive. However, competition can be retained for the works packages.	Success depends on the management contractor's skills. An element of trust is essential. The professional team must be well coordinated through all the stages.	Lies mainly with the client – almost wholly in the case of constructio n managemen t.	Benefits in time and quality but at the expense of cost

Beyond Clamp et al's (2007) analysis, NSWG (2008) stated that the selection of a procurement method must take into account characteristics and constraints that are specific to the project. An appropriate procurement method will be effective in mitigating the risk inherent in the project (NSWG, 2008). Project characteristics that can affect the choice of procurement method include (NSWG, 2008):

a) Funding

- Funding source and availability
- Flexibility of budget including contingencies
- Cash flow requirement or restrictions

b) Timing

- Required start date
- Time available for completion
- Flexibility available in the program
- Staging requirements

c) Policy matters

- Government policies impacting on the project
- Requirement of regulatory authorities

d) Project Complexities

- Interfaces with other contracts or projects
- Stakeholder attitudes and influence
- Coordination with other agencies
- Principal supplied materials
- Environmental, heritage archaeological issues

e) Agency Requirement

- Extent of control over design activities
- Resource limitations, availability and expertise

f) Brief

- Completeness and clarity of the brief

- Likelihood of changes from outside the agency's control (political, funding or technological)
- Status of investigation of work
- Availability of design or performance standards

g) Type of work

- New work, refurbishment, maintenance or demolition
- Building or civil engineering or others
- Removal of hazardous materials or site rehabilitation
- Specialist technical requirement or technology

h) Site

- Geographical location
- Greenfield or developed site
- Premises are currently occupied or vacant
- Availability of site services
- Unknown conditions requiring investigation or preparatory work

i) Others

- Value of project
- Desirability or availability of innovative designs, construction techniques, proprietary system

The use of multiple criteria to derive a suitable procurement strategy for a building project has been argued to assist the client in identifying their principal goals and objectives. Love et al. (1997) listed the following criteria to be considered against clients requirements to select suitable procurement method:

- Speed (during both design and construction)
- Certainty (price and the stipulated time and knowledge of how much the client has to pay at each period during the construction phase)
- Flexibility in accommodating design changes
- Quality (contractors' reputation, aesthetics and confidence in design)

- Complexity (client may specify particular subcontractor, or constructability analysis)
- Risk allocation or avoidance
- Responsibility (Completion of program, price, product quality, design and construction)
- Price competition (Covering such issues as value for money, maintenance cost and competitive tendering)
- Dispute and arbitration

Similarly, Ashworth (1998) argues that the following needs to be considered when choosing the most appropriate procurement path for a proposed project:

a) Project size

b) Cost

c) Time

d) Accountability

e) Quality assurance

f) Organization

g) Complexity

h) Risk

i) Market

j) Finance

k) Design

Given the range of criteria above for the selection of procurement methods, the selection of the types of contract requires discussion as follows.

2.7.2 Selection of Contract Types

Procurement pathways that are used in the construction industry cannot be divorced from contracts (Gould, 2006). Decisions on preferred procurement methods will lead to conclusions on suitable contract types (Singh, 2007).

Appearing under various labels such as 'General' contracts, 'Employer-design' contracts and 'Design-bid-build' contracts, these contracts are basically characterized by the separation of the design from the production or manufacture elements of the contract (Singh, 2007).

JCT (2006) states that it is necessary to check whether the contract type under consideration is appropriate for the procurement method adopted and that the provisions it contains are likely to prove adequate for the particular circumstances before choosing it.

JCT (2006) summarized the appropriateness of different types of contracts into following:

a) Traditional Contract – Lump Sum with Quantities

Appropriate for larger works designed and/or detailed by or on behalf of the employer where detailed contract provisions are necessary. The employer is to provide the contractor with drawings with bills of quantities to define the quantity and quality of the work. Contract administrator and quantity surveyor are to administer the conditions. Can be used when the contractor is to design discrete parts of the works (contractor's designed portion); when the works are to be carried out in sections; and are applicable by both private and local authority employers.

b) Traditional Contract – Lump Sum without Quantities

Appropriate for larger works designed and/or detailed by or on behalf of the employer where detailed contract provisions are necessary. The employer is to provide the contractor with drawings; with either a specification or work schedules to define adequately the scope and quality of the work. The degree of complexity is not such as to require bills of quantities. Contract administrator and quantity surveyor are to administer the conditions. Can be used when the contractor is to design discrete parts of the works (contractor's designed portion); when the works are to be carried out in sections; and are applicable by both private and local authority employers.

c) Traditional Contract – Measurement

Appropriate for larger works designed and/or detailed by or on behalf of the employer where detailed contract provisions are necessary. The employer is to provide the contractor with drawings with approximate bills of quantities to define the quantity and quality of the work; it is subjected to re-measurement as there is insufficient time to prepare the detailed drawings necessary for accurate bills of quantities. Contract administrator and quantity surveyor are to administer the conditions. Can be used where the Contractor is to design discrete parts of the works (contractor's designed portion); where the works are to be carried out in sections; applicable by both private and local authority employers.

d) Traditional Contract: Cost Reimbursement

Appropriate for projects requiring an early start on site where the works are designed by or on behalf of the employer. It is however not possible to prepare full design information before the works commence while detailed contract provisions are necessary. The employer is to provide a specification describing and showing the items of work and drawings may be provided. Contract administrator and quantity surveyor are to administer the conditions. The contract can be used by both private and/or local authority employers when the works are to be carried out in sections.

e) Design and Build Contract

Appropriate when detailed contract provisions are necessary and employer's requirements have been prepared and provided to the contractor. The contractor not only is required to carry out and complete the works, but also to complete the design; and when the employer employs an agent (who may be an external consultant or employee) to administer the conditions. The contract can be used when the works are to be carried out in sections.

f) Management Contract

Appropriate for large-scale projects requiring an early start on site where the works are designed by or on behalf of the employer but not possible to prepare full design information before the works commencement; also when much of the detail design may be of a sophisticated or innovative nature requiring proprietary systems or components designed by specialists. The employer is to provide the management contractor with drawings and a specification; and the management contractor is to administer the conditions. The management contractor does not carry out any construction work but manages the contract for a fee. The management contractor employs works contractors to carry out the construction works. The contract can be used when the works are to be carried out in sections and are applicable for both private and local authority employers.

g) Construction Management

Appropriate when a construction manager is to manage the project on behalf of the client; the client is to enter into direct separate contract with the construction manager. The contract can be used when the works are to be carried out in sections.

The selected contract type should satisfactorily cover situations and foreseeable events which might arise during the carrying out of the work; therefore selection should therefore base on analysis of intended work, not the result of prejudice, doctrinaire allegiance, or just lazily clinging to familiarity (Clamp et al., 2007).

JCT (2006) states that the choice of an appropriate type of contract might be greatly influenced by external factors; choice should never be made on some arbitrary basis but always after a careful analysis of the situation, and taking into account considerations such as the following:

a) The nature of the project

b) The scope of the works

c) Measure of control by the client

d) Accountability

e) Appointment of a contractor

f) Certainty of final cost

g) Start and completion times

h) Restrictions

i) Changes during construction

j) Assessment of risks

k) Building relationships with the supply chain

Similarly Clamp et al. (2007) listed following to be identified prior to deciding which type of contract to adopt:

a) The nature or category of the work

b) Who is responsible for the design work

c) Will full and accurate tender document be prepared

d) Time allocated to prepare full information at tender stage

e) What documents are required for a particular type of contract

f) What is the method of selecting the contractor

g) Is the client able to state his requirements precisely before work starts

h) Does the client need to know a precise contract sum before work starts

i) Who is to be mainly responsible for coordinating the work on site

Extending the criteria for contract types, selection mechanisms for standard forms in Malaysia may then be discussed. The following section details such local selection routes.

2.7.3 Selection of Standard forms of Contract

In Malaysia, there are several standard forms of contract used as formal tools for contractual relationship between the parties in local construction industry (Ting et al., 2010). When it comes to form selection, it is seen that Malaysian contract forms used in construction in the matters of numbers, coverage of issues, lacks clarity, comprehensiveness and completeness, lack of international efficiencies and the mentality of stakeholders, which will greatly affect good project management in terms of contract administration (Ting & Whyte, 2009).

With different choices of standard form of contract availabe and the number of decisions that are needed to be made makes the decision process a difficult task requiring considerable time and therefore money investment in order to select an effective one (MacPherson, 2011).

Clamp et al. (2007) also indicated that choice of the actual forms of contract to be used should depend on those circumstances surrounding the particular project. These circumstances which need to be taken account of are summarized as below (Clamp et al., 2007):

a) Availability

b) Sector

c) Familiarity

d) Personal Preference

In selecting an appropriate standard form, the Malaysian Construction Industry Development Board, CIDB (2005) also came out with several factors which clients need to take into account when deciding upon which form of contract to use, including:

a) The complexity of the works

b) Management capacity, capabilities and expectation of the parties and their agent

c) Requirements for specific contracting and pricing strategies:

- Construction Management
- Design by Employer
- Management Contract
- Design and Build
- Develop and Construct
- Activity Schedules

- Bills of Quantities
- Cost Reimbursement
- Target Cost
- Partnering

d) The compatibility of contract administrative procedures with those of organization

e) Requirements relating to:

- The assignment/ management of risk
- Back to back contracts for the engagement of all types of subcontractors
- The management of cost and time overruns

f) The ability and capacity of skilled resources and desirability within the client body to handle different administrative procedures for building and civil engineering contracts.

g) Training requirements

h) Standardization on a single system capable of handling any discipline and any contracting strategy in a single document in respect of engineering and construction works and all other procurements.

From Macpherson's (2011) research on qualitative analysis of standard form of contract selection criteria in Australia, a total of 28 key factors that are required to be taken into consideration were identified in selecting which standard form of contract including the choice of procurement strategy, type of contract, tender process and standard form of contract, outlined in Table 2.5.

Table 2.5: Key Decision Factors in Selecting Standard Form (Macpherson, 2011)

No	Factor	Procurement Strategy	Type of Contract	Tender Process	Form of Contract	Total
1	Schedule/timing	✓	✓	✓		3
2	Minimum cost	✓	✓	✓		3
3	Cost certainty	✓	✓			2
4	Complexity	✓	✓	✓	✓	4
5	Nature	✓	✓		✓	3
6	Expected cost/value	✓	✓	✓	✓	4
7	Scope	✓	✓			2
8	Size	✓	✓			2

Table 2.5 (cont): Key Decision Factors in Selecting Standard Form (Macpherson, 2011)

No	Factor	Procurement Strategy	Type of Contract	Tender Process	Form of Contract	Total
9	In-house capability	✓	✓			2
10	Quality	✓	✓	✓		3
11	Allocation of risk/responsibilities	✓	✓		✓	3
12	Market conditions		✓	✓		2
13	Flexibility	✓	✓			2
14	Level of competition	✓				3
15	Time certainty	✓	✓		✓	1
16	Control over sub-contractors	✓	✓		✓	3
17	How well defined scope is	✓	✓		✓	3
18	Evidence of transparency			✓		1
19	Evidence of competition			✓		1
20	Number of vendors able to supply goods/services	✓		✓		2
21	Dispute avoidance	✓				1
22	Project administrator				✓	1
23	Location				✓	1
24	Funding				✓	1
25	Difficulty in evaluating tenders			✓		1
26	Domestic/commercial				✓	1
27	Separable portions required				✓	1
28	Client profile				✓	1
	TOTAL	**18**	**16**	**11**	**12**	

Those two (2) dozens key factors above are somewhat summarized by work conducted by Ting and Chin (2013) who outlined seven (7) criteria in selection of standard form with importance weightings and is organized in descending order as below:

- Nature of Work
- Procurement Method
- Finance
- Time
- Quality
- Risk Allocation
- Role Distribution

Ramus et al (2006) also come out with the decision about which form of contract to use for a project will be based upon the following factors:

a) The nature of the client

b) The risk attitude of the client

c) The procurement method adopted

d) The client's priorities in terms of time, cost and quality

e) The size of the project

f) The type of documentation being used

g) The type of project

Similarly, according to Ashworth (1998), the selection of a particular form or standard conditions of contract is dependent upon a number of different factors.

These include:

- *Type of work to be performed*: civil engineering, process plant engineering, building;
- *Size of project*: some forms and conditions are available for major and minor works and even those of an intermediate nature;
- *Status of designer*: civil engineers or architects;
- *Public or private sector*: different forms and conditions of contract are available for use by private employers and government. Large industrial corporations may in addition have developed their own forms and conditions of contract;
- *Procurement method to be used*: traditional, design and construct, management, almost one dozen others; and
- *Methods used for calculating the costs*: measurement, cost reimbursement, lump sum

It is clear then the selection of standard forms of contract requires addressing key variables, which can be identified and then selected for research whose goal is establishing selection of procurement route, alongside complementary selection of standard form.

This logical requirement for identification of firstly a procurement route and then form, is further discussed and placed into the context of the Malaysia construction industry, and presented in Section 3.8.1.2.

The immediate discussion below however, initially seeks to put forward the various theoretical strategies that allow general selection based upon an identified range of key selection factors.

2.7.4 Strategies in Selection

Love et al. (1997) specified that the approaches for procurement selection ranges from simple to highly complex approach, and it is important to do it logically, systematically and in a disciplined manner by the client's principal adviser.

Clamp et al. (2007) states that to select which procurement method depend upon the nature and scope of the work proposed, how the risks are to be apportioned, how and where responsibility for design is to be placed, how the work is to be coordinated and on what price basis the contract is to be awarded.

For most projects, the selection of procurement route to the employer's needs would already limit the available choices of standard form to be considered, and in many situations, procurement and contract selection will be considered simultaneously (Ramus et al., 2006).

Ramus et al. (2006) came out with a strategy for selection of contract types, summarized as follow:

"The criteria for decision-making will generally flow from the requirements of the client, and to ensure effective decision-making it is essential to define these criteria. There will be a difference between the wants and needs of a client. While it is not unreasonable for an client to want the best of all worlds in terms of low cost, low risk, short program, high quality, cost certainty and others, it is not usually possible for procurement and contract strategy to provide this. Therefore it is necessary to identify the client's needs. This can be done by prioritizing those wants that are essential by the client. Having established this hierarchy of needs, it should be possible in conjunction with the other decision-making criteria, such as the size and complexity of the project, to identify the contract type that s most suitable for each given situation".

Choosing the right contract type is all part of the innovative thinking necessary to improve project delivery; a strategic decision that an organization needs to make (CIDB, 2005). CIDB (2005) states that allocation of risk varies between contracts and the typical allocations of risk between the two main parties (employer and contractor) are illustrated in Figure 2.4.

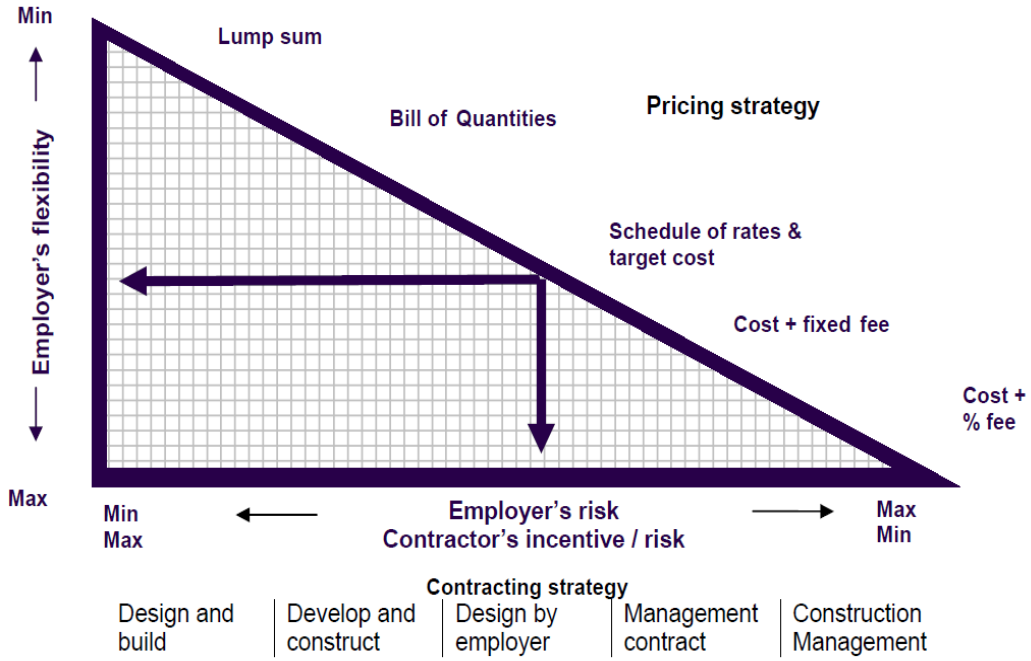


Figure 2.4: Typical Risk Allocation (CIDB, 2005)

Macpherson's (2011) study entitled Qualitative Analysis of Standard Form of Contract Selection Criteria in Australia sought to formalize this somewhat innate, subjective process by developing a structured, objective decision making guide towards the best alternative form of contract in a given environment. The work draws on a variety of sources, collating this information to provide a comprehensive overview of not only the factors considered in order to make an appropriate decision, but also the final product and its relative advantages and limitations.

A practical flow chart such as shown in Figure 2.5 based on knowledge gained from the secondary research supplemented with the results from primary research with a series of closed ended YES and NO questions distinguishes these options for practical applications was developed as summarized as follows:

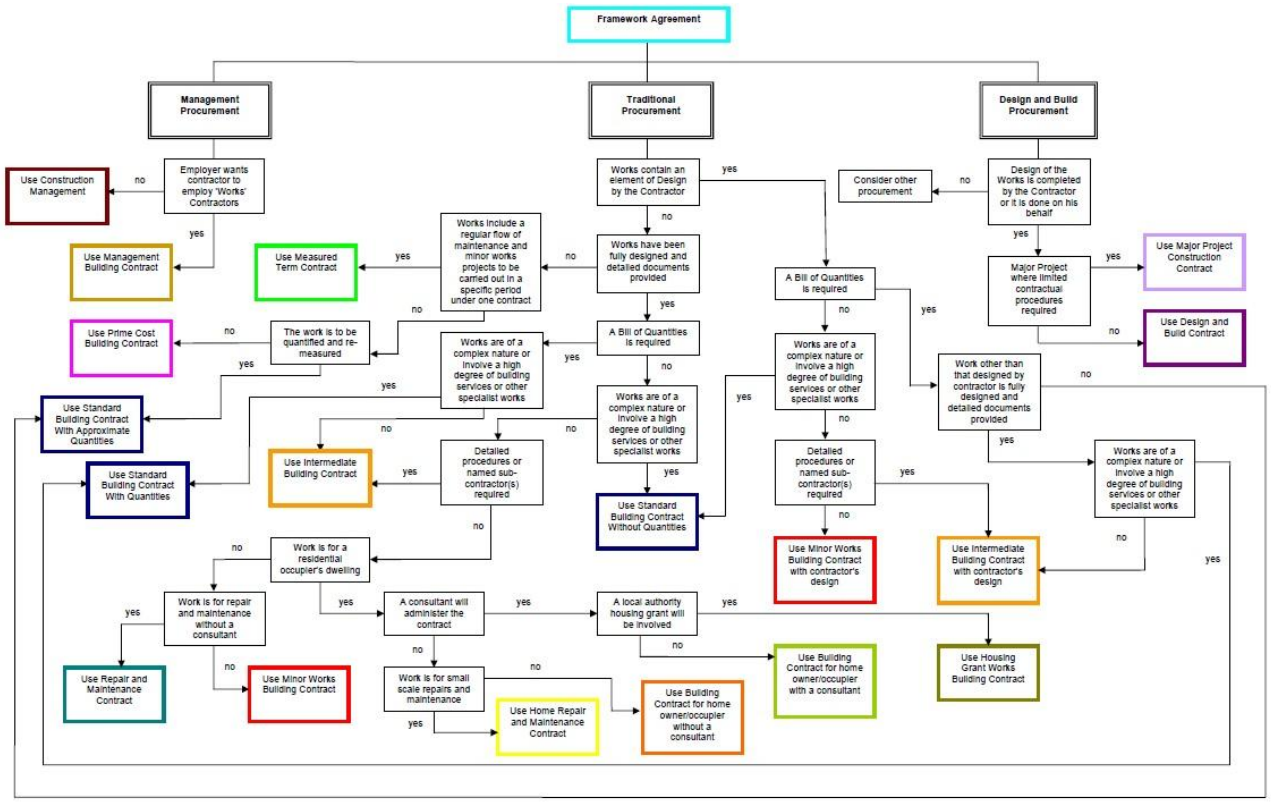


Figure 2.5: Selection of Contract With Respect to Procurement Strategy (Macpherson, 2011)

As mentioned, Tate (2003) commented that selection and management of building contracts is an essential skill of a contract administrator and key criteria for each project must be considered and risks allocated before selecting the standard form of contract for each project. In providing a concise primer for standard form selection, the choice of contract flows from the procurement route chosen for the project (Tate, 2003). Tate (2003) also came out with a matrix guide to standard form of contract where the centre section of the matrix sets out, the allocation of risk and the weight ascribed to key criteria. Tate and those researchers above saw much merit in a strategized mechanism in standard forms selection.

Based on the discussion presented here in Section 2.7 and in other preceding sections, it is important to note that a *Malaysian-system* of standard form selection is not available. There is no selection guide for Malaysian stakeholders working locally with local standards.

In order to arrive at which standard form of contract to use, it is essential to decide on the procurement method most suitable, the type of contract suitable relating to the procurement strategy and the standard form of contract to use for a given package of work (MacPherson, 2011).

Therefore, starting from selection of the numerous available procurement methods and contract types through to standard forms the detailed usage of forms and their clauses, this current work seeks to establish the best match between project and forms so as to establish a new systematic practice of standard forms selection in local Malaysian context, to fill the current knowledge gap.

Further, the local research work presented here develops arguments to be used to establish the various requisite selection criteria, for localized Malaysian procurement strategies towards a means to pick the appropriate standard form; as explained further in Section 3.7.1.

Based on the extensive literature review in the preceding sections, it is established that good contractual relations are in fact defined by:

1. **the administration of the selected forms, which must be inherently 'good';**
2. **the appropriate selection framework to select standard forms**

In order to address the above points in the areas of procurement and standard forms in Malaysia, a *gap in knowledge* can be established as follows:

1. Method of Form Research is not standardized locally
2. Local Standard Forms commonly used to delivered projects are short of being 'ideal'
3. A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia

Hence, it is clear that whilst standardization in construction contracting does and will continue to exist, further study is needed. Thus, this research aims to address both the quantity and quality issues of standard forms by assessing the various standard forms prepared by the various organizations in the local construction industry with the same set of measurement criteria and, to provide a complete guideline for appropriate form selection is necessary. Summary of research problem is presented in Section 1.3.

The following section looks firstly into the various theoretical methods available in order to achieve the aim and objectives of any proposal, and in particular how to meet the goal of this research study; the section below subsequently describes the methodology chosen to address the gap in knowledge identified above.

2.8 Methods of Research

2.8.1 Qualitative Vs Quantitative Research

There are essentially two main types of research methods are quantitative and qualitative.

Quantitative research is a formal, objective, deductive approach to problem solving. In contrast, qualitative research is a more informal, subjective, inductive approach to problem solving. More characteristic of each are compared in Table 2.6 (Munhall, 2007).

Table 2.6: Characteristics of Quantitative and Qualitative Research Methodologies (Munhall, 2007)

Quantitative research	Qualitative research
Considered a hard science	Considered a soft science
Objective	Subjective
Deductive reasoning used to synthesize data	Inductive reasoning used to synthesize data
Focus—concise and narrow	Focus—complex and broad
Tests theory	Develops theory
Basis of knowing—cause and effect relationships	Basis of knowing—meaning, discovery
Basic element of analysis—numbers and statistical analyses	Basic element of analysis—words, narrative
Single reality that can be measured and generalized	Multiple realities that are continually changing with individual interpretation

According to Creswell (2008), there are two major primary research strategies considered when approaching the project question, these being qualitative or quantitative research. The choice of which approach to use is dependent on the problem to be researched. That is, the research strategy must be chosen based on the methods ability to best meet the objectives of the research. Table 2.7 highlights the distinctions between qualitative and quantitative research strategies as outlined by Creswell (2008).

Table 2.7: Comparison of Qualitative and Quantitative Research Methods (Creswell, 2008)

Quantitative Method	Qualitative Method
Data collection centred around numbers	Data collection centred around text
Data is quantifiable	Researcher relies on the views of the participants
Data collected using instruments	Data collected through interviews and/or observing a setting
Specific, narrow, closed ended questions (quantitative hypotheses)	Broad, general, open ended questions (qualitative interview questions)
Tests objective theories (hypotheses) by examining relationships among variables	Seeks to explore a central phenomenon with the aim of understanding a social or human problem as viewed by a individual or group
Inquiry is unbiased and objective	Inquiry is subjective and biased
Analysis of data (numbers) using statistics	Analysis of data (text) involves interpretation to deduce themes
Looks to prove or disprove a theory	Creates and agenda for change or reform
Uses standards of validity and reliability	Validates the accuracy of the findings using concepts of credibility, transferability, dependability and confirmability

According to McEnery and Wilson (2001), corpus analysis can be broadly categorized as consisting of qualitative and quantitative analysis.

a) Qualitative analysis: Richness and Precision.

The aim of qualitative analysis is a complete, detailed description. No attempt is made to assign frequencies to the linguistic features which are identified in the data, and rare phenomena receives (or should receive) the same amount of attention as more frequent phenomena. Qualitative analysis allows for fine distinctions to be drawn because it is not necessary to shoehorn the data into a finite number of classifications. Ambiguities, which are inherent in human language, can be recognized in the analysis.

The main disadvantage of qualitative approaches to corpus analysis is that their findings cannot be extended to wider populations with the same degree of certainty that quantitative analyses can. This is because the findings of the research are not tested to discover whether they are statistically significant or due to chance.

b) Quantitative analysis: Statistically reliable and generalize-able results.

In quantitative research we classify features, count them, and even construct more complex statistical models in an attempt to explain what is observed. Findings can be generalized to a larger population, and direct comparisons can be made between two corpora, so long as valid

sampling and significance techniques have been used. Thus, quantitative analysis allows us to discover which phenomena are likely to be genuine reflections of the behaviour of a language or variety, and which are merely chance occurrences. The more basic task of just looking at a single language variety allows one to get a precise picture of the frequency and rarity of particular phenomena, and thus their relative normality or abnormality.

However, the picture of the data which emerges from quantitative analysis is less rich than that obtained from qualitative analysis. For statistical purposes, classifications have to be of the hard-and-fast (so-called "Aristotelian" type). Quantitative analysis is therefore an idealization of the data in some cases. Also, quantitative analysis tends to sideline rare occurrences. To ensure that certain statistical tests (such as chi-squared) provide reliable results, it is essential that minimum frequencies are obtained - meaning that categories may have to be collapsed into one another resulting in a loss of data richness.

From this brief discussion it can be appreciated that both qualitative and quantitative analyses have something to contribute to corpus of the works in this research. There has been a recent move towards multi-method approaches which tend to reject the narrow analytical paradigms in favor of the breadth of information which the use of more than one method may provide. In any case, as McEnery and Wilson (2001), a stage of qualitative research is often a precursor for quantitative analysis, since before linguistic phenomena can be classified and counted, the categories for classification must first be identified.

Both qualitative and quantitative research methods will be used, but the main bulk of the works for this study shall be carried out via a qualitative research method. Qualitative research method is chosen because both the development of the procurement framework (as discussed in Section 3.8) and form studies (as discussed in Section 3.5 and 3.6) requires in depth relating of experience with selection and the standard forms and richness in the data collected. In addition, qualitative analysis provides flexibility to participants, giving participants opportunity to respond in their own words rather than in highly controlled settings, collecting unique data in assisting the development of the structured selection guideline. Finally, qualitative analysis is deemed suitable for developing data which is in line with this research aim to develop a construction procurement framework towards selection of Malaysian standard forms. Qualitative approaches are discussed below.

2.8.2 Qualitative Research Method

Qualitative research is defined as “a form of systematic empirical inquiry into meaning”. By systematic, it means “planned, ordered and public”, following rules agreed upon by members

of the qualitative research community. By empirical, it means that this type of inquiry is grounded in the world of experience. Inquiry into meaning says researchers try to understand how others make sense of their experience (Ospina, 2004).

There are five (5) types of qualitative inquiry and research design as mentioned by Creswell (2007) the types of approaches are listed as below.

- Narrative Research
- Phenomenological Research
- Grounded Theory Research
- Ethnographic Research
- Case Study

2.8.2.1 Phenomenological Research

Phenomenological study describes the meaning for several individual of their lived experiences of a concept or a phenomenon (Creswell, 2007). Phenomenological study is designed to describe and interpret an experience by determining the meaning of the experience as perceived by the people who participate in it. The central aim of the research is the element of subjective experience, and the main focus is in asking what this experience means to the parties involved. Phenomenology merely wants to understand how, through experiences, all the events and objects of the world appear to be consciousness (Fauzan, 2009).

Phenomenology requires at least some understanding of broader philosophical assumption, and these should be identified by the researcher. The participants in the study need to be carefully chose to be individual who have all experienced the phenomenon in questions so that the researcher, in the end, can forge a common understanding. Bracketing personal experience may be difficult for the researcher to implement. (Creswell, 2007)

In order to achieve the aim and objectives stated for this current research work, the nature of phenomenological research method is deemed suitable. The application of this method to the study at hand is explained in Section 3.6.1 and Section 3.8.1.

The sampling method and sample size corresponding with phenomenological research method is as discussed in the following section.

2.8.2.2 Sampling

Marshall (1996) stated that choosing a study sample is an important step in any research project since it is rarely practical, efficient or ethical to study whole populations. The aim of all quantitative sampling approaches is to draw a representative sample from the population, so that the results of studying the sample can then be generalized back to the population. The selection of an appropriate method depends upon the aim of the study.

The three most common sampling methods are given by Mack et al. (2005) as follows:

- Purposive sampling – Most common sampling strategy, participants according to preselected criteria relevant to a particular research question.
- Quota sampling – A sampling strategy similar to purposive sampling, however is more specific with respect to sizes and proportions of subsamples
- Snowball sampling – Chain referral sampling where participants or informants with whom contact has already been made use their social networks to refer the researcher to other potential participants.

Given the goals and logic of qualitative research works proposed here for this study of Malaysian contracts, purposive sampling deemed appropriate.

Purposive sampling strategies are designed to enhance understandings of selected individuals or groups' experience(s) or for developing theories and concepts. Researchers seek to accomplish this goal by selecting 'information rich' cases, that is individuals, groups, organizations, or behaviors that provide the greatest insight into the research question (Dervers & Frankel, 2000).

Palys (2008) has listed the purposeful sampling strategies as below:

- **Stakeholder Sampling**: Particularly useful in the context of evaluation research and policy analysis, this strategy involves identifying who the major stakeholders are who are involved in designing, giving, receiving, or administering the programme or service being evaluated, and who might otherwise be affected by it.
- **Extreme or Deviant Case Sampling**: Sometimes extreme cases are of interest because they represent the purest or most clear cut instance of a phenomenon we are interested in. For example, if we were interested in studying management styles, it might be most interesting to study an organization that did exceptionally well and/or another that had high expectations but did exceptionally poorly.

- **Typical Case Sampling**: Sometimes we are interested in cases simply because they are not unusual in any way. For example, years ago Howard Becker and some of his colleagues were interested in studying how medical students were socialized into the profession. They did their research at the University of Kansas Medical School – not a highly prestigious medical school such as Harvard or Johns Hopkins – exactly because there was nothing unusual about it and, for that reason, was probably somewhat typical of the medical school experience.

- **Paradigmatic Case Sampling**: A case is "paradigmatic" when it is considered the exemplar for a certain class. For example, if one wanted to study the management of professional sports teams, the paradigmatic case in hockey of a successful franchise would be the Montreal Canadians; for baseball it would be the New York Yankees.

- **Maximum Variation Sampling**: Searching for cases or individuals who cover the spectrum of positions and perspectives in relation to the phenomenon one is studying, and would include both of the previous categories, i.e., both extreme and typical cases plus any other positions that can be identified.

- **Criterion Sampling**: This involves searching for cases or individuals who meet a certain criterion, e.g., that they have a certain disease or have had a particular life experience.

- **Theory guided Sampling**: Researchers who are following a more deductive or theory testing approach would be interested in finding individuals or cases that embody theoretical constructs. As this could be considered a particular type of criterion sampling, it also illustrates the overlaps that can exist between these categories.

- **Critical case sampling**: Here the researcher might be looking for a "decisive" case that would help make a decision about which of several different explanations is most plausible, or is one that is identified by experts as being a particularly useful site because of the generalizations it allows, e.g., recent findings that life exists at the bottom of the ocean where there is no sunlight, bitter cold, and immense pressure, suggests that life can exist almost anywhere.

- **Disconfirming or Negative Case Sampling**: With this strategy the researcher is looking to extend his or her analysis by looking for cases that will disconfirm it, both to test theory and simply because it is often from our failures that we learn the most. The general principle here is, "If you think your results are not generalizable or the

existence of a particular kind of case will undermine all that you 'know' to be true about a phenomenon, then look for that kind of case."

- **Expert Sampling**: Here the researcher is looking for individuals who have particular expertise that is most likely to be able to advance the researcher's interests and potentially open new doors.

Under purposeful sampling, the various sampling methods are presented; criterion sampling is deemed to fit the purpose of this current research project work, and is explained in detail and contextualized further in Section 3.5.2.1 and Section 3.7.1.1 below.

Initially, however, the section immediately following, discusses the issue of sample size.

2.8.2.3 Sample size

Patton (2002) mentioned that there are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility and what can be done with available time and resources. In the end, sample size adequacy, like all aspects of research, is subject to peer review, consensual validation, and judgment. What is crucial is that the sampling procedures and decisions be fully described, explained, and justified so that information users and peer reviewers have the appropriate context for judging the sample.

Struwig and Stead (2001) also stated that it is not possible to state what an ideal size to consider for the purpose and goal of the study. Qualitative researchers are more interested in whether the information from the sample is rich in data and thick in description than the extent to which the data from the sample can generalize to the population. Sample size in qualitative research can starts with n=1 as occurs in case study. Further, according to Marshall (1996) an appropriate sample size for a qualitative study is one that adequately answers the research question. For simple questions or very detailed studies, this might be in single figures; for complex questions large samples and a variety of sampling techniques might be necessary. In practice, the number of required subjects usually becomes obvious as the study progresses, as new categories, themes or explanations stop emerging from the data (data saturation).

Creswell (2007) has summarized the sampling activities of different approaches in Table 2.8.

Table 2.8: Sampling Methods of Different Approaches (Creswell, 2007)

Approach	Sample type	Method and sample size
Narrative	Several strategies depending on the person	Documents and achieved materials, open ended interviews, subject journaling, participant observation, casual chatting
Phenomenology	**Individuals who have experience the phenomenon, 'criterion' sample**	**Interview with 5 to 25 people**
Grounded Theory	Homogenous sample, 'theory-based' sample, 'theoretical' sample	Interview with 20 to 30 people to achieve detail in theory
Ethnography	A strange cultural group, 'representative' sample	Participant observations, interviews, artifacts, and documents
Case Study	Single or multiple case, 'atypical' case, 'maximum variation' case, or 'extreme' case	Extensive form such as, documents and records, interviews, observation and physical artifacts

Based on the above understanding of the various qualitative research methods, the research method adopted in for this current research work, utilizes a Phenomenological Research method with criterion sampling of the prerequisite minimum five (5) respondents of sample size.

Details of the research method adopted by this study, and sample size compliance are further discussed in following chapter in Section 3.6 and 3.8.

The following section details the various theoretical data collection methods for qualitative research method.

2.8.3 Data Collection for Qualitative Research Method

Different approach of qualitative research is having different ways of data collection methods. Marshall and Rossman (2006) mentioned that qualitative researchers typically rely on four main methods for gathering information which are:

- Participating in the setting;
- Observing directly;
- Interviewing in-depth; and
- Analyzing documents and materials culture.

According to Charmaz (2006), intensive interviewing has long been a useful data-gathering method in various types of qualitative research. Most essentially, an interview is a directed

conversation; intensive interviewing permits an in-depth exploration of a particular topic or experience and, thus, is a useful method for interpretive inquiry. With a person who has had the relevant experiences. It remains the most common data collection method in qualitative research and a familiar and flexible way of asking people about their opinions and experiences. One attraction for researchers is that a considerable amount of data can be generated from an interview lasting one or two hours, although of course, considerable time may have been expended setting up the interview and subsequently on analyzing it. (Moriarty, 2011)

Qu and Dumay (2011) mentioned that there are three types of interview namely unstructured interviews, semi-structured interviews and structured interviews. Focus is placed on semi-structured interviews techniques.

2.8.3.1 Semi-structured interviews

Semi-structured interview is the most common of all qualitative research methods. The semi-structured interview involves prepared questioning guided by identified themes in a consistent and systematic manner interposed with probes designed to elicit more elaborate responses. Thus, the focus is on the interview guide incorporating a series of broad themes to be covered during the interview to help direct the conversation toward the topics and issues about which the interviewers want to learn. Generally interview guides vary from highly scripted to relatively loose. However, the guides all serve the same purpose, which is to ensure the same thematic approach is applied during the interview.

The semi-structured interview enjoys its popularity because it is flexible, accessible and intelligible and, more important, capable of disclosing important and often hidden facets of human and organizational behavior. Often it is the most effective and convenient means of gathering information. Because it has its basis in human conversation, it allows the skillful interviewer to modify the style, pace and ordering of questions to evoke the fullest responses from the interviewee. Most importantly, it enables interviewees to provide responses in their own terms and in the way that they think and use language. It proves to be especially valuable if the researchers are to understand the way the interviewees perceive the social world under study.

Underlying the semi-structured interview is the assumption that the questions must be comprehensible to the interviewee while, at the same time, the interviewer must respond sensitively to differences in the way the interviewees understand the world. The localist uses semi-structured interviews to emphasize the need to approach the world from the

interviewee's perspective. Thus, both interviewer and interviewee participate in the interview, producing questions and answers through a discourse of complex interpersonal talk. A primary technique used in semi-structured interviews is the use of scheduled and unscheduled probes, providing the researcher with the means to draw out more complete narratives from the interviewees, drilling down a particular topic. A scheduled probe would require the interviewee to elaborate on a stimulating or surprising answer just made.

Semi-structured interviews have the potential to address the major concerns of the localist perspective in order to produce situated accounts. For example, because of the requirement of the interviewer to probe and follow up on questions, semi-structured interviews are able to produce different responses contingent to the traits of the interviewers. Different interviewers will evoke different responses from the same interviewee given the way questions are asked and probed.

From the various data collection method available, semi structured interviews are preferred for the purpose of data collection for this research work.

The semi structured interviews adopted by this study are seen as a method that draws out the experiences of the respondents with some scheduled questions and probes further with spontaneous questions based on the respondents' responses.

This method is in line with Phenomenological Research method also proposed by this study, in that it draws out experience of respondents who have participated in the use of the available Malaysian standard forms options and/or the selection procedures. An outline of semi-structured interviews conducted is detailed in future Section 3.6.1.3 and Section 3.8.1.2.

Data analysis for the qualitative data collected will be analysed in a standardized way; the following section describes data analysis approaches in general, and seeks to subsequently place these into the context of this work.

2.8.4 Data Analysis for Qualitative Research Method

2.8.4.1 Coding

Coding data is the formal representation of analytic thinking. The tough intellectual work of analysis is generating categories and themes. The researcher applies some coding scheme to those categories and themes and diligently and thoroughly marks passages in the data using codes (Marshall & Rossman, 2006).

Saldana (2009) stated that a code in qualitative inquiry is most often word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based visual data. The data consists of interview transcripts, artifacts, photographs, video, websites, email correspondences, and so on.

To codify is to arrange things in a systematic order, to make something part of a system or classification to categorize. Codifying is when codes are applied and reapplied to qualitative data, which is a process that permits data to be segregated, grouped, regrouped, and relink in order to consolidate meaning and explanation. Coding is a method to organize and group similarly coded data into categories because they have shared some characteristic.

Grounded theory coding consists of at least two main phases:

a) An initial phase involving naming each word, line, or segment of data followed by

b) A focused, selective phase that uses the most significant or frequent initial codes to sort, synthesize, integrate, and organize large amounts of data.

Charmaz (2006) suggested three types of coding in qualitative analysis:

a) Word-by-Word Coding

Word-by-word coding forces to attend to images and meanings, and also the structure and flow of words, and how both affect the sense you make of them, as well as their specific content.

b) Line-by-Line Coding

Line-by-line coding means naming each line of your written data. Coding every line may seem like an arbitrary exercise because not every line contains a complete sentence and not every sentence may appear to be important.

c) Coding Incident to Incident

Making comparisons between incidents is likely works better than word-by-word or line-by-line coding, in part because the field notes already consist of your own words. Concrete, behaviouristic descriptions of people's mundane actions are one of the biggest advantages of this type of coding. Besides, comparative methods help to see and make sense of observations in new, analytic ways.

Results from semi-structured interviews conducted for the current research work is coded by the incident to incident coding method. The experiences of the respondents are recorded both

in writing as field notes and audio taped, upon agreement. This is transcribed and coded in order to provide the required results related to the issues analyzed.

The adaptation of the data analysis method described above is detailed and placed into context in Section 3.6.2 and Section 3.8.2.

It is now noted that, as quantitative research methods also form a part of the research-work conducted for this study, review is required. The following section discusses quantitative research method(s) in more detail.

2.8.5 Quantitative Research Method

According to Whyte (2011), quantitative research method(s) involve a process of collecting, analyzing, interpreting and recording the results of a study. The purpose of data collection as part of a quantitative research method is towards measuring the variables of interest clearly, specifically and accurately so they can be analyzed in the form of numbers and analyzed using perhaps statistical procedures/hypothesis testing. The main advantage of quantitative research method is to measure the reactions of a great many things/people to a limited set of questions, thus a comparison and statistical aggregation of the data can be facilitated. On the other hand it does not allow the evaluators to study in depth and detail because of the limited amount of data. Whyte (2011) further mentioned that the most frequent approaches or methods in quantitative research involve experiments and surveys that yield statistical data.

Nachmias & Nachmias (1996) have solidified the advantages of using questionnaire surveys as including: low cost, reduced bias, and a degree of respondent anonymity. Besides, a questionnaire survey can gauge a larger number of participants

Quantitative research methods using questionnaires' surveys are utilized by this research work to gauge the Malaysian construction's opinion on the attributes that constitutes of an 'ideal' standard form. Opinions received then form the basis of *form-analyses* conducted later. A detail of the application of this approach represents the early/initial data gathering conducted by this study and is described further in Section 3.4.4.

Related sample size parameters now require discussion; a general examination, followed by the more specific application to this study, and outlined below.

2.8.5.1 Sample Size

Population refers to any complete group of people but a sample refers to the group of selected respondents from the population from which related information needed to be attained. Sampling is crucial in this research due to the large amount of research population. To statistically estimate the minimum sample size that is required for this survey, the formula is as follows (Luck et al. 1987):

$$S = \frac{So}{1 + So / N} \quad (1)$$

$$So = \frac{(Z)(Z) \times pq}{(e)(e)} \quad (2)$$

Where S = size of the sample

N = size of the population

p = population proportion

q = (1-p)

e = the proportion of sampling error or 0.05

Z = the standard score corresponding to a given confidence level or 1.625

Logically, a perfect 100-percent response rate would eliminate nonresponsive bias, but since universal participation is rarely if ever attainable in practice, many colleges and universities focus instead on maximizing response rates (Radwin, 2009). Or they may strive to reach an acceptable threshold, although the lack of consensus on what constitutes a "good" response rate has various authorities citing figures anywhere from 10 percent to more than 90 percent.

According to Radwin (2009), the estimates from a mail survey with an average 20-percent response rate were much closer on average to the actual election results (mean discrepancy of 1.6 percent) than were the estimates from a telephone survey with a 60-percent average response rate (mean discrepancy of 5.2 percent). In other words, the survey with the lower response rate was much more accurate than the survey with the higher response rate.

As Liu and Fellows (1997) stated, only 25 to 35 percent of response rate of the distributed questionnaires are expected usable. For this survey the response rate is 30 percent therefore it is valid. Respondents targeted for this survey would be engineers, project managers, safety officers, site supervisors, and also professionals outside the field of civil engineering such as

oil and gas engineers, information technologists as their job scopes are closely knitted with risk assessment.

Blumberg et al's 1974 mail study involved 265 respondents in each of five different interview length conditions. They report the following response rates:

- 30% response to a one-page form;
- 28% response to the one-page form plus a second concerning length and response rates for telephone surveys.
- 20% response to a one-page form plus a series of open-ended questions;
- 21% response to the one-page form plus five pages of fixed alternative questions;
- 22% response to the one page form plus the five pages of fixed alternative questions plus one page of attitude items.

Calculation of compliant sample size parameters for this research is shown in Section 3.4.4.1.

2.8.5.2 Sampling

According to StatPac (2009), it is incumbent on the researcher to clearly define the target population. There are no strict rules to follow, and the researcher must rely on logic and judgement. The population is defined in keeping with the objectives of the study.

Convenient sampling is utilized as it is suitable for exploratory research. This non-probability method is often used during preliminary research efforts to get a gross estimate of the results, without incurring the cost or time required to select a random sample.

StatPac (2009) further explained that convenience sampling comes useful where the researcher is interested in getting an inexpensive approximation of the truth about what respondents think of the attributes that constitutes an 'ideal' standard form in order to set up the criteria to be used for standard forms analyses.

The participants for this current work are chosen principally because of their contract administration roles in Malaysia, but also for a 'convenience-sampling' rationale.

Once again the research-specific details of the sampling process for the study undertaken here are explained in detail in the following Section 3.5.4.1.

Besides qualitative and quantitative methods, this research-work looks into the various contract and standard forms analysis-methods, to assist in the design of a best-practice method to study objectively the range of local Malaysian standard forms of contract.

By looking at past research (methods) carried out on standard forms both locally and internationally, it is proposed here that a set of systematic method(s) can be developed for form-study related to this study into Malaysian standard forms, via a synchronization of the previous approaches and respective identified criteria to allow analyses.

The following section looks at a number of research method(s) adopted by a range of studies that sought to review the 'worth' of a range of standard contracts.

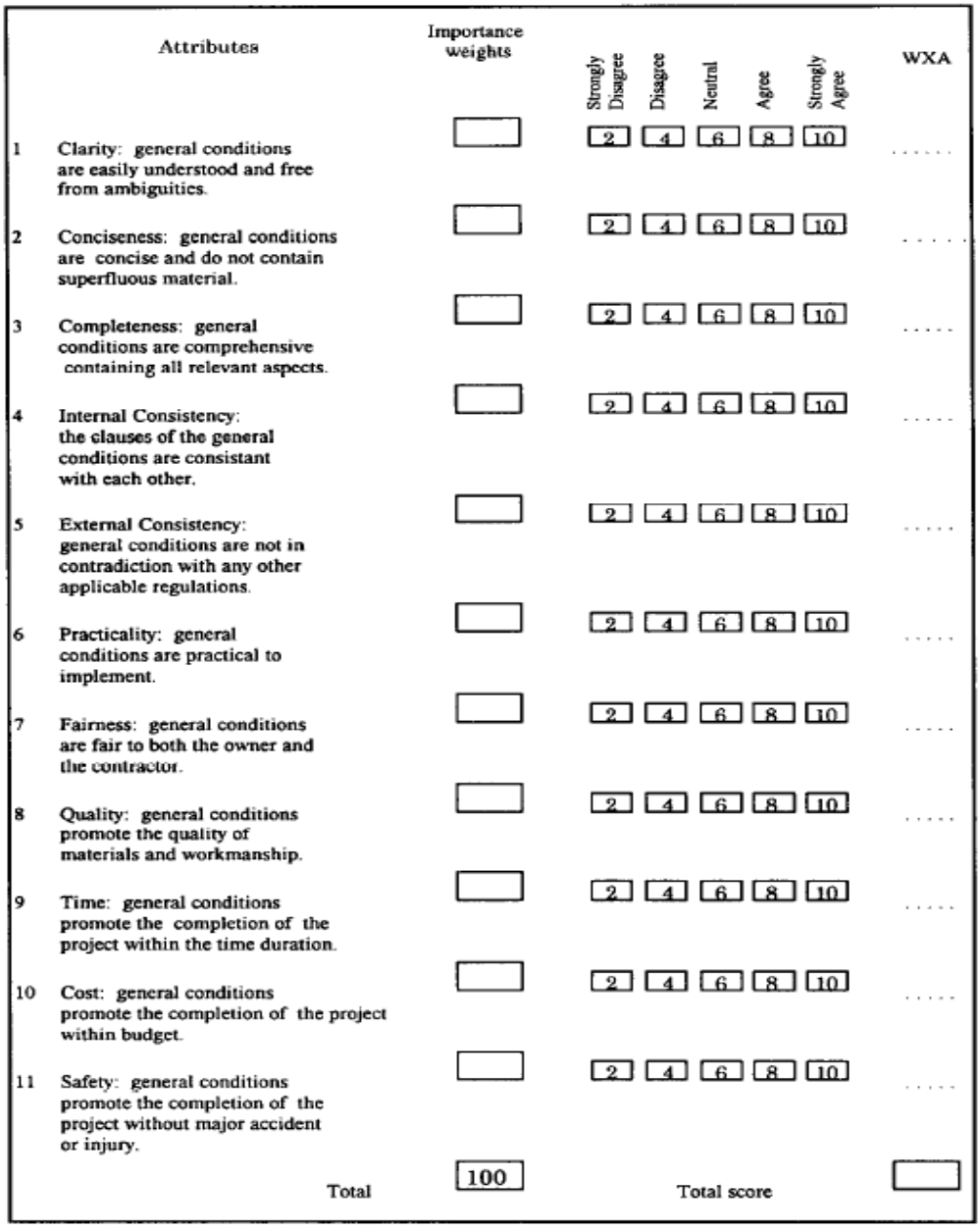
2.8.6 Form Research Methods

The following discussion highlights a number of influential research-methods that were able to successfully provide form-analyses.

A key and prominent research method towards evaluating any standard general condition of a construction contract was that proposed by Bubshait and Almohawis'(1994) who derived and applied eleven (11) attributes, considered to be the key criteria towards a determination of a 'good' set of general conditions.

Bubshait and Almohawis' (1994) research approach used a method where an evaluator determines the ranking of each attribute, and then applies a subsequent level of agreement (or otherwise) with each of the eleven (11) attributes applied overall to the standard general conditions being assessed. They developed, applied and validated this method for form-analysis. Attributes are evaluated using the instrument shown below in Figure 2.6

The first step in this evaluation method is for the evaluator to determine the level of importance of each of the 11 attributes. This is necessary since the relative importance of an attribute is different from one contract to another, owing to the changing contracting, legal and economic environment at the time of evaluation. To quantify the relative importance of the attributes, the evaluator assigns weights to the attributes by distributing 100 points across the 11 attributes in direct relation to their relative importance. There is no limit to the weighting given to a single attribute, as long as the total weightings given to all the attributes add up to 100.



	Attributes	Importance weights	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	WXA
1	Clarity: general conditions are easily understood and free from ambiguities.		2	4	6	8	10	.....
2	Conciseness: general conditions are concise and do not contain superfluous material.		2	4	6	8	10	.....
3	Completeness: general conditions are comprehensive containing all relevant aspects.		2	4	6	8	10	.....
4	Internal Consistency: the clauses of the general conditions are consistant with each other.		2	4	6	8	10	.....
5	External Consistency: general conditions are not in contradiction with any other applicable regulations.		2	4	6	8	10	.....
6	Practicality: general conditions are practical to implement.		2	4	6	8	10	.....
7	Fairness: general conditions are fair to both the owner and the contractor.		2	4	6	8	10	.....
8	Quality: general conditions promote the quality of materials and workmanship.		2	4	6	8	10	.....
9	Time: general conditions promote the completion of the project within the time duration.		2	4	6	8	10	.....
10	Cost: general conditions promote the completion of the project within budget.		2	4	6	8	10	.....
11	Safety: general conditions promote the completion of the project without major accident or injury.		2	4	6	8	10	.....
	Total	100			Total score			

Figure 2.6: Construction-contract general-conditions Evaluation Instrument (Bubshait and Almohawis, 1994)

The next step in the evaluation process is for Bubshait and Almohawis' (1994) evaluation method, after careful review of the general conditions in question, is to indicate the level of agreement (or otherwise) with each of the statements representing the attributes. For this evaluation to be valid, it is important that the evaluator has an adequate industrial and/or academic background in construction management and particularly contract administration.

Once the attributes have been assessed, the **total-evaluation-score (TES)** can be computed by the following formula.

$$\boldsymbol{TES} = \frac{\sum \mathbf{W_i} \times \mathbf{A_i}}{\mathbf{10}} \quad (3)$$

where

TES = total evaluation score

W, = weight (importance) of attribute *i*

A; = agreement level related to attribute *i*

Using Bubshait and Almohawis' (1994) methdology, the **total-evaluation-score (TES)** will be calculated to range from 20 to 100. The interpretation of this computed score is made in accordance to a Likert-style scale used to evaluate each attribute.

In other words, the neutral point of the scale is 60. A score below this neutral point should be as a negative evaluation of the general conditions, and the reverse is true for a score above 60. The further the score is from the neutral point, the stronger is the magnitude of positivity or negativity as it relates to a good, bad or indifferent standard form of contract. Importantly, any attribute with an agreement level of less than 5 (effectively a disagreement) should be looked at seriously as a potential source of risk to contract administration.

According to Bubshait and Almohawis (1994), the magnitude of evaluation for general condition is categorized into three classifications.

The neutral point of the scale is sixty (60) marks. A score below this neutral point should be as a negative evaluation of the general conditions, and the reverse is true for a score above sixty (60). For this research-study, the magnitude of positivity and negativity is expanded from three categories to seven categories towards obtaining a more accurate evaluation of the localized Malaysian specific standard general condition clauses.

From the international context, it is seen that Bubshait and Almohawis' method for studying general conditions of contract is somewhat more complete, procedural and quantitative in its measurement nature, while perhaps the other methods are somewhat more reflective of selected aspects of form study with some methods lacking measurement standard. Given the above the research work carried out here, looks predominantly to the Bubshait and Almohawis' method as it is reference for form-study.

From the local Malaysian context, as seen Section 2.4 and 2.8.6, form-study has yet to adopt a systematic approach as most study done is presented as commentaries and are based on the general assessment of legality of the form, usage of terms and the apportionment of risks carried out based on the experience and skills of the person/s conducting the study. This

approach can be seen in studies carried out by Singh, Rajoo, Oon, Lim and the others. From the academic analysis published as in Sia (2004), form analysis is based on the study of rights and obligations of the contracting as spelled out in the form.

Based on the above literature review of form research methods found internationally and locally, this research work sets-out to conduct form analysis using systematic assessment procedures that include a pre-determined set of criteria likely to be able to provide a complete form study method not only for Malaysia but for its international counterparts too. The outline for Form Analysis Method adopted by this research study is presented in Section 3.4.

2.9 Section Summary

It is established from the literature review that the Malaysian construction industry depends on construction contracts, especially the available standard forms of contract, to define and govern the contractual relations of the contracting parties. It is noted that as all construction projects are carried in a contractual environment, the industry has relied heavily on standard forms to allow a cost saving, familiar and convenient way of stating the obligations and rights of the parties involved in bringing a design project to its fruition. With the obvious advantages and the widespread of usage of standard forms, there have been different sets of standard forms created and championed by their respective independent professional bodies.

Various current sets of Malaysian standard forms have been revised and revamped, creating an increasing and somewhat confusing number of standard forms for a relatively small construction community. The introduction of (untested) new, as well as the constant (untested0 revisions of existing standard forms of contract for the construction industry locally, is somewhat unsubstantiated and potentially increasingly litigious. As seen in the literature review, contract forms and standardization of the general conditions are most frequently the main source of the construction disputes and the existing, and revision, forms have failed to cover some of the most common issues on site such as payments, defects, extension of time and so forth.

In addition to the large number of selection options available, none are found to approach an ‘ideal’ form. There is also a gap in knowledge and procedure related to the non existence of a proper guideline or selection procedures for selection of the appropriate standard form in Malaysia, albeit that form the literature review, there are various selection criteria that are important and should be considered as part of a selection procedure. Instead selection is dangerously hinged on the familiarity factor, and an unsubstantiated reliance on the ‘one-we-always-use’, with no proper system and/or guidelines towards selection of a suitable form.

As mentioned above, with the divergence of aims, egos and interests among the stakeholders, it is all the more important that Malaysia has a systematic and comprehensive set of guidelines that make use of the existing forms that could cover the various issues in construction and different types of construction works. It is perhaps high time that stakeholders go towards one specific, unified set of objectives, understanding and framework in order to bring to an end the current practice of inefficient and ineffective re-modification.

All of the above seems to be suggesting a need for a systematic contracting framework for Malaysian construction contracting with standard forms. This research looks towards the developing of this framework, to be used towards formation of guidelines that could appropriately select the standard forms with the respective project's needs and requirements and provide for enhancement modules for each of the selected forms.

Generally the sections below detail the extensive form study conducted and the enhancement modules developed and provided based on a set of pre-determined criteria.

With a system for appropriate selection of the forms alongside enhancement modules, it is hoped that the research work here can bring about form enrichment critical for Malaysian construction contracting.

The following section discusses the explicit method to address the issues above.

3. RESEARCH METHODOLOGY

3.1 General Overview of Chapter

This chapter discusses the data collection process (es) and methods adopted in the pursuit of achieving the aim and objectives of this research-work (identified previously in Chapter 1) and summarised below in Table 3.1.

This chapter discusses in detail the methodology for this research study.

Table 3.1: General Overview of Chapter 3 and the Logic Flow of Works

Chapters	Issues Addressed	Points Established/ Gap in Knowledge	Way Forward towards Addressing Research Problem & Need
Chapter 2	*As previous*		
Chapter 3	Research Method 3.1 General Overview of Chapter 3.2 Research Framework 3.3 Literature Review 3.4 Standard Form Analysis 3.5 Qualitative Verification of Form Analysis 3.6 Modules for Enhancement 3.7 Development of Selection Framework 3.8 Procurement Framework 3.9 Logical Flow of Research Work	Form-study: Quantitative Method to establish the attributes of analysis of standard forms Techniques for Standard Form Evaluation Qualitative Research to verify the results of Standard Form Analysis Enhancement modules: A benchmarking method is adopted. The benchmark selected is NEC3.	Chapter 4: Five-hundred (500) Questionnaires were sent to measure and establish the attributes for form-analysis. A formal form-analysis method is established and used to study the five (5) most commonly used Malaysian standard forms of construction contract. Eighteen (18) key expert practitioners were interviewed across twenty-three (23) semi-structured interviews to verify the results for Form-analysis. Chapter 5: Justification of NEC3 as the selected Benchmark. Benchmarking procedures are carried out as follows: Objective identification of problematic clauses in Malaysian standard forms Similar clauses in NEC3 identified & selected Positive traits in similar clauses in NEC3 used as a benchmark to create Malaysia-applicable enhancement modules.

Table 3.1 (cont): General Overview of Chapter 3 and the Logic Flow of Works

Chapters	Issues Addressed	Points Established/ Gap in Knowledge	Way Forward towards Addressing Research Problem & Need
		Construction Procurement Selection Criteria: Qualitative method to verify & weight the selection criteria selected Correlation between selection criteria and the procurement method(s), contract types and standard forms of contract via Qualitative Method.	Chapter 6 Selection criteria verified, weighted and correlated with procurement methods, contract types and standard forms in Malaysia via six (6) semi-structured interviewees with key expert industry prime-movers.
		Construction Procurement Framework: Design of Selection Framework for Selection of Procurement Method, Selection of Contract Types and Selection of Standard Forms of Contract Combined Decision Flowcharts Combined with Enhancement modules.	Chapter 7: Procurement Selection Framework is designed in the form of decision flowcharts and also presented in visual basic language to enhance the ease of using the framework for Malaysian users.

Prior to selecting the method to carry out the research-work, it is essential that the aim and objectives are clear and that the literature has justified the need for the work done. The methodology proposed here begins by outlining the research objectives and the selection of the strategies for conducting the research. This is followed by a detailed description of each component of the research framework proposed.

3.1.1 Research Objectives

The primary and secondary research objectives, as listed in Section 1.4, are shown once more in Table 3.2 below. The research method used and the theory employed are tagged alongside respective objectives to provide an overall picture of the research framework adopted.

Table 3.2: Research Objectives to be addressed by the Research Methods

Research Objectives	Cross-reference for Approach Employed	Research Method
To conduct an in-depth academic analyses of existing standard forms of contract commonly used in the Malaysian construction contracting: To establish a set of standard form measurement and analyses methods; To assess the forms' contents using the established standard of measurement; To identify and review the practical issues and problems stemming from the usage of the existing standard forms	*Section 2.8.6 Form Research Methods* *Section 2.8.5 Quantitative Methods using Structured Questionnaire Survey.*	Section 3.5 Standard Form Analysis
To verify the problems and issues, identified via academic-analyses, of local construction industry Malaysian form users	*Section 2.8.2 Qualitative Research Method, Section 2.8.3 Data Collection For Qualitative Research Method and Section 2.8.4 Data Analysis For Qualitative Research Method*	Section 3.6 Qualitative Verification works
To suggest modules for the enhancement of each of the existing standard forms of contract chosen for the study	*Benchmarking method against NEC3; justification of selecting NEC3 as Section 2.5.1*	Section 3.7 Enhancement Modules
To conduct in-depth academic-analyses of the local procurement methods, contract types and standard forms of contract in construction industry: To identify the criteria taken into consideration when making decisions related to procurement method, contract type and standard form of contract to be used. To verify the relevancy of the criteria identified with the local construction industry. To establish the correlation between the identified criteria with the selection of available procurement	*Sect. 2.7 Procurement Strategies to identify the relevant selection criteria* *Sect. 2.8.3 Data Collection For Qualitative Research Method and Section 2.8.4 Data Analysis For Qualitative Research*	Section 3.8 Procurement Selection Framework

Table 3.2 (cont): Research Objectives to be addressed by the Research Methods

Research Objectives	Cross-reference for Approach Employed	Research Method
methods, contract types and the standard forms of contract.	*Method*	
To develop a local guiding framework for: Selection of procurement methods Selection of contracting strategies Selection of standard forms	*Decision Flow Chart*	Section 3.8 Procurement Selection Framework
To propose procurement framework that includes guidelines for standard forms selection with suggested enhancement modules able to enhance project contract administration in construction projects.	*Decision Flow Chart*	Section 3.9

3.2 Research Approach/Framework

This section outlines the research approach, specifically designed to achieve the research's aim and objectives for development of a systematic construction procurement framework towards the selection guidance of standard forms of contract alongside enhancement modules. It describes the method undertaken for conducting the research work. The framework of research is shown in Figure 3.1

It is noted that the research works are separated into **two (2)** major sections in order to achieve the aim and objectives of the research works and fulfil the gap of knowledge/research identified, as follows:

1. Establishing a form-analysis method to carry out the in-depth analyses of standard forms of contract and to establish the enhancement modules.
2. Establishing of the procurement framework towards the selection of standard forms of contract

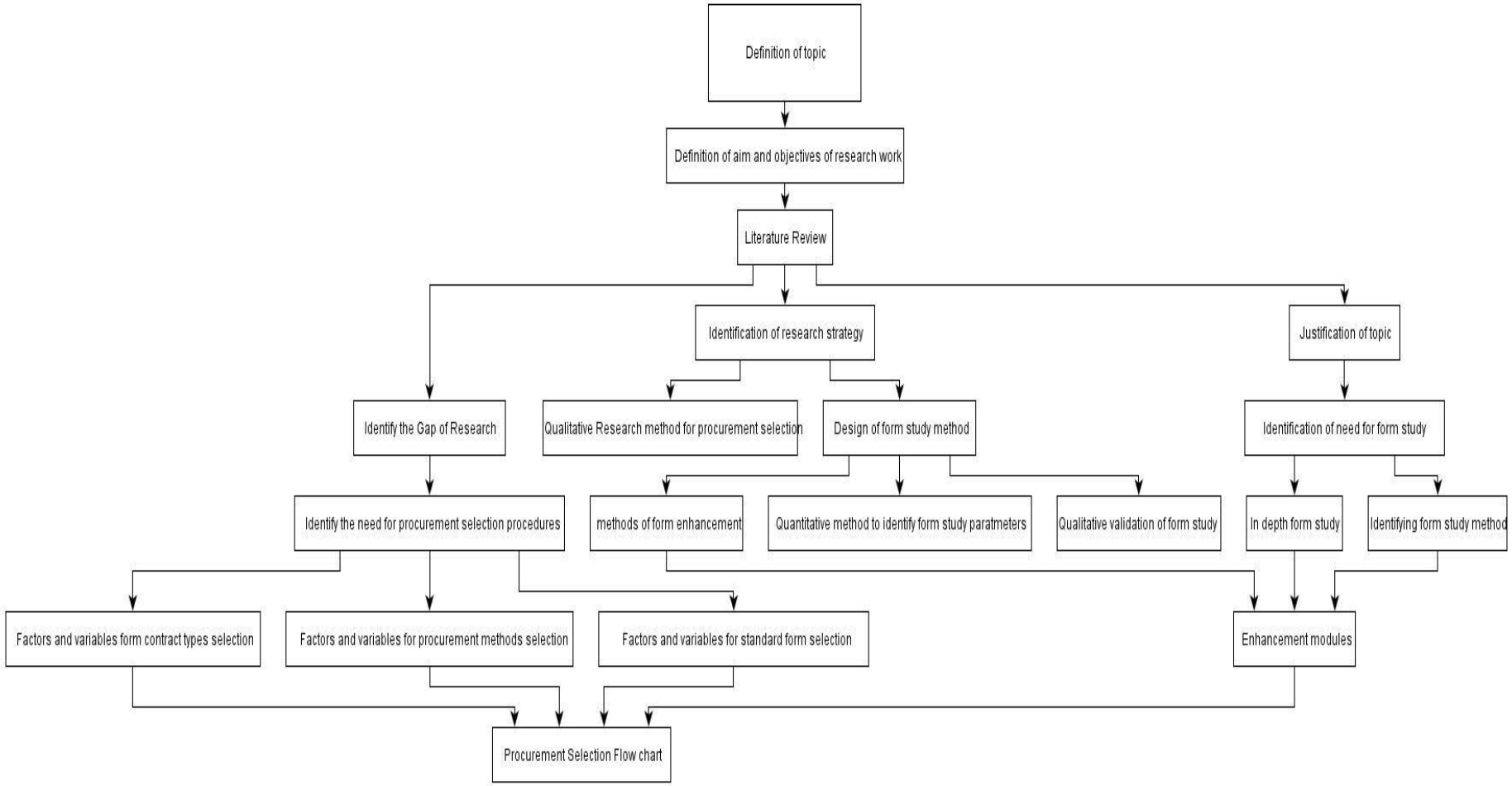


Figure 3.1: Research Approach/Framework

3.3 Literature Review

The literature review conducted of relevant past research by others related to contract administration is outlined in Chapter 2 above. Typical information sources included books, journal articles, conference papers and theses. The resultant secondary-research may be re-stated here as having:

- Justification of this research work's aim and objectives.
- Identification of previous research related to contract administration
- To establish the gap in knowledge areas of procurement and standard forms in Malaysia, namely that:
    1. Method of Form Research is not standardized
    2. Standard Forms commonly used to delivered projects are short of being 'ideal'
    3. A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia
- Gain an understanding of the current practice in form usage and form research methods available.
- To understand the problems and issues with the common standard forms used in Malaysia.
- Gain understanding of the various form improvement/enhancement methods available;
- Justification of NEC3 as the selected benchmark for form enhancement
- Identification and understanding of various procurement methods, contract types, and standard forms of contract available.
- Identifying the criteria or factors influencing selection of procurement method, contract types and standard forms of contract available.
- Understanding of the various strategies designed for procurement selection and the suitability the procurement strategies in different construction situations.
- Identification of research strategies and methods for the fulfilment of the research aim and objectives.

The following discussion focuses on detailing the various components of the research approach/framework designed to fill the gap of research/knowledge identified in pervious sections.

3.4 Overview of Research Methods

Based on the various strategies discussed at length above in Section 2.8, it is summarised here that there are essentially two types of approaches considered in this research, namely quantitative analysis and qualitative analysis. Quantitative analysis consist of studies in which the data concerned are collected and analysed in numeric forms with predetermined options from large number of respondents (Anderson, 2006). Meanwhile, qualitative analysis is concerned with collecting and analyzing information in as many forms as possible, exploring as much detail as possible with smaller number of respondents (Hughes, 2006).

The choice of which approach to use is dependent on the problem to be researched (Creswell, 2008). Table 3.3 below highlights the distinction between these two analyses.

Table 3.3: Comparison of Qualitative and Quantitative Analysis (Anderson, 2006)

Quantitative Analysis	Qualitative Analysis
Objective	Subjective
Test Theory	Develop Theory
Hypothesis	Research Question
Focus is concise and narrow	Focus is complex and broad
Facts are value-free and unbiased	Facts are value-laden and biased
Reduction, control, precision	Discovery, description, understanding
Measurable	Interpretive
Context free	Context dependent
Reasoning is logistic and deductive	Reasoning is dialectic and inductive
Uses instruments	Uses communications and observation
Highly controlled setting	Flexible approach
Strives for generalization	Strives for uniqueness
Sample size: n amount	Sample size is not a concern. Seeks "informal rich" sample

From the literature review on the matter in Section 2.8.1 and the above comparison between the two strategies, both Qualitative and Quantitative research methods are employed, with Qualitative method as pre-dominant. Q***uantitative*** research method via an extensive analysis of questionnaire surveys to construction industry project and contract administrator and personnel, is firstly applied to verify the need of the research and to determine the relevancy and weightings for the *attributes* for form-analysis. Section 3.5.1 to 3.5.4 will specifically explain the employment of such strategy.

Upon verification of the need for this research, results related to attributes will serve as a pre-cursor for specific-document form-analysis. Form analyses carried out will be based on the verified and weighted attributes of evaluation qualitatively via a form research method designed as outlined in Section 3.5.5 to 3.5.7. ***Qualitative*** research methods will then be employed to verify the problematic clauses found in the specific forms documents as

explained in Section 3.6. Qualitative research methods also identifies as a key research approach for the research works towards establishing the procurement framework for standard form selection and will be further detailed in Section 3.8.

3.5 Standard Form Analysis

3.5.1 Verification of Research Need

In order to further verify and substantiate the need for form-analysis, a desk-top study is carried out to assess whether there is currently a link between Malaysian standard form of contract and construction disputes in Malaysia; basically two (2) approaches go towards understanding this relationship:

a) Study of construction dispute cases resolved via litigation;
b) Study of construction dispute cases that are not involved in litigation.

3.5.1.1 Desk-top Study of Construction Dispute Cases (Litigation)

A detailed desk-top study has considered all of the construction disputes cases reported in the Current Law Journal (CLJ) from year 1999 to 2009. CLJ is a database that records all legal proceedings in Malaysia. It covers all legal cases including all construction dispute cases relevant for this research.

The dispute cases reviewed here is limited to the cases that occur in Malaysia and involves construction contract only. Through this analysis, the work fulfills the objective in order to validate the relationship between standard form and disputes based on the legal construction disputes cases. The study on these cases is done based on the following aspects;

- The year of occurrence of the construction disputes cases;
- The standard forms involved in the construction dispute cases reported in this ten years duration;
- The elements in standard forms that is involved in these dispute cases.

The construction dispute cases are analysed based on the three parts mentioned above. It focuses on the name of two parties involved in the construction disputes cases with the first name being the appellant and second name being the respondent. It is then followed by a brief description of cases and the judgment(s) that arise based upon proceeding. From this review, the type of standard form and the nature of construction dispute will be determined.

3.5.1.2 Study of Construction Dispute Cases (Non- Litigation)

The quantitative research method is chosen to collect data for the non-litigation construction dispute cases. A questionnaire survey approach is chosen as it is a ubiquitous research method that can be used to collect a range of numbered data/simple answers with clear variables. This method is further explained in section 2.8.5. In the self-administered survey for this research project, the respondents read the instruction and mark their answers to the questions (Graziano and Raulin, 2004).

This questionnaire survey is carried out in conjunction with and alongside a survey of the eight (8) attributes of evaluation for form-analysis, explained in Section 3.5.4 below. Sample of Questionnaire is as attached in *Appendix A.*Sampling processes are as detailed below in Section 3.5.4.1. The data gathering process for this component seeks to collect information related to:

- Profession of Respondents
- Standard Form of Contract of the Project Disputed
- The Nature of Construction Dispute/Issues under Dispute
- Dispute Resolution Method Used by the Respondent/s

Frequencies/Statistical Analysis method(s) are used in the construction dispute cases and questionnaire surveys data to obtain a frequency of the elements involved. The highest frequency of a selection will indicate the choice of the majority (Panneerselvam, 2006). Based on the frequency statistical analysis, results will be displayed in check lists then analysed in pie charts and bar charts. All the bars and charts use data labels to show the percentage of comparison between all the analysed parameters.

Based on the results obtained, a summary is compiled that reflects the individual data gathering conducted made. In this part, the elements of the standard form(s) are identified as major contributors of disputes (or otherwise) in the construction industry, directly affecting the performance of the industry at large becomes clear. Results are presented in Chapter 4, Section 4.2 and samples of raw questionnaires survey responses can be seen in *Appendix A.*

3.5.2 Attributes of Evaluation for Form Analysis

As discussed in Section 2.8.6, Bubshait and Almohawis' research on evaluating the general conditions of a construction contract points identifies eleven (11) elements for 'good' general conditions of contract. It is noted that Bubshait and Almohawis' method is requires an evaluator to rank the eleven (11) attributes and state their level of agreement with each of the

statements representing the attributes after reviewing the overall general conditions of contract.

This method is adapted and modified here for study of each individual clause in each of the standard forms chosen to be analysed. The method of study presented here is specifically designed for the use of standard form analysis.

Based on the various ideas of an 'ideal' standard form of contract, as discussed in Section 2.5, and Bubshait and Almohawis's research in Section 2.8.6, eight (8) attributes for evaluation are shortlisted and chosen for this study for detailed analysis of the standard forms of contract in Malaysia. The attributes for evaluation that are taken into consideration for evaluation and investigation purposes are restated here as:

- Clarity
- Comprehensiveness
- Completeness
- Consistency
- Flexibility
- Clear structured project management framework
- Fairness or role distribution
- Risk distribution

Where the attributes for evaluation of this study are explained as follows:

- Clarity:

1. Clarity is referred as easy to read; language used is easily understood without ambiguities; sentences are not long.
2. Clarity is the ease with which the language of the general conditions can be understood, and the absence of ambiguities (Bubshait and Almohawis, 1994).
3. Clarity requires that the clauses within a contract should fit together to form a logical whole, be procedurally correct and relevant to modern construction practice (Broome and Hayes, 1997).

- Comprehensiveness:

1. Comprehensiveness refers to the clauses/ conditions include a set of procedures and time frames, if necessary various to be used for contract administration

- Completeness:

1. All the necessary coverage on the issues is there in the clauses and is practical to implement.
2. Completeness is the degree to which the general conditions cover all contractual aspects (Bubshait and Almohawis, 1994).

- Consistency:

1. The clauses are relevant with one another, other parts of contract documents and with external applicable law and regulations.
2. Consistency is the level of conflict (if any) between clauses of the general conditions (Bubshait and Almohawis, 1994).

- Flexibility:

1. Clauses have enough options to cover for potential issues and problems.
2. Clauses are not overly closed ended or open ended.

- Clear structured framework for project management

1. Contract clauses are well structured in such a way that enables good and timely execution of various project management issues such as time, cost, quality and safety, people and team.
2. Contract clauses are well structured in such a way that enables good site and/or contract management.

- Fairness or role distribution:

1. Conditions describing the roles of the contracting parties fairly equally and are not one sided to either party of the contract.
2. Fairness is the degree to which the general conditions are fair to the contracting parties (Bubshait and Almohawis, 1994)
3. According to Australia's National unfair contract terms, a term is deemed to be 'unfair' when:

a) It causes a significant imbalance in the parties' rights and obligations arising under the contract; and

b) It is not reasonably necessary to protect the legitimate interests of the supplier (in this case the Employer)

c) An unfair term of a standard form contract is void but the contract continues to bind the parties if it is capable of operating without the unfair term.

- Risk distribution:

1. The risks in the conditions are equally distributed to both parties of the contract.

2. The five theoretical principles proposed by Abrahamson (1984) are first recognized in construction, i.e. a risk shall be allocated to the party:
   i. If the risk is of loss due to his own wilful misconduct or lack of reasonable efficiency or care;
   ii. If he can cover the risk by insurance and allow for the premium in settling his charges and it is most convenient and practicable for the risk to be dealt with in this way;
   iii. If the preponderant economic benefit of running the risk accrues to him;
   iv. If it is in the interests of efficiency to place in the risk on him; and
   v. If, when the risk eventuates, the loss happens to all on him in the first instance, and there is no reason under any of the above headings to transfer the loss to another, or it is impracticable to do so.

3.5.3 Parameters Used for Measurement of Attributes

Based on the literature above detailing an 'ideal' form in Section 2.5, the parameters (denoted by P), used for the measurement of each attributes of evaluation is selected, explained and summarised in Table 3.4 as follows:

Table 3.4: Parameters for the Measurement of Attributes

Attribute	Parameters, P	Clarification on Parameters
Clarity	1. Language used 2. Structure of sentence 3. Length of sentence	1. Simple English and non legalistic, no ambiguities and/or errors 2. Brief and concise, understand upon first read 3. Less than 40 words per sentence.
Comprehensiveness	1. Details of procedures, including 2. Time frame/s	1. Step by step guides towards resolving issues 2. Provision of time frame for parties to action within.
Completeness	1. Coverage of relevant issues	1. Covering the necessary issues within the same topic
Consistency	1. Conflict between clauses, references, cross referencing to other clause/external law	1. Conflict of issues between clauses and/or making a necessary cross referencing and/or make reference to external law/policy/ Act.
Flexibility	1. Procedures/options for application of various situation 2. Open ended/close ended	1. Provision to handle other similar situations under the same topic 2. Clause too loose and leaving decision to discretion of certain party or unnecessary rigid.
Clear Structured Project Management Framework	1. Procedures/option to enhance project management	1. Procedures to enhance site management (time, cost, quality, safety) 2. Procedures to enhance contract administration 3. Procedures to enhance team and/or people management
Fairness/Role Distribution	1. Balance rights and responsibilities of parties involved	1. List down the rights and responsibilities of Employer and/or his representatives 2. List down the rights and responsibilities of Contractor
Risk Distribution	1. Even distribution of negative impacts/consequences	1. Negative impacts to the contractor 2. Negative impacts to the Employer .

3.5.4 Quantitative Method ~ Structured Questionnaire Survey

Upon the determination of the attributes of evaluation and their relevant parameters, the next step is to determine the relevancy and ranking of the eight (8) attributes of evaluation. A quantitative survey method is employed with a survey done using the structured questionnaires method. The structured questionnaires will be distributed to construction industry's respondents who are generally in senior contract administration positions or are involved in using the standard forms of contract in Malaysia.

The respondents are asked to rank the eight (8) attributes for evaluation in a descending order of importance; i.e. the most important parameter will be ranked '1', and similarly the least important will be ranked '8'. The results of the structured questionnaire as shown in Section 4.3 will be used to distribute the weights of importance of the attributes to a clause analysis technique which leads towards the standard forms analyses. Sample of Questionnaire is as attached in *Appendix A.*

The questionnaires will be tested with ten (10) respondents because according to Burns and Bush (1998), a pre-test of 5 to 10 representative participants is usually sufficient to validate the questionnaire. They will be asked to evaluate the questionnaires to clarify any ambiguous questions. Then, from the feedback of the pilot test, the questionnaires are subsequently redesigned.

3.5.4.1 Sampling Process

Figure 3.2.shows the sampling procedures design to determine the sample size for structured surveys (detailed discussion of respective values is presented directly below the figure):

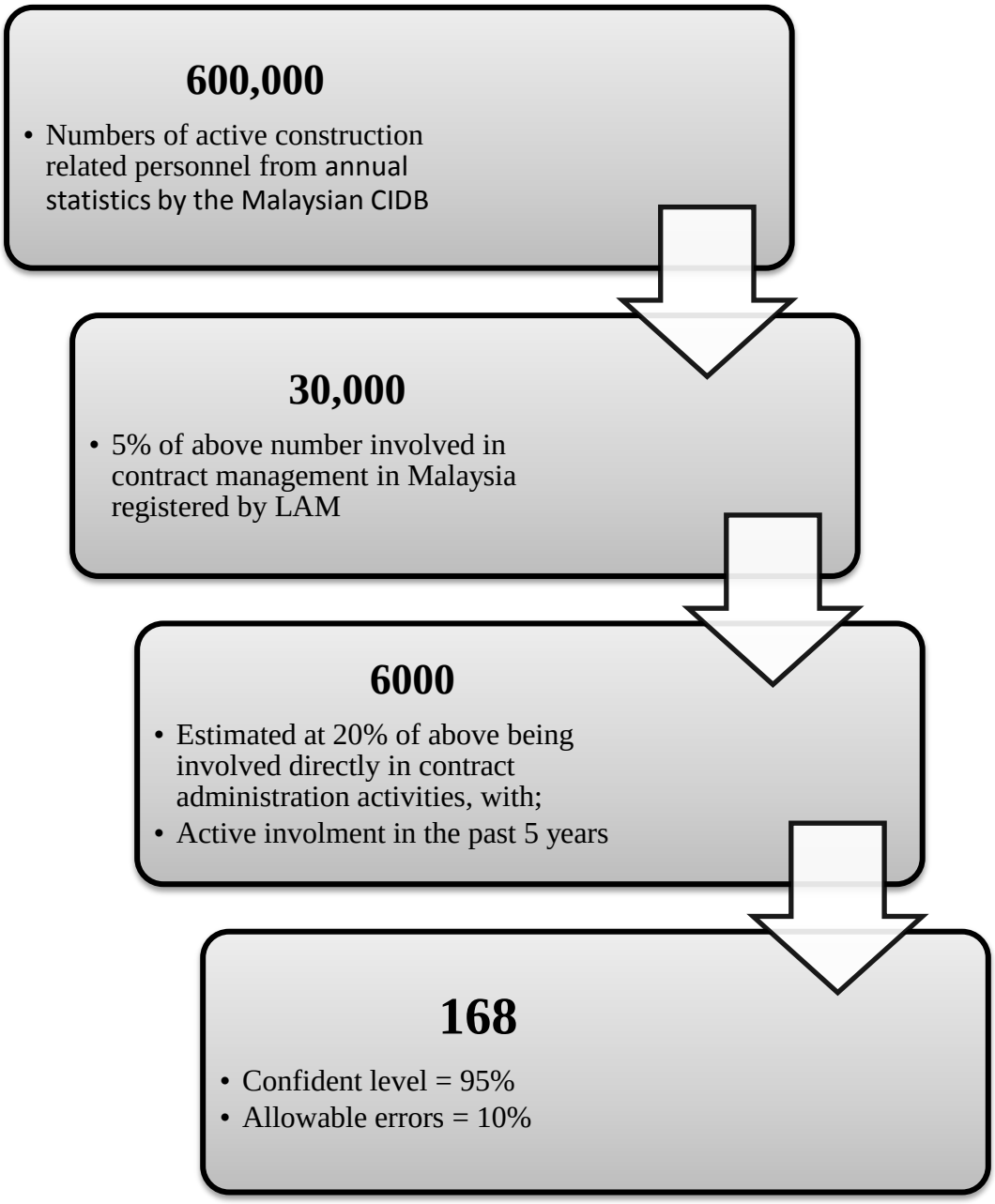


Figure 3.2: Sampling Procedures

Based on annual statistics published by Construction Industry Development Board of Malaysia (CIDB), an estimation of six hundred thousand (600,000) personnel are actively involved in the construction field (CIDB, 2008). Based on local practice, generally there is only five (5) percent of the total workforce involved in a project as actively forming the administration or at management level. This is further supported in the data obtained from Lembaga Arkitek Malaysia (LAM) which stated in their manual that a total of five (5) percent of personnel are further involved in administration and management of projects (LAM 1986). Hence, the sample size is further reduced to thirty thousand (30,000) personnel.

Out of the 30000, it is assumed that the survey will be carried out in major urban regions and cities in Malaysia, accessible by email and direct mail or hand delivery; and, this further reduces the population to six thousand (6000) personnel who are actively and directly involved in contract administration works at least over the past five (5) years. Due to a limitation of communications and mobilisations (in more rural areas), respondents are targeted from urban areas directly contactable by means of telephone or email.

Based on survey sample size calculation manual, published by Market Directions' Analytical Group of Market Directions (nd), stating a 95% confident level and 5% level of allowable errors, the minimum sample size for population of six thousand (6000) is one hundred sixty eight (168) (based on the calculation expressed in the following paragraph).

To ensure a satisfactory result that does indeed achieve the required 168 replies, a total of five hundred (500) survey forms were distributed by means of postal, emails and by-hand to collect industry's opinion on the degree of importance of the eight (8) attributes of evaluation identified as essential to the study of a standard form in the Malaysia construction Industry.

Based on the formula by Luck et al, (1987), the minimum sample number is as follows:

$$S = \frac{So}{1 + So / N} \qquad (1)$$

$$So = \frac{(Z)(Z) \times pq}{(e)(e)} \qquad (2)$$

Where S = size of the sample

N = size of the population

= estimated to be 30000 personnel involved in the construction industry

p = population proportion

= 6000 / 30,000

= 0.2

q = (1-p) or 0.8

e = the proportion of sampling error or 0.05

Z = the standard score corresponding to a given confidence level or 1.625

Therefore, $$So = \frac{(1.625)(1.625) \times (0.283)(0.717)}{(0.05)(0.05)}$$

= 169

Thus, $$S = \frac{214.32}{1 + 214.32 / 30000}$$

= 168

The sample proportion is calculated to be 0.2 (i.e. 6000/30000). Since the survey is on a one-on-one basis, chances of error occurring are less likely. Nevertheless, to account for possible errors in the qualitative answers of the questionnaires, the maximum standard error, V, is set as 5% or 0.05. Substituting the values into equations 4 and 5 as above, the minimum required samples are computed to be 168; with participants of the survey having direct contract administration duties and reviewed with reference to the *convenient sampling method* explained in more detail in Section 2.8.5.2 above. Results are presented in Chapter 4, Section 4.3 and samples of raw questionnaires survey responses can be seen in *Appendix A.*

3.5.5 Calculation of Importance Weighting, W_i for Each Attribute

The results from the survey are reviewed and summarized using the format shown in Table 3.5 below, towards further calculation able to determine the importance weighting.

Table 3.5: Format of Table to Analyse Result of Structured Questionnaire Survey

Attribute *Column A*	Weighting Points *Column B*	Rank *Column C*	Importance Weighting (out of 36) *Column D*

The explanation for each column of the Table 3.5 is as follows:

- Column A: Attribute

This column states the eight (8) elements identified as essential to a contract form in Malaysia construction Industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, fairness or role distribution and risk distribution.

- Column B: Weighting Points

The second column states the total of weighting points of the degree of importance (1-8) for each attributes by summing up the results given by the respondents from structured questionnaires surveys.

- Column C: Ranking

The third column states the ranking or arrangement based on the total of points of each attributes. The ranking is done giving one (1) to the attributes that carry the least total weighting points and eight (8) to the attributes that carry the biggest value of total of weigthing points.

- Column D: Importance Weighting (out of 36)

This column states the importance weighing of each attributes with the highest ranking attributes being given lowest importance weighting and vice versa. Total of importance weighting will be sum of importance weighting for the eight (8) attributes will be thirty six (36).

In order to achieve the importance weighting denoted as W_i for each attribute, the magnitude of importance of each attribute from ranking the results of the structured questionnaires surveys is converted to percentages using formula (4) below and assigned to each attribute as 'importance weighting', W_i , where i is the attribute evaluation.

$$\frac{(\boldsymbol{Weight})}{\mathbf{36}} \times \mathbf{100}\% = \boldsymbol{Wi},\ \boldsymbol{Importance\ weighting\ of\ each\ attribute\ in}\ \% \qquad (4)$$

In other words, all eight (8) attributes of evaluation will have an importance weighting, W_i which will remain constant throughout the form analysis. Results for the calculation of importance weighting, W_i are presented in Chapter 4, Section 4.3.2.

3.5.6 Level of Adequacy, Ai for Each Attribute

Upon confirmation of the W_i for each attributes of evaluation, the researcher has to deliberate the level of adequacy, denoted by A_i of the specific clause with respect to each of the eight (8) attribute of evaluation. The level of adequacy designed is somewhat similar to the Likert Scale Method.

10 – Perfect Clause

8 – Minor Improvement required

6 – General Improvement required

4 – Major Improvement required

2 – Clause re-drafting necessary

In order to have a repeatable structured technique for deliberation, analyses are carried out based on parameters within each attribute as set-out in previous Table 3.4.

The following Table 3.6 sets out a systematic method of clause evaluation where, under each attribute; all the clauses are analysed according to the parameter/s pre-determined in Table 3.4. The researcher's deliberation is recorded under the parameters and summed-up as number-of-problem-areas.

Table 3.6: Clauses Analysed In Terms Of Parameters Under Each Attributes of Evaluation

Clause Title and No	Parameters, P	Description of Problem Areas	Total Problem areas	Level of Adequacy
	P1			
	P2			
	P3			

The relationship between the Level of Adequacy and the number of problem areas (as listed in Table 3.6above) is represented in table 3.7 as follows.

Table 3.7: Level of Adequacy, A_i as per indicated by the Problem Areas

Level of Adequacy, A_i	No. of Problem areas
10 – Perfect Clause	None
8 – Minor Improvement Required	1-2 problem area/s
6 – General Improvement Required	3 - 5 problem areas
4 – Major Improvement Required	6-8 problem areas
2 – Clause re-drafting necessary	More than 8 problem areas

Upon completion of A_i (deliberation of the level of adequacy) for each attribute, each attribute will have a score named here as the attribute's score obtained by the multiplication of the importance weighting of the said attribute W_i and level of adequacy of the clause based on the same attribute, A_i.

3.5.7 Qualitative Form Analysis

Form analysis is then carried out via the calculation of the Total Evaluation Score (TES) Scoring System (as adapted from Bubshait and Almohawis's (1994) research method), for every clause in each of the standard forms of contract selected for review. The formula (3) indicated as follows is used.

$$\boldsymbol{TES} = \frac{\sum \mathbf{W_i} \times \mathbf{A_i}}{\mathbf{10}} \quad (3)$$

Where:

TES = total evaluation score

W_i = weight (importance) of attribute *i*

A_i = Level of adequacy related to attribute *i*

Calculation of the importance weighting as mentioned previously will form the W_i of the TES formula. W_i for each of the eight (8) attributes will form the first component of TES scoring system. The second component, A_i (the level of adequacy) of each attribute under the said clause. Summation of the attributes' scores will give the Total Evaluation Score (TES) for the particular clause to indicate the adequacy level of the particular clause.

Modified from Bubshait and Almohawis's (1994) research, the method adopted here for an evaluation of the individual clauses in the selected standard forms will be analysed with the following designed instrument, as shown in Figure 3.3 below, and deemed repeatable for all clauses in all standard forms, selected for analysis.

Attributes	Importance weightings	Redrafting needed	Major	General	Minor	Perfect	W XA
1. Clarity		2	4	6	8	10	
2. Comprehensiveness		2	4	6	8	10	
3. Completeness		2	4	6	8	10	
4. Consistency		2	4	6	8	10	
5. Flexibility		2	4	6	8	10	
6. Clear structured project management framework		2	4	6	8	10	
7. Fairness or role distribution		2	4	6	8	10	
8. Risk distribution		2	4	6	8	10	
Total:	100				Total score:		

Figure 3.3: Clause Evaluation Instrument Designed

The five (5) most popular forms in Malaysia used for the (local industry dominant) Traditional Procurement method (totalling 277 clauses across 5 forms) included in this form-study, using the method described in Section 3.4.3 to 3.4.7 are as follows:

- PWD 203 A with 78 clauses
- JKR Sarawak Form of Contract with 49 clauses
- PAM 2006 with 38 clauses
- IEM 89 CE with 57 clauses
- CIDB 2000 with 49 clauses and 6 option modules

Form analyses involves a detailed analysis on all the clauses, across all the five (5) standard forms of construction contract with respect to the aforementioned eight (8) attributes for evaluation. Each clause of the standard forms will have a Total Evaluation Score (TES).

The magnitude of positivity and negativity of the clause will be described with reference to the clause's TES, as categorized in to a table according to the range of total evaluation score (TES) as shown in Table 3.8 below:

Table 3.8: The Magnitude of Evaluation of TES

Range of Total Evaluation Score (TES)	Magnitude of Evaluation
20-39	Highly Negative
40-49	Negative
50-59	Low Negative
60-69	Low Positivie
70-79	Positive
80-89	Highly Positive

In this research, clauses with Total Evaluation Score (TES) of 70 or below will be categorised as *Problematic Clauses*. Form analysis from this component of research is presented in detail in Chapter 4 below.

In order to justify the reliability and validity of the results from the in-depth form analysis, a verification study is subsequently conducted for the identified *Problematic Clauses*.

The following section discusses the method used for verification.

3.6 Qualitative Verification of Form-Analysis

In order to verify the problematic clauses, it is important to firstly draw out the problematic clauses, that is, clauses of TES less than 70 points. These clauses are then identified as 'problematic clauses' and hence need to be verified with the users of the forms in the construction industry.

3.6.1 Verification of the Problematic Clauses

Based on the nature of the verification works, a *Phenomenological Research* method is adopted. Details of this qualitative research approach are discussed in Section 2.8.2.1. Among all the qualitative data collection methods, semi-structured interview techniques (as

discussed in Section 2.8.3) is chosen to collect the data required for this aspect of the research work.

According to Qu and Dumay (2011) the semi-structured interview involves prepared questioning guided by identified themes in a consistent and systematic manner interposed with probes designed to elicit more elaborate responses. Thus, the focus is on the interview incorporating a series of broad themes to be covered to help direct the conversation toward the topics and issues sought. Generally, interview guides vary from highly scripted to relatively loose. However, the guides all serve the same purpose, which is to ensure the same thematic approach is applied during the interview.

The semi-structured interviews are conducted face to face with the interviewees and recorded for later transcription and coding, unless interviewees do not give permission. In this case detailed field notes are taken throughout the interview. The following discusses the sampling methods and procedures used for this verification work.

3.6.1.1 Sampling

As mentioned in Literature in Section 2.8.2.2, the aim of all quantitative sampling approaches is to draw a representative sample from the population, so that the results of studying the sample can then be generalized back to the population. Sampling is the process of choosing the sample for research, in this research sampling is the process of choosing interviewee for the semi-structured interview. Qualitative research does not require collection data from everyone in a community in order to get valid findings, but only a sample of population (Mack et al., 2005).

Purposeful sampling with the criterion sampling strategy is selected here for this study. Therefore, the interviewees of the interviews conducted here are carefully selected, so that they contribute valuable opinion for the research.

There are a few criteria that the interviewee must fulfil to consider as key expert interviewees qualified for the interviews. The criteria for identifying these key expert interviewees are as below:

- The interviewees must be practicing and are involved in the construction industry in Malaysia with at least ten (10) years of experience;
- The interviewees must have had used the said standard forms of contract in previous construction projects;

- The interviewees have legal knowledge and good experience with construction contract administration.
- Selection is prioritised with industry experts

3.6.1.2 Sample Size

According to Patton (2002), there are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility and what can be done with available time and resources. In the end, sample size adequacy, like all aspects of research, is subject to peer review, consensual validation, and judgment. What is crucial is that the sampling procedures and decisions be fully described, explained, and justified so that information users and peer reviewers have the appropriate context for judging the sample. Struwig and Stead (2001) also mentioned that it is not possible to state an ideal size to consider for the purpose and goal of the study

Qualitative researchers are more interested in whether the information from the sample is rich in data and thick in description than the extent to which the data from the sample can generalize to the population.

As this area of *form-research* requires *very specific levels of expertise and experience*, this study was pleased to have identified and gained access to, a total of eighteen (18) key expert interviewees who were selected and interviewed over twenty three (23) interview sessions, to assess and record judgment of the five (5) standard forms chosen.

The semi-structured interviews are carried out with a structured and guided set of questions designed for verification works. The structure and procedures of the interviews is as per indicated in the following section.

3.6.1.3 Structure and Procedures of Interviews

The background of interviewees is carefully checked. Any potential conflict of interest must be declared to ensure that the result of this research is fair and representing the opinion of the users of the form in the industry; no conflict of interest has occurred.

All potential interviewees were informed via emails or phone calls of the intention to request for their participation in the verification exercise. They were given an explanation of the details of the project before their permission was secured.

Upon agreeing to participate, the problematic clauses and their respective attributes' scores and interview questions were emailed and in some cases hand delivered to the interviewees before setting an interview date, venue and time. This gives interviewees time to understand the questions and prepare for the interviews.

During the interviews, interviewees were given more time for a clear explanation of the purpose and impact of the research, and interviewees understood that participation is of voluntary research basis where there is no token of appreciation in any monetary form. Interviewees had the right to refuse their participation in this research. Interview sessions were typically 1-3 hours, depending on the availability of the interviewees.

The interviews were conducted in a semi-structured manner. The interview questions were divided into three sections. The first section of the interview is to verify the background and industry experience of the interviewee to ensure that they are indeed key expert interviewees for the particular forms. The questions involved the name of the interviewee, organization, designation, level of education, experience in construction experience, and type of standard form used before.

The second section of the interview focused on the verification of problematic clauses identified from the form analysis. If time permitted, interviewees will be asked all of the below:

- to assess the attributes' scores for the problematic clauses given in the form analysis;
- whether they agree/disagree with the score given;
- their opinions and experience with the listed problematic clauses;
- whether they have site/contract administration experience with the listed problematic clauses; and
- finally, interviewees were asked of any other problems they have encountered with standard form other than the listed problematic clauses.

The final section of the interview includes the interviewees' recommendations on how to improve the form and the clauses in general. Interview results are presented in the *Appendix C* of this research work. Samples of raw interview transcript can be seen in *Appendix D*.

3.6.2 Data Analysis

The analysis of data gathered from semi-structured interviews with the users of standard forms of contract is carried out using a selected coding method. Marshall and Rosman (2006) mentioned that coding data is the formal representation of analytic thinking. Rigorous

intellectual work of analysis generates categories and themes. The researcher applies the selected coding scheme to those categories and themes and diligently and thoroughly marks passages in the data using codes.

The table shown in Table 3.9 represents each problematic clause is developed specifically to analyse the interview results for all problematic clauses in the standard forms. In the context of the Malaysian standard forms:

- A 'Disagree' column is ticked when the interviewee disagrees directly or indirectly that the attribute is causing practical problem when using the form.
- A 'Neutral' column is ticked when the interviewee does not cover on the specific attributes and has no comment on the attribute in the clause.
- An 'Agree' column is ticked when the interviewee directly or indirectly agrees that the specific attribute is causing problem when using the form or when negative comments of the specific clause are given by interviewees.

Table 3.9: Coding Table Designed for Problematic Clauses

Attribute	Score	Interviewee 1			Interviewee 2			Interviewee 3			Interviewee 4			Interviewee 5		
		A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
Clarity																
Comprehensiveness																
Completeness																
Consistency																
Flexibility																
Clear Structured Project Management Framework																
Fairness or Role Distribution																
Risk Distribution																

Where,

A= Agree

N= Neutral

D= Disagree

After the coding process, problematic clauses can be validated by the summation of repetition of negative comments by the interviewees. As more interviewees think those clauses as problematic, the higher the possibility that those clauses 'are' problematic to the users in the construction industry.

The verification of problems and issues are based on the number of interviewees agreeing with the problems. The verification is divided into groups of strongly verified, verified and verified with low frequency of occurrence, and not verified as present in Table 3.10.

Table 3.10: Level of Verification for Problematic Clauses

Level of Verification	No of interviewees agreeing to the problem attributes
Strongly verified	4-5 numbers of interviewees agreeing to the problem attributes
Verified	3 number of interviewees agreeing to the problem attributes
Verified with Low Frequency of Occurrences	1-2 number of interviewees agreeing to the problem attributes
Not verified	None of the interviewees agreeing to the problem attributes

When there are five (5) interviewees disagreeing that the attribute is problematic in that clause, the clause is considered *not verified* as problematic to form users. Non validated attributes indicate that the problems are only problematic in *academic study* and not perceived as problems when actually using the form in practice.

Results and analysis for all verification works conducted for this research project are detailed and presented in the following Chapter 4, Section 4.4 to 4.8.

3.7 Modules for Enhancement

The "problematic clauses" which have been evaluated and verified in the previous section will subsequently be selected for constructive criticism as part of an enhancement process in the form of modules. As clauses are evaluated based on the eight (8) attributes of evaluation, modules of improvement will be based on the same eight (8) attributes.

As mentioned in Section 2.5.1 above, although not yet the 'ideal contract', the New Engineering Contract (NEC3) has been widely commended for its achievement in administrative-efficiency when compared with other contracts. NEC3 has attracted considerable global interest as it slowly becomes a more preferred choice of contract in various circumstances. Commentaries on the NEC 3 are presented to develop *enhancement modules* in a Malaysian context, for the main Malaysian standard forms.

3.7.1 Benchmarking

As NEC3 has been argued in an international sense as a set closer/closest to a best-practice standard form (alongside a recognition that NEC3 itself is highly unlikely to be adopted locally, as discussed in Section 2 above) recommendations for enhancement of the current Malaysian main standard forms through benchmarking good-practice procedures are adopted. Problematic clauses will be benchmarked against NEC3. The steps of the benchmarking process designed for the forms analsyed are shown as below:

Step 1: "Problematic Malaysian Clauses" are assessed based on the eight (8) attributes and their respective parameters will select to be benchmarked.

Step 2: Similar/Relevant clauses identified in NEC3 will be studied and reviewed with the commentaries of NEC3 contextualised for the local market.

Step 3: Positive characteristics with respect to the eight (8) attributes found in NEC3 will be used to suggest improvement modules for the "Problematic Clauses" in the principal Malaysian standard forms.

Modules for enhancement based on the attributes will be set up under each relevant problematic clause of the respective forms to enable users of the forms to go towards improvement. The set of developed enhancement modules are summarised and presented following Chapter 5, for the purpose of:

- Serving as a 'warning' for the potential pitfalls in the existing forms' clauses during contract administration.
- Carrying out systematic checking and adjustment to individual clauses, rather than ad-hoc form or clause/s 'fixing'
- Serving as a guideline to synchronize form(s) enhancements for all Malaysian standard forms in order to achieve the idea of a 'suite' of enhanced standard forms for the Malaysian construction industry with reference to current existing Malaysian standard forms.

Upon addressing the 'quality' issues of the standard forms in use, subsequent work is required to fill the knowledge gap that exists whereby, locally, no neither formal nor complete selection framework is available to guide selection of the most appropriate *procurement route,* towards assisting choice of an appropriate standard form of contract. The section below discusses the approach to develop such a selection framework.

3.8 Development of Selection Framework

For the development of the selection framework, a qualitative analysis approach is selected and adopted. Based on the comparison quantitative and qualitative research method in Section 3.4 and the detail discussion in Section 2.8.2.1, again a *Phenomenological Research* method is adopted for data-gathering.

3.8.1 Data Collection Method

As discussed in Section 2.8.3, in-depth interview is deemed to be most appropriate data collection to suit the Phenomenological Research methods which seek to draw out the experience and judgment of the interviewees towards issues related to procurement route selection, especially standard forms of contract selection. From the various interview methods, a semi-structured interview technique is again employed in this case. According to Cohen and Crabtree (2006), the benefits of using a semi structured interviews are:

- Interview questions can be prepared ahead of time.
- Interviewer can prepare and appear competent during the interview.
- Semi-structured interview allow participants the freedom to express their views in their own terms compared to questionnaires.
- Semi-structured interviews provide reliable and comparable qualitative

As alluded to previously, Qu and Dumay (2011) argue that the semi-structured interview involves prepared questioning guided by identified themes in a consistent and systematic manner interposed with probes designed to elicit more elaborate responses. Thus, the focus is on the interview guide incorporating a series of broad themes to be covered during the interview to help direct the conversation toward the topics and issues about which the interviewers want to learn. Generally, interview guides are highly scripted or relatively loose but must ensure consistently, are conducted face to face and recorded; interview questions address *procurement strategy towards the selection of standard forms of contract* in an open-ended manner to allow, clarify and elaborate on participants' responses.

3.8.1.1 Sampling and Sample Size

As mentioned in the previous Section 3.6.1.1 and 3.6.1.2 (and following Marshall's (1996) work), qualitative sampling approaches draw a representative sample from the population that can then be generalized back to the population with criterion sampling again chosen as the sampling for this method. Criteria for interviewees to be considered as key expert interviewees include: involvement in the construction industry for a minimum 10 years; managerial/key decision maker position and/or involvement in the planning and development of the projects; involvement in contract set up and/or administration; client, contractor or consultant representation; and, public sector or private sector experience.

And Creswell (2007) in Section 2.8.2.3 recommended a sample of minimum five (5) to a maximum twenty- five (25). As this area of procurement and selection strategy requires the involvement key decision makers of the construction organisations, usually involving key managing personnel, this study has gained access to six (6) key Malaysian construction industry prime movers for their opinion, experience and expertise in selection of procurement strategies towards the selection of standard forms of contract.

3.8.1.2 Structure and Procedures of Interview

The structure and procedures of interviews are similar to those detailed in Section 3.6.1.3 for the verification of problematic clauses. Again as with the verification work in the previous section 3.6.1.3, the key expert interviewees must be given clear explanation of purpose. The background of interviewees requires checking to avoid potential conflict of interest to ensure that the result of this research is fair and representing of the opinion of the industry with respect to the *selection of procurement strategies towards the selection of standard form of contract*.

The semi-structured interviews will primarily be divided to four sections.

Section 1- Interviewee's Background: this section is to obtain the information on the background of the interviewees. The important information that is required in this section is: position of the interviewee; experience; and Client/Contractor/Consultant/Public/Private representation.

Section 2- Procurement Methods

This section covers information on procurement method. The important information that is required in this section includes the need:

a) To determine whether the procurement methods that are considered are used by interviewees. The considered procurement strategies are:
   - Traditional Procurement
   - Design and Build Procurement
   - Management Procurement

b) To determine if there are other procurement methods that has been used beside the stated ones.

c) To assess if a guideline for selection of procurement method is important.

d) To assess whether the identified criteria for procurement selection is relevant or not. The identified criteria are:
   - Speed
   - Complexity
   - Quality
   - Flexibility
   - Certainty
   - Competition
   - Responsibility
   - Risk

e) For relevant criteria, explain on why each criterion is relevant and how does it influence on procurement method selection.

Section 3- Contract Types

This section covers information on contract types. The important information that is required in this section is:

a) To determine whether contract types that are considered are used by the interviewees. The considered contract types are:
   - Lump Sum Contract
   - Measurement Contract
   - Cost Reimbursement Contract
   - Turnkey Contract
   - Design and Build Contract
   - Management Contract
   - Construction Management Contract

b) To determine if there are other contract types that has been used by the interviewees beside the stated ones.

c) To assess which contract types is suitable for traditional procurement, design and build procurement and management procurement.

d) To assess if a guideline for selection of contract type is important.

e) To assess whether the identified criteria for contract type selection is relevant or not. The identified criteria are:
   - Nature of work
   - Scope of work
   - Responsibility
   - Certainty of final cost
   - Time against scope of work
   - Variation of work
   - Risk allocation

f) For relevant criteria, explain on why each criterion is relevant and how does it influence on contract type selection.

Section 4- Standard Forms of Contract

This section covers information on standard forms of contract. The important information that is required in this section is:

a) To determine whether standard form of contract that are considered are used by the interviewees. The considered contract types are: JKR 2006 form, PWD203 forms, PAM 2006 forms, IEM 89 CE form, and CIDB 2000 form; and, to determine if there are other standard forms of contract that have been used by the interviewees beside the stated ones.

b) To assess if a guideline for selection of standard forms of contract is important.

c) To draw out with interviewees' opinion on the advantages and disadvantages of the considered standard forms of contract.

d) To assess the opinion of the interviewees on the major differences between each forms.

e) To assess whether the identified criteria for standard form of contract selection is relevant or not. The identified criteria are:
   - Procurement strategy

- Contract type
- Nature of Work
- Sector
- Clarity
- Completeness
- Comprehensiveness
- Flexibility
- Clear framework
- Risk and Role Distribution

f) For relevant criteria, explain on why each criterion is relevant and how does it influence on standard form selection.

3.8.2 Data Analysis

Qualitative data consist of words and observations; analysis and interpretation of the data are required to bring order and understanding of these data (Powell & Renner, 2003). According to Charmaz (2006), coding incident to incident is the best way to interpret the data collected. There are three stage processes for the data collected for this component of research work can be broken down into the following steps: Coding the data by identifying, assigning and reducing interviewees' results to specific selection criteria as codes; Categorizing these codes to determine the correlation between the identified criteria with the selection of procurement method, contract type and standard form of contract; and the interpretation and display of this data to draw conclusions.

The data collected and analysed towards procurement framework suggestions is be presented in Chapter 6 of this work.

3.8.3 Decision Flow Chart

From the semi-structured interviews, the relevancy of the identified criteria are obtained and ranked accordingly. The influences of identified criteria known from the semi-structured interviews are coded as correlations of the identified criteria with the selection of procurement method, contract type and standard form of contract.

From result and analysis, suitable questions were designed to represent each criterion and from the correlation of the identified criteria, the derived questions are matched with the most suitable procurement method, contract types and standard forms of contract. From the

matches, the decision flowchart for procurement method, contract type and standard form of contract selection was generated. A program was written to provide the users with the ease of using the flowchart.

Results generated by this research method are presented in Chapter 7 of this work.

3.9 Procurement Selection Framework

A summary of all the findings of this research as well as all inferences made from the investigation and evaluation require presentation in a clear and concise manner. This ensures that no data is lost during succeeding conclusions sections. In addition, this summary serves as a quick cross-check of localised problems with the ability to lead to a more holistic discussion.

At the end of the research, a complete procurement framework is put together based on the results shown in Chapter 6, and the correlation analysis in Chapter 7, and the results from form study in Chapter 4, and the enhancement modules in Chapter 5.

Results obtained and analysed enable the researcher to design a complete construction procurement framework which involves contracting and form selection strategies for the Malaysian construction industry across its 13 states locally.

This framework will work towards the selection of the standard form of contract deemed fit-for-purpose for the local construction industry. Upon directed selection of the standard form, form users can then refer to the enhancement modules for standardised form amendments and enhancement procedures, thus creating a harmonised suite of forms for the Malaysian construction industry.

A program was written to provide users with an easy-to-use decision flowchart. This framework can be used as a procurement and form selection guideline for Malaysia with reference to the standard traditional general contracting model.

3.10 Limitations of Research Methods

The following notes the limitations of the research methods applied to carry out the work:

1) Form analyses are carried out in a clause by clause manner with results' respective TES for the clauses. Final scores for the standard forms is expressed as the Magnitude of

Evaluation. It is noted that contract must be read as a whole and therefore, the form's Magnitude of Evaluation may not be an exact representation, but rather an estimation of the quality of the form.

2) Benchmarking method focuses on the problematic clauses only. As again, the contract must be read a whole and any changing of the one clause without reference to all the others may not be advisable, enhancement modules are presented as enhancement to *problematic issues*, instead of clauses and should be used as guideline to make improvements to such issues.
3) Procurement framework towards the selection of standard form designed with the enhancement cannot be tested on real life case study as subject matter is a broad solution, which requires a specific opportunity to be implemented.

3.11 Logic Flow of Research Work

A graphically summary for sections 3.1 to 3.9 is presented below in Figure 3.4

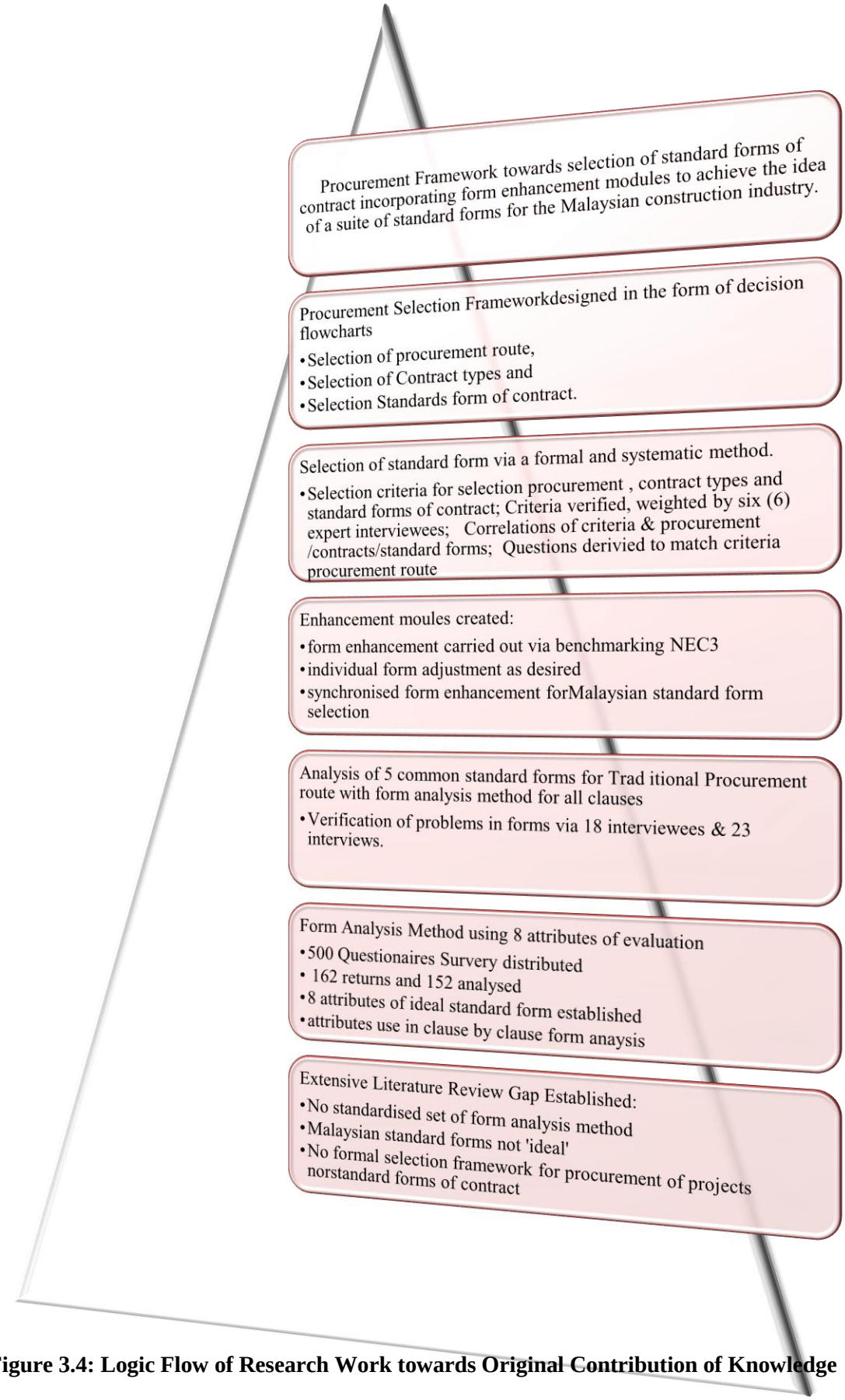


Figure 3.4: Logic Flow of Research Work towards Original Contribution of Knowledge

The research framework and research methods discussed in this chapter are summarised in the logic-flow, pyramid of research work, summarised above in Figure 3.4, as representing graphically the following approach:

- Procurement Framework towards selection of standard forms of contract incorporating form enhancement modules to achieve the idea of a suite of standard forms for the Malaysian construction industry.
- Procurement Selection Framework designed in the form of decision flowcharts
    - Selection of procurement method,
    - Selection of Contract types and
    - Selection Standards form of contract.
- Selection of standard form via a formal and systematic method.
    - Selection criteria for selection procurement, contract types and standard forms of contract; Criteria verified, weighted by six (6) expert interviewees; Correlations of criteria & procurement /contracts/standard forms; Questions derived to match procurement route
- Enhancement modules created for:
    - form enhancement carried out via benchmarking NEC3
    - individual form adjustment as desired
    - synchronised form enhancement for Malaysian standard form selection
- Analysis of 5 common standard forms for Traditional Procurement with form analysis method designed for all clauses
    - Verification of problems in forms via 18 interviewees & 23 interviews.
- Form Analysis Method designed using 8 attributes of evaluation
    - 500 Questionnaires Surveys distributed
    - 162 returns and 152 analysed
    - 8 attributes of ideal standard form established
    - attributes use in clause by clause study
- Extensive Literature Review Gap Established:
    - No standardized set of form analysis method
    - Malaysian standard forms not 'ideal'
    - No formal selection framework for procurement of projects nor standard forms of contract

The following chapter detailed below represent the results of the analytical works carried out using the methods described in this chapter.

4. FORM ANALYSIS

4.1 General Overview of Chapter

This chapter presents the results and detailed findings from the form-analysis carried out for the five (5) most commonly used standard forms of contract in Malaysia.

The form-analysis method is established and explained in this chapter.

The eight (8) attributes established for evaluation purposes of standard forms, alongside developed and determined parameters are verified and ranked via a structured survey process that forwarded developed questionnaires to five-hundred (500) pre-selected participants, with one hundred fifty two (152) respondents and respective responses subsequently deemed appropriate for detailed analyses.

Form analysis results are verified across twenty-three (23) interviewee sessions held face-to-face, with the eighteen (18) key Malaysian construction industry professional prime-movers, selected to provide expert judgement.

The chapter also presents results for the study of the relationship between construction disputes and standard forms of contract, which further verify the need for an extensive form analysis.

Table 4.1 below, provides the general overview of the discussion presented in Chapter 4, whilst Figure 4.1 identifies where these Chapter 4 findings are placed, in the context of the overall data-generation carried-out for this research-project, and the stage at which Chapter 4 sits in the overall quest towards an original contribution to knowledge.

Table 4.1: General Overview of Chapter 4

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards Addressing Research Problem & Need
Chapter 3	*As previous*		
Chapter 4	4.1 General Overview of Chapter 4.2 The Need for Form Study 4.3 Form-Analysis Method 4.4 Form Analysis - PWD 203A 4.5 Form Analysis - JKR Sarawak Form of Contract 4.6 Form Analysis - PAM 2006 4.7 Form Analysis - IEM 89 4.8 Form Analysis - CIDB 2000 4.9 Section Summary	Chapter 4 presents: Analysis of construction disputes in Malaysia and the relationship of disputes with standard forms towards further establishing the urgent need for form enhancement Form Analysis method that needs to be established in order to systematically analyse standard forms with a predetermined set of attributes of evaluation. Results of the 500 questionnaires sent out, with 162 returns and 152 analsyed towards analyses to establish the eight (8) attributes of form-analysis All Five (5) forms tested and analysed with the form-analysis method proposed and presented as 1) Overall Performance, 2) Clause Analysis and 3) Discussion and Verification of Problematic clauses. Form Analysis reaffirming Malaysian Standard Forms of Contract as short of being 'ideal'. Twenty (23) interviewees carried out with eighteen (18) key expert interviewees to verify the results from the form-analysis	Chapter 5 suggests recommendations for a coordinated form enhancement exercise as a way forward to create a suite of Malaysian forms.

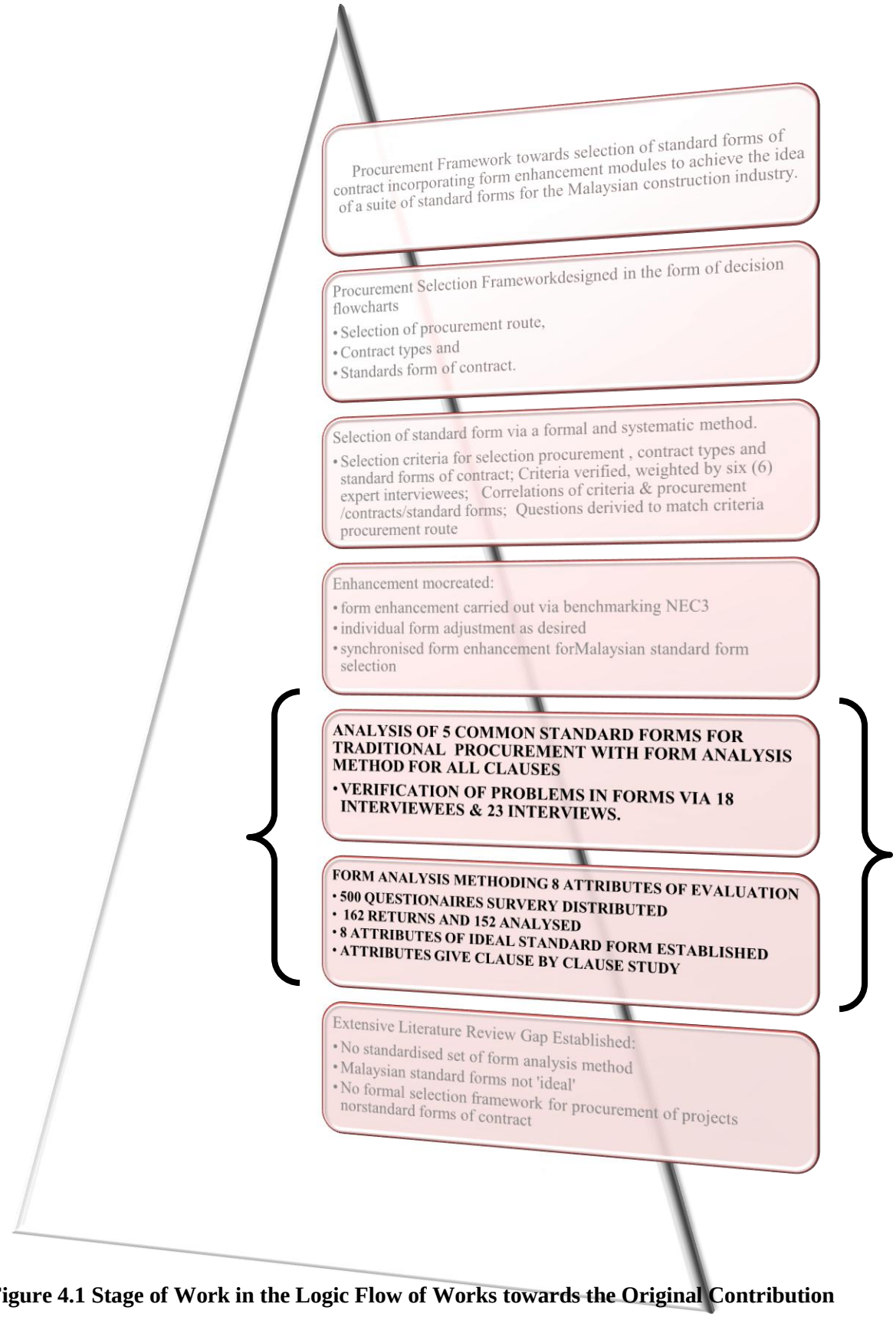


Figure 4.1 Stage of Work in the Logic Flow of Works towards the Original Contribution to Knowledge

4.2 The Need for Form Study

In order to further substantiate and verify the need for form-analysis in Malaysia (to build upon the literature review conducted and presented in Chapter 2 Section 2.3) this research project sought to examine any direct relationship between construction disputes and standard forms.

Having compiled and assessed the information presented in the Malaysian Current Law Journal (CLJ), for all petitions, across all sectors of activity, and having isolated only those cases involving construction and engineering, it is seen that there were thirty three (33) Malaysian cases related to construction disputes reported across a ten year duration starting from year 1999 to 2009.

Whilst at first glance this might seem relatively low for a ten year period, the figure must be placed into the context of the traditional and widespread lack of willingness amongst stakeholders in the Malaysian construction industry to go beyond (internal) mediation/arbitration processes, and seek retribution from the law courts. The building industry in Malaysia is a small relatively close-knit community and any organisation perceived as (unusually) litigious and confrontational enough to go to the law courts (and subsequently have their name published as such in the MCLJ) is highly unlikely to find themselves on any future tender lists, either in the public sector or the private sector. In light of the traditionally *non*-litigious nature of Malaysian construction, thirty-three cases which chose to go to court is rather substantial.

The data regarding type of standard form of contract used in the construction disputes cases reported by the MCLJ is interpreted graphically in Figure 4.2 below.

Of the total thirty three (33) legal cases reported to CLJ, the standard forms of contract PAM and PWD were cited as unable to resolve dispute (during normal negotiations) resulting in construction dispute cases where (private-sector preferred form of contract) PAM possesses the highest percentage (86%) of cases, whilst (the public-sector preferred) PWD standard form of contract had a relatively small amount of cases at 14%.

Once again, the extent to which contractors operating for public-sector clients, are much less likely to go to court, to maintain their place on tender-lists for future projects is somewhat implicit.

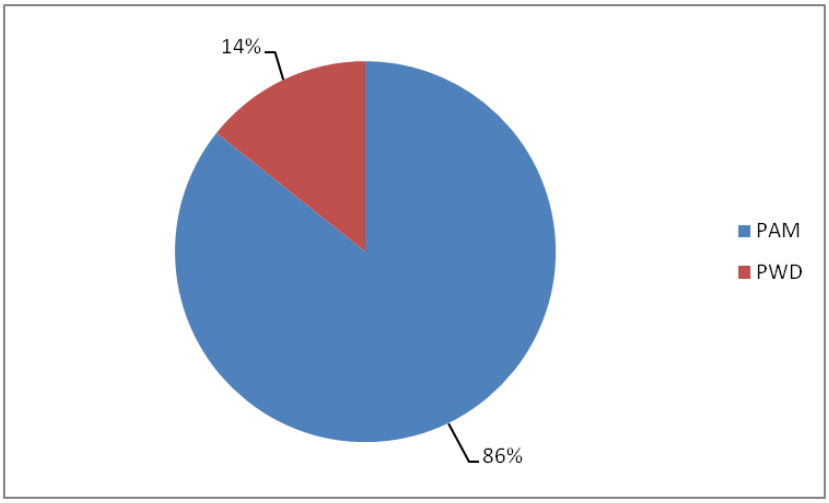


Figure 4.2: Percentages of Standard Form of Contract which are Involved in Construction Disputes

Of the standard forms of contract involved in conflict between parties, findings on the nature of the dispute that stem from the governance of these standard forms of contract was carried-out to determine which areas contributed most to disagreement.

The data analysis conducted here, is shown in Figure 4.3, and indicates the major parameters that result in the need for a court judgement to settle dispute resolution as, in order of occurrence: payment issues, and then variation order issues, defect issues, delay issues, damage issues and performance bond issues.

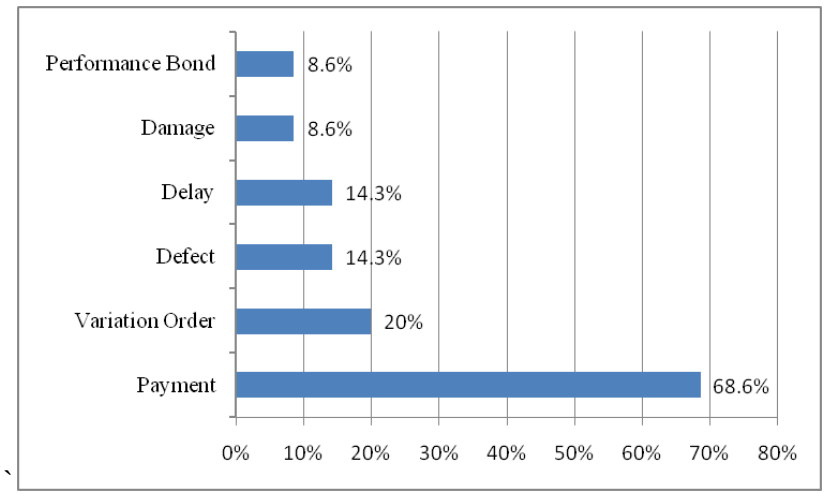


Figure 4.3: Nature of Construction Disputes from Construction Dispute Cases

From the distribution in Figure 4.3, the main causes of dispute in the thirty three (33) cases revolves around the payment issue (68.6%), then followed by variation order issues (20%),

defect issues (14.3%), delay issues (14.3%), damage issue (8.6%) and performance bond (8.6%).

To address the issue of the (Malaysian) lack of willingness to go to court, this research sought to generate data where the dispute did not escalate to the law courts.

Similar research information was sought via the five hundred (500) questionnaires distributed all over Malaysia in order to get an overview from the construction industry regarding (non-escalated) dispute and standard form of contract; one hundred sixty two (162) questionnaires were returned with one hundred fifty two (152) deemed appropriate for further analysis. Forty (40) questionnaire-replies (or over one-third of those who replied) describe an occurrence of construction dispute in respective projects. The forty (40) questionnaires are further analysed. Questionnaires sample is provided in *Appendix A*.

The data collected on the standard forms of contract used by respondents is interpreted graphically and shown in Figure 4.4 as follows. In this case, and interestingly, the (public-sector orientated) PWD form of contract was found as most problematic.

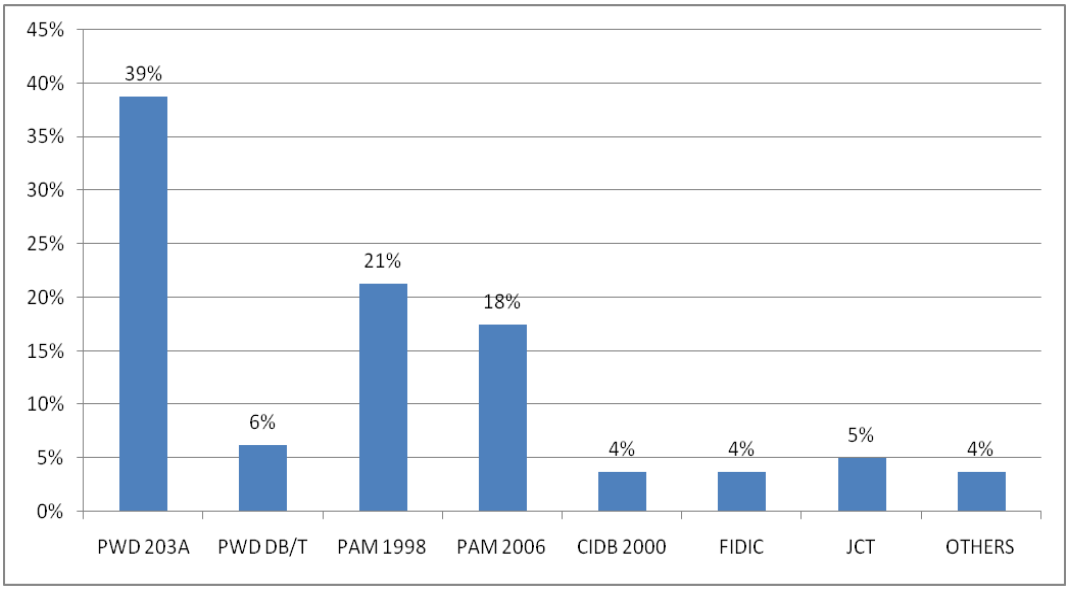


Figure 4.4: Standard Forms of Contract Used by Respondents

Based on the distribution in Figure 4.4, the highest peak obtained is for the PWD 203A standard form of contract (39%). The second highest is the PAM version 1998 (21%) followed by PAM 2006 (18%), PWD DB/T (6%), JCT (5%), CIDB 2000 (4%), FIDIC (4%), and others which comprises of Standard Form of Domestic Contract such as Shell General Condition of Contract and Putrajaya Form (4%).

Further details were sought and once again most disputes relate to payment and somewhat ambiguous payments clauses, as shown in figure 4.5 below.

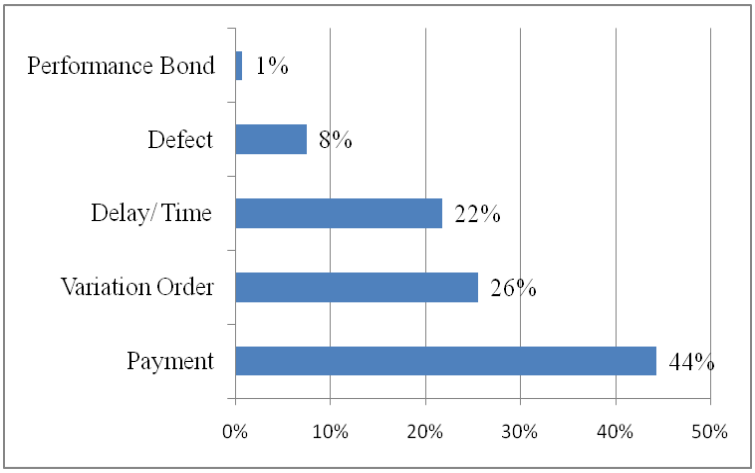


Figure 4.5: Nature of Construction Disputes from the Questionnaires Survey

Based on the forty (40) questionnaires that are analysed, the distribution shown in Figure 4.5, disputes are commonly related to five major parameters and they are: performance bond issues, defect issues, delay or time related issues, variation order issues and payment issue. From Figure 4.5, the most critical parameter that causes disputes is the payment issue (44%), followed by variation order issues (26%), delay or time issues (22%), defect (8%) and performance bond (1%).

One aim of the work presented here is to find out whether standard forms of contract are a main source of construction disputes. It is observed that with usage of standard forms deeply ingrained in the Malaysian industry, and based on the gap of research previously established in the literature review, alongside the results of the work above, disputes *can* be argued to stem from forms (mis)interpretation(s); given discussion thus far (and in chapter two) it might be restated that in the Malaysian construction industry:

1. Method of Form Research is not standardized
2. Standard Forms commonly used to delivered projects are short of being ‘ideal’
3. A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia.

Secondly, the analysis from the court resolved dispute cases and those shown in the questionnaires survey indicates that the higher the usage of a particular form, the more cases of disputes are seen from those forms (i.e. the PWD public-sector orientated forms and PAM private-sector orientated forms).

This result shows an ineffectiveness of these local forms in preventing or resolving disputes. In fact, from the common parameters, which cause disputes shown in the analysis, the forms are somewhat flawed and therefore unable to effectively cover these issues and, when conflicts occur, are unable resolve them effectively (in perhaps more than one-third of projects across Malaysia).

Malaysian standard form's (in)ability and (in)effectiveness in preventing and resolving construction dispute is something therefore that needs and requires to be addressed; this project restates its goal to do so.

Most importantly the results from this initial data-generating study point toward the need for this project to conduct its more detailed in-depth analyses into the effectiveness of existing forms, and a system for form selection suggestions in order to make the necessary improvements on the usage of standard forms of contract in Malaysia.

Building upon the discussion above, the latter sections of Chapter 4 provide standard forms' analyses of the commonly used forms in Malaysia; however, directly below in the following intermediary section of Chapter 4, a specific, systematic form analysis method is presented and established.

The following section presents a systematic means for form-study in Malaysia, which begins with the determination of attributes of evaluation for analysing standard forms.

4.3 Form Analysis Method

4.3.1 Determination of Attributes of Evaluation

Five hundred (500) structured questionnaires have been distributed to construction contract administration personnel. The quantitative survey method is selected to collect opinions of the construction contract personnel and administrators on the degree of importance on the eight (8) attributes identified as essential to a standard form of contract in Malaysian construction industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, fairness or role distribution and risk distribution as previously explained in Section 3.4.1. Questionnaires sample is provided in *Appendix A* together with sample of raw survey responses.

Structured questionnaires were distributed to respondents to represent the engineer, project manager, architects, quantity surveyor and others professionals that are involved in contract

administration works, and also have knowledge dealing with various standard forms of contract. There are one hundred sixty two (162) returned survey forms from the respondents; one hundred fifty two (152) out of the total returns were deemed appropriate to be used to analyze the importance weighting of each attribute.

With one hundred fifty two (152) survey forms received, the response rate is 30.4%. According to the opinions of various authors as mentioned in Section 2.8.5.1 and Visser, et al (1996) emphasizing that minimum of 20% response rate are required for a survey to be valid, the results from the surveys are considered to be able to reflect the views and opinions of the construction industry at large on the attributes of evaluation. Results from the surveys are discussed in the following section.

4.3.2 Calculation of Importance Weighting, W_i for Each Attribute

As explained in Section 3.4.4, the respondents have been asked to rank the eight (8) parameters in a descending order of importance; i.e. the most important parameter will be ranked '1', and similarly the least important will be ranked '8'.

The ranking results of one hundred fifty two questionnaires (152) is extracted and summarized into a table as shown in Table 4.2 as follows.

Table 4.2: Importance Weighting of Attributes

Attribute *Column A*	**Weighting Points** *Column B*	**Ranking** *Column C*	**Importance Weighting (out of 36)** *Column D*
Clarity	260	1	8
Comprehensiveness	371	3	6
Completeness	346	2	7
Consistency	450	4	5
Flexibility	482	5	4
Clear Structured Framework for Project Management	611	8	1
Fairness or Role Distribution	581	7	2
Risk distribution	574	6	3
Total of Weight			**36**

The survey results provide the rankings given by one hundred fifty two (152) respondents for each attribute, which are summed up as the weighting points of each attribute (as shown in Column B). Largest weighting points will give lowest ranking attribute and vice versa as shown in Column C. Highest ranking attribute will then have a lowest importance weighting

and vice versa as shown in Column D. The importance weighting, W_i in percentage is determined by using the following formula (4):

$$\frac{(Weight)}{36} \times 100\% = Importance\ weight\ of\ each\ element\ in\ \%, Wi \qquad (4)$$

The importance weighting of each attribute in percentage is calculated and summarized into a table as shown in Table 4.3 Importance Weight of Each Criterion in Percentage Form as follows.

Table 4.3: Importance Weighting of Each Attribute in Percentage Form

Attribute	Importance Weighting (out of 36)	Calculations	Importance Weighting (%), W_i
Clarity	8	$\frac{(8)}{36} \times 100\%$	22.22
Comprehensiveness	6	$\frac{(6)}{36} \times 100\%$	16.67
Completeness	7	$\frac{(7)}{36} \times 100\%$	19.44
Consistency	5	$\frac{(5)}{36} \times 100\%$	13.89
Flexibility	4	$\frac{(4)}{36} \times 100\%$	11.11
Clear Structured Project Management Framework	1	$\frac{(1)}{36} \times 100\%$	2.78
Fairness or Role Distribution	2	$\frac{(2)}{36} \times 100\%$	5.56
Risk distribution	3	$\frac{(3)}{36} \times 100\%$	8.33
Total of Percentage			**100**

The result above forms the first component of the calculation of the total evaluation score (TES) of each clause for form analysis.

4.3.3 Calculation of Total Evaluation Score (TES) for Clause Analysis

The importance weighting, W_i for each attributes will now be transferred to the clause evaluation instrument designed as seen in Section 3.5.7 Figure 3.3. The following Figure 4.6 shows the clause evaluation instrument with the importance weighting, W_i attached, ready to be used for clause analysis.

Attributes	Importance weightings, W_i	Redrafting needed	Major	General	Minor	Perfect	W X A
1. Clarity	22.22	2	4	6	8	10	
2. Comprehensiveness	16.67	2	4	6	8	10	
3. Completeness	19.44	2	4	6	8	10	
4. Consistency	13.89	2	4	6	8	10	
5. Flexibility	11.11	2	4	6	8	10	
6. Clear structured project management framework	2.78	2	4	6	8	10	
7. Fairness or role distribution	5.56	2	4	6	8	10	
8. Risk distribution	8.33	2	4	6	8	10	
Total:	100				Total score:		

Figure 4.6 Clause Evaluation Instrument with Importance Weighting, W_i

The overall level of adequacy of the clause with respect to each attribute, denoted by A_i is designed somewhat similar the Likert Scale Method as previously explained in Section 3.5.6.

10 – Perfect Clause

8 – Minor Improvement required

6 – General Improvement required

4 – Major Improvement required

2 – Clause re-drafting necessary

The researcher has to deliberate the level of adequacy, denoted by A_i of the specific clause with respect to each of the eight (8) attribute of evaluation and the relevant parameters in Table 3.4. The deliberation procedures are as outlined in Section 3.5.6. Upon completion of level of adequacy for each attribute, an attribute score will be obtained by multiplying W_i with A_i.

The total evaluation score of the specific clause is calculated with the TES formula in following formula (3).

$$\mathbf{TES} = \frac{\sum \mathbf{W_i} \times \mathbf{A_i}}{\mathbf{10}} \qquad (3)$$

Where:

TES **=** total evaluation score

W, = weight (importance) of attribute *i*

A; = level of adequacy related to attribute *i*

The TES for each clause is calculated by the summation of all attributes' scores and divided by ten (10) to get the actual total score of evaluation for each clause in the forms.

Using the above method, the TES will range from 20 to 100. The magnitude of positivity and negativity of the clause will be described with the clause's TES, as categorized in to a table according to the range of total evaluation score (TES) as shown in Table 4.4 below:

Table 4.4: The Magnitude of Evaluation of Clauses in the Standard Forms

Range of Total Evaluation Score (TES)	Magnitude of Evaluation
20-39	High Negative
40-49	Negative
50-59	Low Negative
60-69	Low Positive
70-79	Positive
80-89	Highly Positive

The **five (5)** most popular forms in Malaysia used for the Traditional Procurement method namely the following, are analysed

- Public Works Department 203A (REV. 2007) Standard Form of Contract (PWD 203 A) with 78 clauses
- JKR Sarawak Form of Contract with 49 clauses
- Pertubuhan Arkitek Malaysia Standard Forms of Building Contract 2006 (PAM 2006) with 38 clauses

- IEM Conditions of Contract Mainly for Civil Engineering Works (IEM 89 CE) with 57 clauses
- CIDB Form of Contract for Building Works 2000 CIDB 2000 with 49 clauses and 6 option modules

The performance of the forms (the five (5) standard forms selected) will be discussed in the following sections.

4.4 Form Analysis – PWD 203A

4.4.1 Overall Form Performance

Based on the intensive form analysis of Public Works Department 203A Form (Rev. 2007) Standard Form of Contract (PWD 203A), there are total of eight (8) clauses scoring the TES of 80 point in the Positive Category, thirty five (35) clause scoring in between the TES of 70-79 Low Positive Category, twenty six (26) clauses scoring in between the TES of 60-69 in the Low Negative Category and nine (9) clauses scoring in between the TES of 50-59 in Negative Category. This makes the total of 43 clauses in the positive evaluation category while rest of the 35 clauses are in the category of neutral and negative evaluation category.

Figure 4.7 shows the percentages of Clauses/Option Modules under different Magnitude of Evaluation.

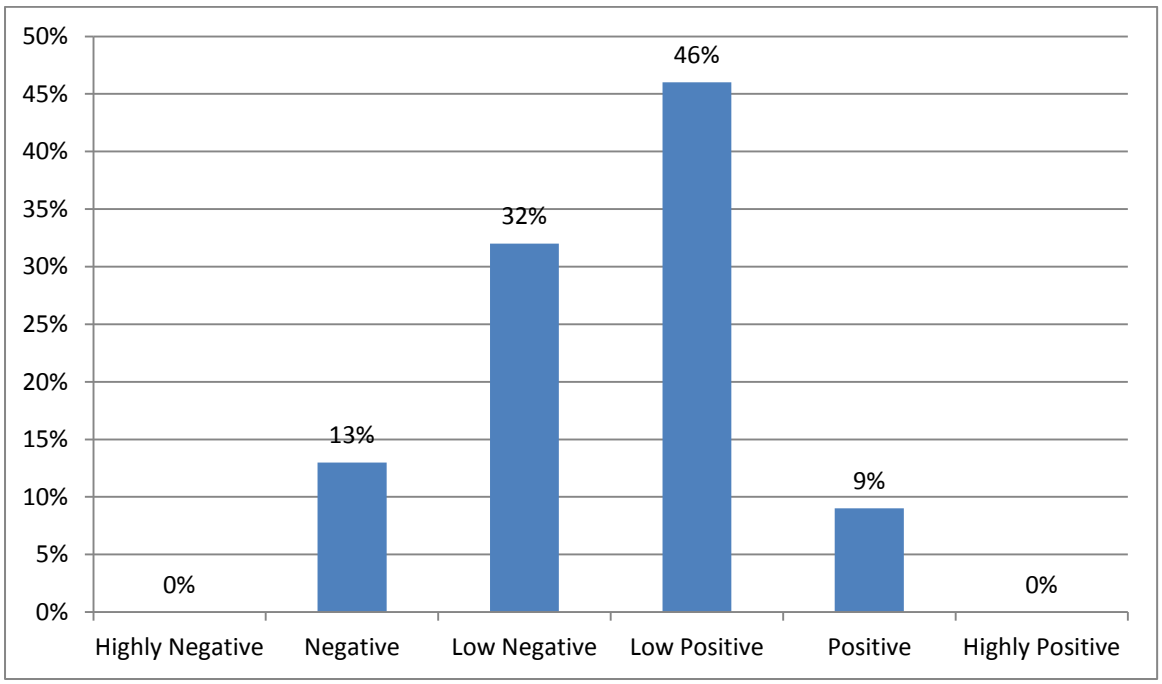


Figure 4.7 Percentages of Clauses/Option Modules under Different Magnitude of Evaluation in PWD 203A

From the Figure 4.7 shown above, there are total of 55% of the clauses fallen under positive section which consist of 46% of Low Positive clauses and 9 % of Positive clauses while 45% of the clauses have fallen under the negative section with 32% as Low Negative and 13% as Negative. It is noted that the percentage of positivity and negativity is almost similar.

The result of percentage of clauses fallen under the five (5) levels of adequacy based on the Attributes of Evaluation is as summarised in Table 4.5 as shown below.

Table 4.5: Percentages of Clauses under Each Level of Adequacy based on Attributes of Evaluation for PWD 203A

No.	Attributes of Evaluation	Level of Adequacy				
		2	4	6	8	10
1	Clarity	0%	3 %	18%	79%	1%
2	Comprehensiveness	0%	8%	56%	36%	0%
3	Completeness	0%	8%	29%	63%	0%
4	Consistency	0%	3%	46%	51%	0%
5	Flexibility	0%	0%	41%	59%	0%
6	Clear Structured Project Management Framework	0%	0%	59%	41%	0%
7	Fairness or Role Distribution	0%	12%	46%	42%	0%
8	Risk Distribution	0%	12%	51%	37%	0%

The positivity of the overall performances of PWD 203A is contributed by the three (3) attributes of evaluation namely clarity, completeness and flexibility. Whilst negativity is

contributed mainly by the Comprehensiveness, Fairness/Role Distribution and Risk Distribution attribute.

It is also noted there are a high percentage of clauses, which needs General Improvement as a good percentage of clauses are rated with '6' in all the attributes.

Hence, albeit having a good percentage of clauses which only need Minor Improvement and considering that the form is a latest revised version of the PWD form, the form is actually still in need of some major and general improvement.

This performance is consistent with the fact that this is a government form, drafted by the government for the government projects and hence, many clauses' procedures and time frame are left empty to make it flexible for the SO to decide while risk and role distribution and more sided towards the Government/Employer.

The overall performance of this contract is considered as **Low Positive**. The following section explains in more details of the form's performance in terms of the clauses analysed.

4.4.2 Clause Analysis

This section explains the results of clause analysis for PWD 203A with respect to the clauses' TES. In order to explain the results of TES for each clause in a more comprehensible way, the following puts forward an example of how clause analysis is carried out to arrive at its TES.

The example provided is PWD 203A Clause 31.0 'Final Account and Payment Certificate'.

A complete set of example of analysis of Problematic Clauses with respect to each attributes of evaluation is provided for in *Appendix B*. The standard form chosen as an example is the IEM 89 CE standard form.

Table 4.6: Clause Analysis for PWD 203 A Clause 31.0 'Final Account and Payment Certificate'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clarity	P1	Language used	Ambiguities as the use of 'permitted deductions' is not explained.	1	8
	P2	Structure of sentence	-		
	P3	Length of sentence	-		
Comprehensive-ness	P1 & P2	Details of procedures, including Time frame/s	No procedures: • For penultimate claims, certificates and payment. • For requesting for additional documents by Superintending Office • For Contractor to agree or disagree on Final Account provided by SO • Is included for carrying out calculation of other account closing items such as retention sum, performance bond, liquidated damages, additions by variations and make references to the permitted deductions	4	6
Completeness	P1	Coverage of relevant issues	• No mention of penultimate claims, certificates and payment as it should be treated separately from final or interim claims. • No right to agree/disagree for Contractor with final account put forward • No mention on submission of as built • The final certificate does not include other account closing items such as payment of retention sum, performance bond, liquidated damages, additions/deduction by variations and make references to the permitted deductions. • No statutory declaration from Contractor that he has already pays his nominated subcontractors/ suppliers/wages to workers.	5	6

Table 4.6 (Cont): Clause Analysis for PWD 203 A Clause 31.0 'Final Account and Payment Certificate'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Consistency	P1	Conflict between clauses, references, cross referencing to other clause/ external law	• No reference to penultimate claims, certificates and payment. • Not relating penultimate procedures with final account procedures • No reference to dispute resolution should there be disagreement over final account. • Inconsistency in procedures as submission of final account 3 months after issuance of practical completion but making good defect is still in progress and as built drawings is yet to be submitted. • Inconsistency in procedures as final account need to be assessed 3 months after issuance of certificate of making good defects while submission of claim is 3 months after practical completion. • Not Relating final account with defects liability period	6	4
Flexibility	P1	Procedures/ options for application of various situation	• The final certificate does not include other account closing items such as payment of retention sum, performance bond, liquidated damages, additions/deduction by variations and make references to the permitted deductions. • No procedures for requesting for additional documents by SO;	4	6

Table 4.6 (Cont): Clause Analysis for PWD 203 A Clause 31.0 'Final Account and Payment Certificate'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
	P2	Open ended/close ended	• Submission of final account 3 months after issuance of Practical completion. • SO only need to assess 3 months after expiry of Defect Liability Period or issuance of certificate of making good defects		
Clear Structured Framework for Project Management	P1	Procedures/ option to enhance project management	• Account closing procedures are not clear as the clause does not include other account closing items such as payment of retention sum, performance bond, liquidated damages, additions/deduction by variations and make references to the permitted deductions. • No right for Contractor to disagree to final account put forward. • No method of coming to consensus should there is disagreement.	3	6
Role Distribution/ Fairness	P1	Balance rights and responsibilit-ies of parties involved	• SO only need to assess 3 months after expiry of Defect Liability Period or issuance of certificate of making good defects • Submission of final account 3 months after issuance of Practical completion. • No procedures for requesting for additional documents by SO.	3	6
Risk Distribution	P1	Even distribution of negative impacts/ consequences	• No right for Contractor to disagree to final account put forward. • Final accounts only need to be assessed 3 months after expiry of Defect Liability Period or issuance of certificate of making good defects. • No mention of other final account closing procedures related issues.	3	6

Based on the deliberation format given in Section 3.4.6 and as shown in the example in Table 4.6, Level of Adequacy for each attribute for a specific clause is determined and calculation of the attributes' scores are made as shown in following Table 4.7.

Table 4.7 Attributes' Scores for PWD 203AClause 31.0 'Final Account and Payment Certificate'

Attributes	Importance Weighting in %	Level of Adequacy	Attribute's Score
Clarity	22.22	8	17.78
Comprehensiveness	16.67	6	10.00
Completeness	19.44	6	11.66
Consistency	13.89	4	5.56
Flexibility	11.11	6	6.67
Clear Structured Framework for Project Management	2.78	6	1.67
Role Distribution	5.56	6	3.34
Risk Distribution	8.33	6	4.99
		TES	**61.67**

The Level of Adequacy for each attribute and the Total Evaluation Score (TES) for all the clauses in PWD 203A are summarised in Table 4.8 as follows, (where 'Cl.' represents the form's Clause number).

Table 4.8: PWD 203A TES Scores for all 78 Clauses

Cl.	Clarity	Comprehen-siveness	Complete-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
1	8	8	6	8	8	8	6	6	73.33
2	8	8	8	8	8	6	6	6	76.67
3	4	8	8	6	6	6	6	4	61.15
4	8	8	8	8	8	8	6	6	77.22
5	8	8	8	8	8	8	4	4	74.44
6	8	4	4	6	6	6	4	4	54.46
7	8	8	8	8	8	8	8	8	80.00
8	4	6	6	8	8	6	4	6	59.42
9	8	8	8	6	8	6	8	6	74.99
10	8	8	8	8	8	6	8	6	77.78
11	8	8	8	6	8	6	4	4	71.11
12	8	8	8	8	8	6	8	6	78.33
13	8	8	8	8	6	8	8	6	76.11
14	6	6	6	6	8	6	6	6	62.24
15	6	8	6	8	8	6	4	4	65.56
16	8	8	8	8	8	8	6	6	73.88
17	6	8	8	8	6	6	6	6	73.89
18	6	6	6	6	8	8	6	6	65.56

Table 4.8 (cont): PWD 203A TES Scores for all 78 Clauses

Cl.	Clarity	Comprehen-siveness	Complete-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
19	6	8	8	8	8	6	6	6	69.43
20	8	6	6	8	6	6	6	6	61.67
21	6	6	6	6	6	6	4	4	57.22
22	6	4	6	6	6	6	4	4	58.88
23	6	6	6	8	6	6	6	6	62.78
24	8	6	4	4	6	6	6	6	57.78
25	6	4	4	6	6	6	6	6	52.78
26	8	6	6	8	8	6	8	8	77.22
27	8	6	6	6	8	6	8	8	73.33
28	8	6	6	6	6	6	6	6	64.44
29	8	6	8	8	8	8	8	8	76.67
30	8	6	8	8	8	8	8	8	76.66
31	8	6	6	4	6	6	6	6	61.67
32	8	6	8	8	6	8	4	4	68.88
33	8	6	8	6	8	6	6	6	70.00
34	8	6	8	6	8	8	8	8	73.88
35	6	6	6	6	6	6	6	6	60.00
36	8	6	6	6	6	6	6	6	64.44
37	8	6	8	8	8	8	8	8	76.66
38	8	6	6	8	6	8	6	6	67.77
39	8	6	8	8	8	8	6	6	73.88
40	8	6	8	8	6	8	8	8	74.44
41	8	6	8	8	8	8	8	8	76.77
42	8	4	4	6	6	6	6	6	57.22
43	6	4	4	6	6	6	6	6	53.78
44	8	6	6	6	6	6	6	6	64.44
45	8	6	8	8	8	8	8	8	76.66
46	8	6	8	6	8	6	6	6	70.55
47	8	6	6	8	6	6	6	6	67.21
48	8	4	4	6	6	6	6	6	57.22
49	6	8	8	8	8	8	8	8	75.55
50	8	4	4	6	6	6	6	6	57.22
51	8	6	6	6	6	6	6	6	63.89
52	8	6	8	6	6	8	6	6	68.89
53	8	6	8	6	8	6	8	8	73.32
54	8	6	8	6	6	6	8	8	71.11
55	8	6	8	6	6	6	8	8	71.11
56	8	8	8	6	8	8	8	8	77.22
57	8	6	8	6	8	6	8	8	73.33
58	8	6	6	8	6	6	6	6	64.41
59	8	6	8	8	8	8	8	8	73.33
60	6	6	6	6	6	6	6	6	60.00

Table 4.8 (cont): PWD 203A TES Scores for all 78 Clauses

Cl.	Clarity	Comprehen-siveness	Complete-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
61	8	6	8	6	8	6	6	6	68.89
62	8	6	8	6	8	6	6	6	68.89
63	8	6	8	6	6	8	4	4	68.00
64	8	8	8	8	8	8	8	8	80.00
65	6	6	6	8	6	6	6	6	62.78
66	8	6	8	8	6	8	8	8	74.44
67	8	8	8	8	8	8	8	8	80.00
68	8	6	8	8	8	8	6	6	73.88
69	8	6	6	6	6	6	6	6	68.33
70	8	8	8	6	8	8	8	8	77.22
71	6	8	8	6	8	8	8	8	72.77
72	8	8	8	8	8	8	8	8	80.00
73	8	8	8	8	8	8	8	8	80.00
74	8	6	6	8	8	6	8	8	69.44
75	8	6	8	8	8	6	8	8	76.11
76	8	6	8	6	8	6	8	8	73.33
77	8	8	8	8	8	8	8	8	80.00
78	8	8	8	8	8	8	8	8	80.00

It is noted that from the clause analysis as shown above, seven (7) clauses score 80, namely Clause 7, 64, 67, 72, 73, 77, 78. These clauses are rather general clauses and are not deemed to be covering the typically 'critical' issues in a standard form. They are generally very short clauses, which can be readily understood.

Clauses in between the 70.00 to 79.99 marks are generally positive with Level of Adequacy of 8 under most attributes of evaluation with only few of attributes scoring 6 and hence, can be considered needing minor improvements. There are a total of thirty six (36) clauses under this category. It is suggested that clauses as such will need to be examined and updated at a regular intervals to improve on its validity. However, specific attentions when used on a project basis are not necessary.

There are twenty five (25) clauses scored low-negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 60.0 to 69.99 in the clause analysis, namely:

- Clause 3.0: The Superintending Officer And Superintending Officer's Representatives
- Clause 14.0: Indemnity In Respect Of Personal Injuries And Damage To Property

- Clause 15.0: Insurance against Personal Injuries and Damage to Property
- Clause 18.0: Insurance of Works
- Clause 19.0: Setting Out
- Clause 20.0: Unfixed Materials and Goods
- Clause 23.0: Employment of Workmen
- Clause 28.0: Payment to Contractor and Interim Certificates
- Clause 31.0: Final Account and Payment Certificates
- Clause 32.0: Effect of SO's certificates
- Clause 35.0: Material Goods and Workmanship
- Clause 36.0: Inspection and Testing of Materials, Goods and Equipment
- Clause 38.0: Possession of Site
- Clause 44.0: Claims for Loss and Expense
- Clause 47.0: Sub-contract or Assignment
- Clause 51.0: Events and consequences of Default by the Contractor
- Clause 52.0: Termination on National Interest
- Clause 58.0: Site Agents and Assistants
- Clause 60.0: Payment to Nominated Sub-Contractor or Supplier
- Clause 61.0: No Liability of Government to Nominated and/or Sub Contractor or Supplier
- Clause 62.0: Responsibilities of Contractor to Nominated and/or Sub-Contractors or Suppliers
- Clause 63.0: Intellectual Property Rights
- Clause 65.0: Arbitration
- Clause 69.0: Stamp Duty
- Clause 74.0: Epidemics and Medical Assistance

There are ten (10) clauses scored 'negative' in the clause analysis as stated below. These clauses obtained the total evaluation score in between range of 50.0 to 59.99 in the clause analysis, specifically:

- Clause 6.0: Scope of Contract
- Clause 8.0: Contract Documents
- Clause 21.0: Compliance with the Law
- Clause 22.0: Design
- Clause 24.0: Variations
- Clause 25.0: Valuation of Variations

- Clause 42.0: Partial Occupation/Taking Over by Government
- Clause 43.0: Delay and Extension of Time
- Clause 48.0: Defects after Completion
- Clause 50.0: Suspension of Works

All clauses with TES of less than 70 (and referred to as Problematic Clauses) that has fallen under the two categories of negativity have problems associated with them and therefore, the Level of Adequacy is 6 or below in certain attributes. Problems and issues of these clauses are further discussed and verified by the key expert interviewees from the construction industry, to make sure that the problems and issues are actually problematic to the construction industry. The following sections present the discussion and verification of the problematic clauses determined from the clause analysis.

4.4.3 Discussion and Verification of the Problematic Clauses

4.4.3.1 Interviewees' Profiles

Interviewees chosen are carefully selected based on the criteria set in Section 3.6.1.1. Backgrounds are Engineering, Architecture, Construction Lawyers, and Arbitrators with some actually having a combination of backgrounds. Their profiles are summarized in the following Table 4.9.

All five (5) standard forms are distributed equally among the eighteen (18) key expert interviewees. Five (5) key expert interviewees are willing to participate and relate their experience and expertise with PWD 203A. As seen in Section 2.8.2.3, *phenomenological research* which requires the individual to relate his or her experience on the forms, a number of five (5) interviewees are deemed as adequate.

Table 4.9: Interviewees' Background Summary for PWD 203A

Interviewee	Type of Job/Position	Organization	Experience in construction industry or contract administration	Standard Form of Contract Used
1	Architect/Arbitrator/ Senior Partner	Engineering and Claim Consultancy	>25 years	PWD/PAM
2	Construction Lawyer/ Senior Partner	Legal Firm	>20 years	PWD/CIDB
3	Construction Lawyer/ Senior Partner	Legal Firm	>15 years	PWD/CIDB/PAM
4	Civil Engineer/Arbitrator/ Senior Partner	Engineering Consultancy	>30 years	PWD/IEM
5	Electrical Engineer/Construction Lawyer/Arbitrator/ Senior Partner	Legal Firm	>30 years	PWD/PAM

4.4.3.2 Discussion and Verification

The following provide an example of how verification-works are carried out. Based on the previous example of Clause 31.0 0 'Final Account and Payment Certificate', problems and issues of this problematic clause are discussed as follows:

Clause 31.0 'Final Account and Payment Certificate' requires the contractor to send in full particulars of their account no later than three (3) months from the issuance of Certificate of Practical completion for the final certificate and payment. The clause does not mention the Penultimate certificate and payment, which follows the Certificate of Practical Completion on an elemental basis. This gives rise to inconsistency in the procedures for accounting after certificate of practical completion. It is not practical to submit the full application for final accounting nine months ahead (based on normal 12 months defect liability period) as final account can only be fully closed upon the submission of as-built drawings and completion of the outstanding defects. SO(s) only need to assess the submission within the three (3) months after the expiry of Defect Liability Period or three (3) months after the issuance of certificate of completion of making good defects. The clause does not have procedures for requesting for additional documents by SO; contractor to agree on the final account, procedures should he disagree; and reference to dispute resolution should there be disagreement with final account. The final certificate does not include the payment of retention sum, performance bond, liquidated damages, additions by variations and make references to the permitted deductions. Use of 'permitted deduction' can be more clearly expressed with 'deduction as consent/agree by the contractor. The statutory declaration does not cover payment make to supplier.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution with level of adequacy for these attributes to be 6 or below such as shown in Table 4.6. The problems and issues stated above as an example are then forwarded and put to be verified with our five (5) key expert interviewees; an example of interviews' results are as follows:

Interviewee 1:

Interviewee 1 mentioned that Government form likes the idea of off set with payment. Hence, one can see in many clauses when the Government like to do permitted deductions. But deductions really cannot be done without the consent of the Contractor. Government or SO cannot simply give the Contractor's works to anybody without first getting the consent from the Contractor.

While it is true that Contractor need to agree on the final account, it will probably be impossible to get the clause to give the right for the Contractor to disagree. He did not think the PWD can ever be drafted to be fairer to the Contractor. The Government will not put itself in such a hard position. Therefore, it is an onerous form but one have to remember that Contractor gets into it with their eyes wide opened, so it may be difficult to shout for foul play after he has agreed to the terms. It is also reminded that in practice, Contractors can and have previously disagreed and disputed the final certification. Hence, it is not beyond hope but the current implied procedures are 'painful'.

Interviewee 2:

Interviewee 2 stated that essentially this is a Government directive and that when working with these agencies, such efficiencies level is 'rather expected'. The final account would have to go through various red tape and hence, the request for submission as early as 3 months before issuance of certificate of practical completion till 3 months after end of defects liability or issuance of certificate of making good defects.

Besides Interviewee 2 emphasized that the reasons why procedures with final account are not well defined is mainly due to the fact that Government agencies have their own set of rules and regulations and the clause is to provide such flexibility to the agencies. Hence, many procedures and time frame will be left to the discretion of the SO, rather than determined by clause interpretation.

Interviewee 3:

Again Interviewee 3 mentioned that this clause does not have much content like the variation clause. He mentioned it is one of those incomplete clauses in this form. The SO is an evaluator here with a very arbitrary role. In fact roles of Engineer/Architect or the designer of the project should be more defined here in terms of payment certification. It is interesting to see the role of professional persons in clauses like extension of time but not payment clause, assuming that final accounts deal more with accounting rather than the need to certify physical work before payment is made.

Interviewee 4:

Interviewee 4 agreed that there is no mention on penultimate claim and payment and reference to the start of defects liability period. As opposed to other forms such as say the IEM form, PWD has the SO that is suppose to certify and prepare account ready for payment. In IEM forms, Engineer who is like the designer of the works will be put in charge of such tasks and it is more practical to do so because he can make the assessment based on his design. He opined that final account settlement actually relies heavily on the completion of defects rectification and assessment of the remedy works.

In addition, Interviewee 4 agreed the time frame given is rather odd. Contractor is to submit his claim 3 month after the certificate of practical completion but the Engineer has 3 months after defects liability or certificate of making good to certify. He suggested that it should be Contractor to submit 3 months before end of defects liability and Engineer has 3 months after to certify. He also opined that there should be a final account meeting before the Engineer to make the certification so that chances of disagreement can be lessened.

Interviewee 5:

Interviewee 5 explained that permitted deduction actually means that consent must be given by the Contractor before such deduction is executed. This is very importantly legally as the Contractor should have the first right to make good of defects and any outstanding works.

He also agreed that the clause is not complete procedurally which should include the treatment of penultimate claim and payment, assessment of defects and/or outstanding works and finally assessment of the final claim and payment.

The following Table 4.10 shows the coding and coding-tabulation for interviews' results. The respondents are to respond to the 'Problematic Clauses' which is defined by TES of less than

70 and the problem areas and the level of adequacy scores given based on the number of problem areas as stated in Table 4.6. Level of adequacy scores for the specific attributes which are 6 or below from Table 4.6, are reinstated in the following Table 4.10 for the purpose of coding of the interview's results.

Table 4.10: Coding Analysis from Interviews Results for Clause 31.0

Attributes	**Score**	**Interviewee 1**			**Interviewee 2**			**Interviewee 3**			**Interviewee 4**			**Interviewee 5**		
		A	**N**	**D**	**A**	**N**	**D**	**A**	**N**	**D**	**A**	**N**	**D**	**A**	**N**	**D**
Comprehensiveness	6	✓			✓			✓			✓			✓		
Completeness	6	✓			✓			✓			✓			✓		
Consistency	4	✓				✓		✓			✓				✓	
Flexibility	6	✓			✓				✓		✓				✓	
Clear Structured Framework for Project Management	6	✓			✓				✓		✓			✓		
Fairness or Role Distribution	6	✓				✓		✓			✓				✓	
Risk Distribution	6	✓				✓			✓		✓				✓	

Where, **A**= Agree, **N**= Neutral, **D**= Disagree

From the coding analysis as seen above in Table 4.10, a summary of the verification process results are provided in the following Table 4.11.

Table 4.11: Summary of Interviewees' Verification for Clause 31.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	4	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	3	2	0

It was found that Clause 31.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and clear structured framework for project management. In terms of risk distribution, consistency and flexibility, Clause 31.0 is verified to have problems with these attributes.

The above process is repeated for all the thirty four (34) problematic clauses in PWD 203A. The complete set of interviews results are presented in *Appendix C*. Discussion of problematic clauses and results and analysis of verification works are summarised and shown in the following section(s).

Clause 3 'The SO and SO's representatives' is seen to have long sentences especially part 3.3(b). Moreover, even though the SO's representative has already approved certain works or material or failure of him to disapprove certain works or material will not prejudice the SO to do so later, which creates problem in consistency with previous part that of SO representative being delegate any powers and authorities vested in the SO and also may create problems over the management of the project. Contractor may be unsure when carrying out the SO representative's instructions as it may not be finalised and may be overturn by the SO himself. Hence, the contractor is taking up more risk when approvals are given by SO representative or when instructions are issued by SO representative.

The clause is found to be deficient in clarity, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.12: Summary of Interviewees' Verification for Clause 3.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	4	5	0	0
Consistency	6	4	1	1
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	4	1	1
Fairness or Role Distribution	6	4	1	1
Risk Distribution	4	4	1	1

It was found that Clause 3.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, role and risk distribution and clear structured framework for project management.

Clause 6 'Scope of Contract' basically list out the scope of obligations of the contractor. The title of the clause is rather confusing as readers may assume the clause is about the scope of works. It does not also make references to other relevant clause. It is noted that obligations of Government or SO are not listed anyway specifically. The clause is hanging as it is generally incomplete as it does not list down all the obligations of the Contractor nor comprehensive as it does not talk about any procedures.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.13: Summary of Interviewees' Verification for Clause 6.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	2	2	1
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	4	4	1	0
Risk Distribution	4	4	1	0

It was found that Clause 6.0 is strongly verified to have problems with, role distribution and risk distribution. In terms of comprehensiveness, completeness, flexibility and clear

structured framework for project management, Clause 6.0 is verified to have problems with these attributes. Consistency problem is verified as a problem with low frequency of occurrence.

Clause 8 'Contract Documents' has words such as 'mutually explanatory' and 'true intent' which can be ambiguous to the not legally trained personnel administrating the contract and in some parts long sentences (Part 8.2a) which can creates confusion and failure to understand the clause. Exact definition and items of the contract documents are not provided and hence, lacking in completeness. The clause does not provide for time frame within which the SO must response to the discrepancies. And in terms of role distribution and fairness, it is seen that procedures informing about the discrepancies are to be executed by the contractor when it may be more effective for the administration of the contract should the SO or designer from the Government side take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found. On the hand, the contractor might use the discrepancy of the contract as additional advantage to reduce his obligations as well. The shared responsibilities should enhance the framework for good project management on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.14: Summary of Interviewees' Verification for Clause 8.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	4	5	0	0
Comprehensiveness	6	3	2	0
Completeness	6	2	3	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	4	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 8.0 is strongly verified to have problems with clarity, role distribution and risk distribution. In terms of comprehensiveness and clear structured framework for project management, Clause 8.0 is verified to have problems with these attributes. Completeness problem is verified as a problem with low frequency of occurrence.

Clause 14 'Indemnity In Respect Of Personal Injuries and Damage to Property', clause 15.0 'Insurance against Personal Injuries and Damage to Property', clause 16.0 'Indemnities to Government In Respect of Claims by Workmen', Clause 17 'Employee's Social Security Acts 1969' and Clause 18 'Insurance of Works' defines the obligation of the government and contractor in the issues of compensation of different issues which is consistent related to each others on certain issues.

Clause 14 makes no reference to Clause 15 even though they are closely related, hence, lacking in terms of consistency and then, may affect the management of these clauses. In addition, Clause 14 has some parts long sentences which affect the score under the clarity attribute. Besides, even though, the clause mentioned indemnifying the Government except if the event is caused by the act or omission or negligence by the Government, the clause generally focused heavily on the contractor's responsibility and fails to cover fully on the acts or omissions or negligence by the Government and its representative and how to handle such situations. Hence, scoring lower with respective to comprehensiveness, completeness, role distribution/fairness and risk distribution.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.15: Summary of Interviewees' Verification for Clause 14.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Consistency	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 14.0 is verified to have problems with comprehensiveness, completeness, consistency, role distribution, risk distribution and clear structured framework for project management. Clarity problem is verified as a problem with low frequency of occurrence.

Even though **Clause 15 'Insurance Against Personal Injuries and Damage of Property'** makes a reference to Clause 14 and Clause 48, which improves the consistency of this clause, the insurance required in this clause seems to overlap with those the requirement stated in Clause 16 and Clause 17. It is unclear whether the contractor is not taking up a separate insurance besides the Clause 18 Insurance of Works. The sentences structure is long and the specific insurance/s required, if any, are not stated. There is failure to mention the coverage of such insurance for cases related to causes of other nature other than the contractor's fault (such as design, SO's instructions, force majeure). The coverage of sanctions of Contractor not taking up the insurance can be more extensive. The clause also does not make statement advising contractor to price such risks he is to undertake accordingly. Good risk management practice may be enhanced should such statement be provided.

The clause is found to be deficient in clarity, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.16: Summary of Interviewees' Verification for Clause 15.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Completeness	6	4	1	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	4	3	2	0
Risk Distribution	4	3	2	0

It was found that Clause 15.0 is strongly verified to have problems with clarity and comprehensiveness. In terms of completeness, role distribution, risk distribution and clear structured framework for project management, Clause 15.0 is verified to have problems with this attributes.

Clause 18 'Insurance of Works' covers insurance of works for loss and damage caused by for force majeure and other factors, which are not due to the fault of the contractor or Government. Sentences used are long and even though, the clause make various references to other applicable clauses (Sectional Completion, Partial Occupation, Making Good of Defects), the insurance coverage does not include the loss of life and injuries which is assumingly covered in clause 14, 15, 16 and 17. However, cross referencing is not made and Clause 14, 15, 16 and 17 certainly did not include issues on loss of life and injuries due to

these causes. The clause is very specific about events the insurance must covered but mainly on event's non related to contractor's or Government's default. The coverage of sanctions of Contractor not taking up the insurance can be more extensive. This clause as well does not make statement advising the contractor to price such risks he is to undertake accordingly. Clause 14, 15 and 18 do required better cross referencing to enhance the coverage of the issues of indemnification and insurance.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.17: Summary of Interviewees' Verification for Clause 18.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 18.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clarity and clear structured framework for project management, Clause 18.0 is verified to have problems with these attributes.

Clause 19 'Setting Out' requires the contractor to be responsible of the true and proper setting out of the works but fails to mentioned the SO's responsibilities to check on the setting out. Should the checking be done, it does not relieve the contractor of his responsibility should error persists, creating ambiguities towards the SO's responsibilities. This not only does not have a fair risk distribution or role distribution, it does not encourage good management principles of good teamwork and problem solving on site as SO need not to be responsible for any wrong judgement on his part or any mutual errors by both parties.

The clause is found to be deficient in clarity, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.18: Summary of Interviewees' Response for Clause 19.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	1	4	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 19.0 is strongly verified to have problems with role distribution and risk distribution. In terms of clear structured framework for project management, Clause 19.0 is verified to have problems with this attribute. Clarity problem is verified as problem with low frequency of occurrence.

Clause 20 'Unfixed materials and Goods' gives rise to legal issues regarding ownership of the materials and goods as it does not cover the fact that only certain percentage of the value of materials and goods are made and not the full amount. The Government may have the possession but not the legal title of the materials and goods. It also fails to cover the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter. As a short clause that is easy to read and understand, it fails to be comprehensive and complete as it does not cover the Government as it seems to be. The Contractor is to remain responsible for loss and damage of the materials and goods remains ambiguous as to how or make reference to other clauses of how he is to do so.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.19: Summary of Interviewees' Response for Clause 20.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 20.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, role distribution, risk distribution and clear structured framework for project management.

Clause 21 'Compliance with the Law' required the Contractor to comply with all respects with any law or by-law, or any directive issued by any public authority or public service company. The word 'Law' may create confusion as compliance in this clause is with statutory requirements and all construction contracts in Malaysia are governed with Law of Malaysia. It is unsure of how the contractor can keep the Government indemnified against all penalties and liability of every kind of breach of any such statutory requirements and whether that is possible. If the Contractor fails, the clause is not clear on the sanctions. Cross reference to variation clauses should be made in order to keep up with the consistency of the clauses involved and enable good management practice on site. The clause also does not include the Government's responsibilities of obtaining any planning, zoning, payment of capital contributions and security deposits to other authorities involved. It is also noted that assistance to be provided by Government and its SO are not mentioned as well when certain authorities requires the submission and liaison from the Government's representatives. There is also no mention on the variation arising from compliance with statutory requirements that the Government and the designers fail to acknowledge.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.20: Summary of Interviewees' Response for Clause 21.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	3	2	0
Risk Distribution	4	3	2	0

It was found that Clause 21.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, and clear structured framework for project management. In terms of risk distribution and role distribution, Clause 21.0 is verified to have problems with these attributes

Clause 22 'Design' intends to cover the situation where the Contractor is required to undertake certain design work on a standalone basis. This will give rise to liability issue. It is unclear of how a contractor without Professional Indemnity Insurance which is common among the designer can the contractor provide indemnity for his design. If the design is approved by the SO, should there not be a joint liability on the design. There is no specific reference made to the information provided by the SO and Government for the design works to be carried out and who should be held responsible for the information. The clause also does not cover the design by subcontractors, nominated or otherwise. Basically this clause only specifies the Contractor's design liabilities and the risks he is to assume when undertaking the task. And the Design Guarantee Bond in part 22.2 demands the contractor for a guarantee on his design.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.21: Summary of Interviewees' Response for Clause 22.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	5	0	0
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	4	5	0	0
Risk Distribution	4	5	0	0

It was found that Clause 21.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, role distribution and risk distribution. In terms of clear structured framework for project management, Clause 21.0 is verified to have problems with these attribute. Clarity problem is verified to be a problem with low frequency of occurrence.

Clause 23.0 'Employment of Workmen' well defines the obligations of contractor in the issues of employment of workers that cover workmen, compliance with Employment Act 1955, etc, days and hours of working, wages books and time sheets, default in payment of wages and discharge of workmen. This clause have set out the obligations of Contractor and consequences of employment of workmen in details and set out the solutions for a very wide scope of issues that might happen under this provision. Details on workmen removal are not complete and comprehensive and the SO can at his liberty request for removal and object to workmen. It however fails to cover safety and health and job training issues on site; and sentences in some parts are long and hard to read and some words are ambiguous.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.22: Summary of Interviewees' Response for Clause 23.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 23.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility and clear structured framework for project management. In terms of role distribution and risk distribution, Clause 23.0 is verified to have problems with these attributes. Clarity problem is verified to be a problem with low frequency of occurrence.

Clause 24.0 'Variation' is lack the procedures and time frame with respect to the issuance of variation order or notification by Contractor if he opined that instructions of SO constitute a variation; instructions by SO regarding variation of works; and approval/disapproval by the Government on the variation in the works. There should also be cross referencing made with clauses related to SO's instructions and Contractor's need for complying and doing variation works urgently needed based on oral instruction by the SO. It also fails to refer to pricing and valuation of variations in Clause 25.0.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.23: Summary of Interviewees' Response for Clause 24.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	4	4	1	0
Consistency	4	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 24.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, role distribution and risk distribution.

Clause 25.0 'Valuation of Variation' is unclear in term of the valuation formula given. It does not cover rate no included or covered in the bills of Quantities and the day works method and any other methods of calculation applicable. The clause is not comprehensive nor complete as it does not cover omission of works which are given to others and whether the contractor can claim loss of profit or losses for the omission. It does not also cover whether the Contractor can claim expenses due to lengthening of time of contract caused by variation. It does not cover the rights of Contractor to disagree and basis of which Contractor can reject/disagree with the variation proposed (i.e. cardinal changes). Sentences are long and it does not promote easy management of the issue of variation on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.24: Summary of Interviewees' Response for Clause 25.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	2	0
Risk Distribution	6	4	1	0

It was found that Clause 25.0 is strongly verified to have problems with consistency, flexibility, role distribution, risk distribution and clear structured framework for project management. In terms of clarity, comprehensiveness and completeness, Clause 25.0 is verified to have problems with these attributes.

Clause 28.0 'Payment to Contractor and Interim Certificates' does not require the contractor to make an application for payment by formally submitting a claim which includes

the supporting documents (invoices, delivery orders, warranties by suppliers, test certificates) necessary for the assessment of claim by the SO. The initiation of the payment process is done by the SO and it is at his discretion whether to make any valuation or not. Besides, signing of the contract is not a condition precedent to the 1st progress payment; payment for material on site is 90% instead of the usual 75% seen in other contract; and payment to nominated suppliers is 100%. All these do not give rise to equal risk and role distribution and good framework for contract and site management. Part 28.3 states that within fourteen (14) days of making the valuation, the SO shall issue an interim certificate. As making valuation is at his discretion and without a time frame, it is unclear of when the fourteen (14) days would start. Clause does not cover payment for off-site material such as workshop and pre-fabricated items. Part 28.4 on the amount stated as due do not include the calculation of retention sum in the formulae. It is unclear as to whether there is a need for retention sum in this form. Procedures for Contractor to agree on the interim certificates and remedies for non-payment or delay in payment are not included in the clause. It is mentioned here that subject to agreement between the parties, payment is to be made by stages. The term stage payment is unclear. There is also no provision of contractor to provide warranties or provide the guarantees on the material supplied by suppliers; and the Contractor to declare that the he has a title free from encumbrances for him to entitle payment.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.25: Summary of Interviewees' Response for Clause 28.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 28.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, and clear structured framework for project management. In terms

of risk distribution, role distribution and consistency, Clause 28.0 is verified to have problems with these attributes.

Clause 32.0 'Effect of Engineer's Certificates' states that no certificates of the Engineer are considered as conclusive evidence and binding in any dispute between the Employer and the Contractor. It does not define certificates and does not make exception for the final certificates to have effect in dispute resolution proceeding/s which is common in other forms. Hence, the clause does not have an equal distribution of risk and role and is deemed as inflexible.

The clause is found to be deficient in comprehensiveness, flexibility, clear structured risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.26: Summary of Interviewees' Response for Clause 32.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Flexibility	6	4	1	0
Fairness or Role Distribution	4	4	1	0
Risk Distribution	4	4	1	0

It was found that Clause 32.0 is strongly verified to have problems with flexibility, role distribution and risk distribution. In terms of comprehensiveness, Clause 32.0 is verified to have problems with this attribute.

Clause 35.0 'Materials, Goods and Workmanship' explains on the general quality aspects works and material and goods to be used for the contract. It does not mention on the submission of quality plan and guidelines for it and/or incorporation of quality plan with work method statement for the endorsement of the Engineer in order for work to be more efficient managed on site. It is noted that sentences are long especially with respect to Part 35.2 but focuses very briefly on testing of material and goods; and opening up for inspection works covered up. In order to achieve better completeness and comprehensive, it may be better to separate both issues. On the matter of testing, to better explain the terms, reference should be made to Clause 36, especially Part 36.5 and Part 36.6 On the matter of opening up, to better explain the terms, it is necessary to state the matter with respect to notice from contractor to SO and/or Engineer before cover up; SO and/or Engineer fails to show up; effects of opening up on time and cost; reinstating back the opening up; conditions for cost of opening up to be

borne by Employer and Contractor. The clause essentially does not give a equal distribution to the role and risk to the contractor as it is stated Engineer can instruct for opening up and testing without stating the conditions precedent to it and costs to be borne by contractor for such circumstances.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.27: Summary of Interviewees' Response for Clause 35.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 35.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution. In terms of, consistency and flexibility, Clause 35.0 is verified to have problems with these attributes. Clarity is verified to be a problem with low frequency of occurrence.

Clause 36.0 'Inspection and Testing of Material, Goods and Equipment' focuses mainly on the issue of material and goods but not equipment. It uses term 'proposals for inspecting the design and setting out of the Works and testing the material and workmanship', which is generally incomplete instead of a quality plan. The clause amplifies the Contractor's responsibility in terms of quality of material and works. However, Part 36.3 is hanging as it only state SO may instruct the Contractor to remove material from site or rectify any works and goods that is not in accordance with this Contract at his own costs. Remedial actions should non conformance be confirmed can be more extensive. Part 36.2, 36.5 and 36.6 uses the term 'reasonably required by the SO' and do not state the conditions pertaining to the need of further testing and opening up aside from those intended for; treatment for tests that are not

intended for in the contract; carrying out of tests elsewhere in another location; conditions for costs of test to be borne by Government other than conformance found in further testing.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.28: Summary of Interviewees' Response for Clause 36.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 36.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution and clear structured framework for project management. In terms of consistency and flexibility, Clause 36.0 is verified to have problems with these attributes.

Clause 38.0 'Possession of Site' gives a detail account on the matter of for possession of site (conditions precedent, guidelines and remedial in the event of failure to possess the site on time). However, it can be more comprehensive in aspects of partial possession. It is stated that in Part 38.3 possession of site may be given only if it is already stated in the Appendix to the form or in the contract documents. This does not give flexibility to the issue of partial possession. Conditions that necessitate partial possession can be provided to improve the completeness of the clause. Part 38.4 does not mention that the clause is referred to in the event that the delay is within the ninety (90) days period but it is implied so as Part 38.5 and 38.6 indicates remedial action for delay in giving possession of site (full and partial) beyond ninety (90) days. References are not made to determination clauses to provide of effects after determination. Claim of Extension of time is allowed but not claim for loss and damages in any circumstances, making this clause unequal in risk and role distribution.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.29: Summary of Interviewees' Response for Clause 38.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Flexibility	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 38.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of flexibility, Clause 38.0 is verified to have problems with this attribute.

Clause 42.0 'Partial Occupation/Taking Over by Employer' states that the Employer can with the consent of the contractor to take over and occupied certain portion of the works. Part 42a- f explains on the consequential effect of such action. It, however, does not cover effect on certificate of non completion for incomplete portion, retention sum and payments; occupation without consent; and fails to discuss various risks involved in partial occupation. As the site is partially occupied but the work is not fully completed for other parts, insurance coverage for the end-users and occupiers would not be the same as those to the workmen, labour or site personnel. Certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. In addition, the clause does not cover the contractor's work flow (working programme and work method) with respect to partial occupation. Instead of having full possession, the Contractor who has partial possession may find his work flow being disturbed in his attempt to complete the various parts of the uncompleted works. Part of the unoccupied works may also be disturbed by the occupiers and end users. Defects liability and delays can be issues for the uncompleted works but no coverage is provided in this clause. Contractor's safety precautions and plans for the end users and occupiers should be included. This clause on Partial Occupation should be improved with respect to these issues mentioned in order to have a better risk and role distribution. Clause does not give any explanation on occupation without consent from Contractor and hence, lacking in flexibility.

The clause is found to be deficient in clarity, comprehensiveness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.30: Summary of Interviewees' Response for Clause 42.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 42.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution and clear structured framework for project management. In terms of consistency and flexibility, Clause 42.0 is verified to have problems with this attribute.

Clause 43.0 'Delay and Extension of Time' replaces the terms 'officer named in Appendix' instead of the SO to form an opinion on the delay cause and calculation. This is inconsistent with the rest of the form with SO is typically the contract administrator. The clause states the Contractor should immediately submit a written given notice of the causes of the delay with supporting documents to the officer. The clause is hanging as it is incomplete and incomprehensive. It basically gives minimal coverage on the procedures for notification of delay; and application of extension of time by the contractor and all the necessary time frame, necessary documents and content (working program, prove of work as a critical activity, previous applications) needed are not included. On the officer's part, there are no conditions, guidelines and time frame the assessment of Extension of time applications including consideration for extension previously granted, concurrent delay, effect of additional and deduction of provisional quantities; request for additional information; procedures for approving or rejecting the extension of time application base on other than reasons stated in 43a-j. Even though the granting of extension of time is extended to provisions where that Contractor is take reasonable steps (to the satisfaction of the SO) to reduce or avoid delay, and the delay is not caused by default of contractor and delay caused by nominated sub-contractor and suppliers, the grounds of extension of time can be further expanded to include

other potential risks. Terms such as, 'in the opinion of the Engineer', 'fair and reasonable' are ambiguous. The clause imply that the Engineer is final; does not mention the Employer's right in this matter; whether the Contractor can disagree with extension granted or not granted and the procedures for disagreement and discussion for coming to consensus; and without the proper procedures in place, risk and role distribution can be affected.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.31: Summary of Interviewees' Response for Clause 43.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	4	4	1	0
Completeness	4	4	4	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 43.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution and clear structured framework for project management. In terms of clarity, consistency and flexibility, Clause 43.0 is verified to have problems with these attributes.

Clause 44.0 'Loss and Expenses' does not indicate whether the items under loss and expenses claimable is those in general or specific but imply that it only covers loss and expenses as a consequence and directly from delays under 43c, d, e, f, and h. Coverage is insufficient. Loss and expenses due to practical causes other than delays should be included for a fairer and comprehensive form. The clause fails to cover the procedures for claim (including submission of proofs and records required to support the claim) and the procedures and conditions precedent to the Engineer's decision of approval or disapproval.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role

distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.32: Summary of Interviewees' Response for Clause 44.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	4	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 44.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution and clear structured framework for project management. In terms of risk consistency and flexibility, Clause 44.0 is verified to have problems with these attributes.

Clause 47.0 'Sub- Contract or Assignment' has two components. Part 47.1 to 47.5 emphasize on the issues of sub-contract but fail to cover matters with respect to conditions precedent to employment of sub contractor/s. Instead, consent is to be given by the SO (without limitations on his power) and not to be 'unreasonably delayed or withheld', which can be rather subjective. It does not state that sub-contract for whole work is not allowed, instead stating that sub-contract the whole or any substantial parts of works is not allowed without prior consent of the SO, implying that it is allowed under certain circumstances. It does not fully cover the contractor's responsibility to his sub-contractor and on issues such as default payment to sub-contractors by contractor and the Employer's rectification actions; whether or not the SO and Employer can directly deal with subcontractors in the matter of instructions, payment, variations and other contractual matters; and objections of SO to contractor's subcontractors and how to come to a consensus. Part 47.6 states that no assignment of the contract is allowed without the Employer's consent, which is welcomed as assignment full or part of works will create difficulties for effective project and contract management of the project on site. Assignment should not be done unless for insurance or financing purpose. But it does not cover rights of Employer to assign.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The

problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.33: Summary of Interviewees' Response for Clause 47.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	4	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 47.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution and clear structured framework for project management. In terms of flexibility, Clause 47.0 is verified to have problems with this attribute.

Clause 48.0 'Defects after Completion' shall define the method of making good defect. The clause does not define the terms 'defects' and the types of defects (patent or latent) which the Contractor is liable for. No time frame is given for the SO to generate the Schedule of defects after site inspection, testing and commissioning and/or after issuance of Certificate of Practical completion. Part 48.1 b covers only Schedule of Defects to be generated and delivered to contractor no later than 14 days before end of Defect Liability. In addition, no time frame is given for contractor to rectify the necessary defects. Part 48.1 b gives that for schedule of defects generated before end of Defects Liability Period, it must be completed with reasonable time but no later than three (3) months. The lack of comprehensiveness here may seem as flexible but it does not give rise to good and effective management on site. The coverage also does not extend to critical and emergency defects occur during defect liability period. Furthermore, the remedies for the Employer should contractor fail to carry out the rectification works for the defects do not extend to the cancellation of Certificate of Practical Completion or lengthening of the defect liability period and hence, not exhaustive. It does not state that a notice of default or the consent of the contractor is needed when Employer employs someone else to do it or make appropriate deduction for such defects. The clause does not cover further retesting and access for contractor to come in to rectify defects. Upon issuance of the certificate of making good, the follow on actions are not mentioned. Whether the Contractor is relieved from his responsibilities, payment, removal of workmen and

equipment and any continuous warranty, if necessary, is not clearly stated and leaving the clause hanging. If SO decides that certificate of making good defects is not to be issued as yet, follow on actions are not provided for.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.34: Summary of Interviewees' Response for Clause 48.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	5	0	0
Completeness	4	5	0	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 48.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution, risk distribution, and clear structured framework for project management. In terms of consistency and flexibility, Clause 48.0 is verified to have problems with these attributes.

Clause 50.0 'Suspension of Works' uses the terms 'officer named in Appendix' to 'Engineer' adding a separate role to the contract as contrast to the typically used 'SO'. The clause states that the officer may at any time instruct contractor to suspend works, all or part. This gives rise to issue of the power of the SO as issues on 'suspension of works' is to be dealt with very procedurally. There is insufficient coverage of condition precedents/events that lead to the exercising of this clause, leaving it completely to the discretion of the SO. Hence, the clause is deem as wide and general and incomplete and has unequal distribution in terms of risk and role. It does not cover the contractor's disagreement to the grounds of suspension and ways of reaching consensus before the clause of suspension is activated, which may be a better framework for site management and contract administration. There is no time frame given for the suspension in terms of a maximum suspension period and thus, does not take pro-longed suspension into much consideration. For suspension that is over twelve (12) months period, parties must discuss whether to mutually terminate the contract or

suspend the works further. It is unclear that whether the twelve (12) months period is the limit for suspension. It is noted that there is Government only can exercise suspension and does not give adequate coverage for contractor to suspend the works. Besides, the remedial actions after suspension are not comprehensively listed out stating out only issues on extension of time but not others such as loss and expenses, damages, material and equipment on site, payment and so forth.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.35: Summary of Interviewees' Response for Clause 50.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	5	0	0
Completeness	4	5	0	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 50.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clear structured framework for project management, consistency and flexibility, Clause 50.0 is verified to have problems with these attributes.

Clause 51.0 'Effects and Consequences of Default by the Contractor' is heading does not corresponds with actual content of the clause. Essentially the clause is contractor's employment being terminated by the Employer due to contractor's default. The clause uses the words 'reasonable', 'diligently', 'regularly' in the absence of better words is rather ambiguous. The clause is generally not comprehensive in terms of the procedures for termination. It does not cover the contractor's disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated, which may be a better framework for site management and contract administration. In terms of the effects of termination (on the procedures after determination) are incomplete as it does not cover procedures for joint site inspection to determine the works done, material and goods

delivered; and proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site as this may involve legality issues in terms of possession and legal title; and the determination of the final account that is agreed by both parties and make reference to dispute resolution, if necessary. It does not cover the situation when the Contractor is underpaid during determination (consequence of work being slowed down due to payment reason).

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.36: Summary of Interviewee's Response for Clause 51.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 51.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clear structured framework for project management, consistency and flexibility, Clause 51.0 is verified to have problems with these attributes.

Clause 52.0 'Termination on National Interest' does not cover definition of national interest, national security or national policy. Hence, this clause is seen as a blanket which the Government can use as justification for termination and thus, too much flexibility and does not give rise to good role and risk distribution. It does not make reference to external law and regulations and may be more appropriate to be lump under Termination of convenience.

The clause is found to be deficient in comprehensiveness, consistency, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.37: Summary of Interviewees' Response for Clause 52.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Consistency	6	2	3	0
Flexibility	6	2	3	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 52.0 is strongly verified to have problems with comprehensiveness, role distribution and risk distribution. In terms of consistency and flexibility, Clause 52.0 is verified to have problems with these attributes.

Clause 58.0 'Site Agent and Assistants' states the matter with respect to the site agent of a contractor and his assistants. The use of 'competent, efficient, suitably qualified, experienced and good character' is ambiguous and rather long. It does not state the duties and the limitations of the site agent and his assistants in the course of carrying out the works. It is not clear with respect to the sanctions or procedures should the site agent is absent and contractor does not replace him with anybody. It is unclear whether the contractor needs to obtain the approval of the SO regarding the choice of site agent and procedures should the SO disagree. In addition, the clause does not state the conditions or reasons precedent the removal of site agent. No procedures for disagreement by the Contractor are included. This does not enhance the element of good team, conflict and people management practice on site.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.38: Summary of Interviewee's Response for Clause 58.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 58.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clear structured framework for project management and flexibility, Clause 58.0 is verified to have problems with these attributes.

Clause 59 to 62 describes the engagement of Nominated Sub-contractor and nominated suppliers for the contract in detail. Whilst Clause 59 'Nominated Sub-Contractor and/or Nominated Suppliers' are fairly clear and the nominated sub-contractor and/or suppliers are chosen based on tender, it lacks comprehensive in detailing the grounds of objection by the contractor and the nomination of nominated sub-contractor and/or suppliers by the SO.

Clause 60.0 'Payment to Nominated Sub-contractor and/or Supplier' put forward that the payment to the nominated sub-contractor and/or supplier is directly from the Government to nominated contractor and/or supplier. This lacks consistency with Clause 61 'No Liability of Government to Nominated Sub-contractor and/or supplier' and Clause 62 'Responsibilities of Contractor to nominated Sub-contractor and/or suppliers'. The Government is in no way liable to any nominated sub-contractor and/or supplier and the contractor is fully responsible for the nominated sub-contractors' works, actions, defaults. Direct payment if not properly managed, can create difficulties for the Contractor to manage the works as he would lose the full authority over the nominated sub-contractors. It is only practicable that the contractor is to have control over his sub-contractor and/or supplier should he holds the purse string. It will definitely be less complicated in terms of procedures for the contractor if the Employer to not interfere with the management of the Contractor over the nominated sub-contractor by paying them directly. Procedures for claims, certifications and payments are not clearly stated and formulation of payment to nominated subcontractor and /or supplier can be better expressed in a formula. And payment made to nominated sub-contractor and /or suppliers are deemed to be made to the contractor, which has an unequal distribution of risk and role.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.39: Summary of Interviewees' Response for Clause 60.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	1	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 60.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clear structured framework for project management, consistency and flexibility, Clause 60.0 is verified to have problems with these attributes. Clarity is verified as a problem with low frequency of occurrence.

Clause 61.0 'No Liability of Government to Nominated Sub-contractor and/or Supplier' attempts to transfer the risk the Government to Contractor by not having any legal relations with the nominated sub-contractor/supplier. It effectiveness is a disputable point as Clause 59 and 60 puts responsibility of payment on the Government.

The clause is found to be deficient in comprehensiveness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.40: Summary of Interviewees' Response for Clause 61.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Consistency	6	3	2	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 61.0 is strongly verified to have problems with comprehensiveness, role distribution, risk distribution and clear structured framework for project management. In terms of consistency, Clause 61.0 is verified to have problems with this attribute.

Clause 62.0 'Responsibilities of Contractor to nominated Sub-contractor and/or Suppliers' stipulates that the Contractor is to take full responsibilities of the nominated Sub-contractor and/or suppliers' acts, defaults and breach and again it is emphasized herewith that this contradicts with Clause 60. The clause in Part 62.2 is not comprehensive with respect to the Contractor's right to determine the nominated sub-contractor and/or supplier's employment when he defaults; and the grounds and procedures for determination. Part 62.2 only mentions the remedial action the Contractor's part when the determination has come into effect.

The clause is found to be deficient in comprehensiveness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.41: Summary of Interviewee's Response for Clause 62.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Consistency	6	3	2	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 62.0 is strongly verified to have problems with comprehensiveness, role distribution, risk distribution and clear structured framework for project management. In terms of consistency, Clause 62.0 is verified to have problems with this attribute.

Clause 63 'Intellectual Property' does not refer to external law/act on this matter so the Contractor can better understand the implication of such a clause. It is not comprehensive in terms of how the contractor is to indemnify the Government. Coverage of clause does not include software. It only states that contractor must pay at his own expenses should the Government be using or possess an equipment or material that is likely to cause infringement. This is a lopsided clause in terms of risk and role distribution, protecting the Government's rights as it does not cover should the infringement is caused by the design and/or requirement by the Government and its designer.

The clause is found to be deficient in comprehensiveness, consistency, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be

verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows

Table 4.42: Summary of Interviewees' Response for Clause 63.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Consistency	6	5	0	0
Flexibility	6	2	3	0
Fairness or Role Distribution	4	2	3	0
Risk Distribution	4	2	3	0

It was found that Clause 63.0 is strongly verified to have problems with comprehensiveness and consistency. In terms of risk distribution, role distribution and flexibility, Clause 63.0 is verified to have problems with this attributes

Clause 65 'Arbitration' is a dispute resolution clause starting from the Engineer trying to resolve the difference through to using arbitration as dispute resolution mode. The clause named the person in charge of resolving the difference as the officer named in Appendix which could be stated as the Engineer/Architect of the project to avoid confusion. Procedures for Engineer/Architect to resolve the dispute is unclear before bringing it forward to arbitration. The clause basically requires the Contractor to work diligently regardless of whether there is dissatisfaction or not. And arbitration procedures cannot commenced until after the completion of the works or the determination of the Contractor or unless consent are given by Government and Contractor. Flexibility is given to the Government when handling differences which leads to dispute. The clause also fails to mention the other dispute resolution method such as mediation and adjudication

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.43: Summary of Interviewees' Response for Clause 65.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	6	4	1	0
Completeness	6	5	0	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	2	3	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 65.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, role distribution and clear structured framework for project management. In terms of role and risk distribution, Clause 65.0 is verified to have problems with these attributes. Clarity and clear structured framework for project management are verified to be problems with low frequency of occurrence.

Clause 69 'Stamp Duty' states that Contractor is to pay and be responsible of getting the contract stamped and all the related charges. This is transferring the original duties of the Employer to the Contractor, which may not be managed well.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.44: Summary of Interviewees' Response for Clause 69.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Consistency	6	5	0	0
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 69.0 is strongly verified to have problems with role distribution, risk distribution, consistency and flexibility and clear structured framework for project

management. In terms comprehensiveness and completeness, Clause 69.0 is verified to have problems with these attributes.

Clause 74 'Epidemics and Medical Attendance' in essence deals with health and safety issue on site but the heading does not reflect the content of the clause. It is not complete nor comprehensiveness in the issue of health and safety. It does not make any reference to external health and safety regulations and law and provide the necessary sanctions if the Contractor does not comply accordingly.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.45: Summary of Interviewees' Response for Clause 74.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0

It was found that Clause 74.0 is verified to have problems with comprehensiveness, completeness and clear structured framework for project management.

4.5 Form Analysis – JKR Sarawak Form of Contract

4.5.1 Overall Form Performance

Based on the intensive form analysis of JKR Sarawak Form of Contract, there are total of nine (9) clauses scoring the TES of 80 point in the Positive Category, eighteen (18) clause scoring in between the TES of 70-79 Low Positive Category sixteen (16) clauses scoring in between the TES of 60-69 in the Low Negative Category and six (6) clauses scoring in between the TES of 50-59 in Negative Category. This makes the total of 27 clauses in the positive evaluation category while rest of the 22 clauses are in the category of neutral and negative evaluation category.

Figure 4.8 shows the percentages of Clauses/Option Modules under different Magnitude of Evaluation.

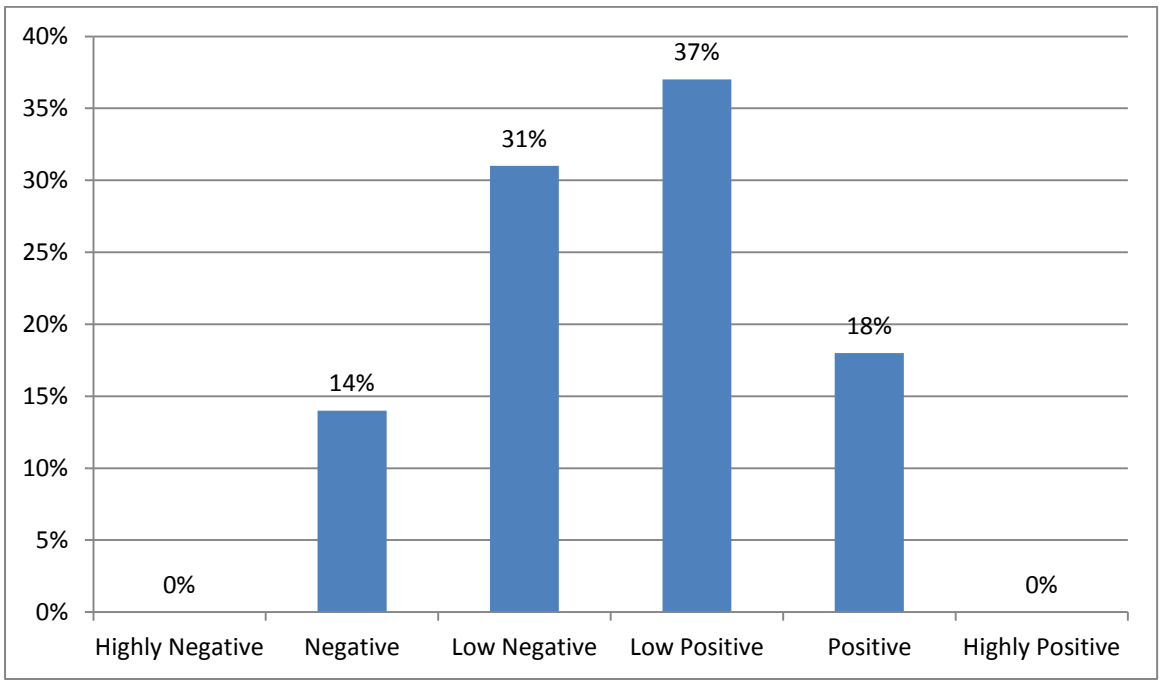


Figure 4.8: Percentages of Clauses/Option Modules under Different Magnitude of Evaluation in JKR Sarawak Form Contract

From the Figure 4.8 shown above, there are total of 55% of the clauses fallen under positive section which consist of 37% of Low positive clauses and 18% of positive clauses while 41% of the clauses have fallen under the negative section with 31% as low negative and 14% as negative. It is noted that the percentage of positivity and negativity are not extremely far apart, close to half of the clauses falls under the negative region.

The result of percentage of clauses fallen under the five (5) levels of adequacy based on the Attributes of Evaluation is as summarised in Table 4.46 as shown below

Table 4.46: Percentages of Clauses under each Level of Adequacy based on Attributes of Evaluation for JKR Sarawak Form Contract

No.	Attributes of Evaluation	Level of Adequacy				
		2	4	6	8	10
1	Clarity	0%	2.0%	28.6%	69.4%	0%
2	Comprehensiveness	0%	0%	57.1%	42.9%	0%
3	Completeness	0%	4.1%	49.0%	46.9%	0%
4	Consistency	0%	0%	36.7%	63.3%	0%
5	Flexibility	0%	2.0%	32.7%	65.3%	0%
6	Clear Structured Management Framework	0%	2.0%	49.0%	49.0%	0%
7	Fairness or Role Distribution	0%	16.3%	38.8%	44.9%	0%
8	Risk Distribution	0%	18.4%	38.8%	42.9%	0%

The positivity of the overall performances of JKR Sarawak Form of Contract is contributed by the three (3) attributes of evaluation namely clarity, consistency and flexibility. Whilst

negativity is contributed mainly by the Comprehensiveness, Fairness/Role Distribution and Risk Distribution attribute.

It is also noted there are a high percentage of clauses that needs General Improvement as a good percentage of clauses are rated with '6' in all the attributes. Hence, albeit having good percentages of clauses which only need Minor Improvement and considering that the form is the latest revised version of the JKR Sarawak Form of Contract, the form is actually still in need of some major and general improvement.

This performance is consistent with the fact that this is a government form, drafted by the government for the government projects in Malaysia largest state, Sarawak and hence, many procedures and time frame are not included to be left flexible for the SO to decide while risk and role distribution favoured the Government/Employer.

The overall performance of this contract is considered as **Low Positive**. The following section explains in more details of the form's performance in terms of the clauses analysed.

4.5.2 Clause Analysis

This section explains the results of clause analysis for JKR Form of Contract with respect to the clauses' TES. In order to explain the results of TES for each clause in a more comprehensible way, the following puts forward an example of how clause analysis is carried out to arrive at its TES. Example provided is JKR Sarawak Form of Contract 11.0 'SO and SO's Representatives'. A complete set of example of analysis of Problematic Clauses with respect to each attributes of evaluation is provided for in *Appendix B*. Standard form chosen as example is the IEM 89 CE standard form.

Table 4.47 Clause Analysis for JKR Sarawak Form of Contract 11.0

'Superintending Officer and Superintending Officer's Representatives'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clarity	P1	Language used	• Terms such as "reasonably" and "timely" is ambiguous and lack of standard measurement. • Lack of definitions in various terms. • Limitation of power is unclear.	4	6
	P2	Structure of sentence	• The clause is divided into several non related parts and difficult to inter-relate them.		
	P3	Length of sentence	-		
Comprehensive-ness	P1 & P2	Details of procedures, including Time frame/s	Lack of procedures for : • Issuance of instructions by the SO and his representatives. • Issuance of instructions under emergency situations where SO's instructions are to be with immediate effects. • Procedures to handle instructions and Contractor to disagree on the given instructions and how to come to a consensus are unclear. • Procedures to handle variations and Contractor to disagree with the variation works such as cardinal changes are unclear. • Limitation of power of SO is provided for but follow on procedures are not clearly stated.	5	6
Completeness	P1	Coverage of relevant issues	• No clear definition of the authorities and duties of assistants appointed by SO or his representatives, definition of variations and conditions precedent to the application of variations. • No coverage on the issuance of instruction by the SO and his representatives. • No coverage on emergency situation where SO's instructions are to be with immediate effects. • No right for Contractor to disagree to the instruction and procedures to come to a consensus. •	5	6

Table 4.47 (cont): Clause Analysis for JKR Sarawak Form of Contract 11.0

'Superintending Officer and Superintending Officer's Representatives'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
			• No right for Contractor to disagree with the variation works such as cardinal changes.		
Consistency	P1	Conflict between clauses, references, cross referencing to other clause/ external law	• Inconsistency exist where Part 11.1b contradicts with 11.1b(i) stating that the SO representatives' instruction and approval are binding between the Contractor and Employer (as in Part 11.1b), but SO reserves the right to overturn any approval made by his representative. • All instructions are to be in writing but clause makes allowance for verbal instructions, which does not necessarily requiring the SO to furnish in writing. • Under the same title, the clause covers instructions and variations • Does not make reference to valuation of variations	4	6
Flexibility	P1	Procedures/ options for application of various situation	• No coverage and procedures for issuance of instructions under emergency situations where SO's instructions are to be with immediate effects. • Limitation of power of SO is provided for but follow on procedures are not clearly stated.	3	6
	P2	Open ended/close ended	• Contractor has seven (7) days to confirm and comply with SO's instructions which may not be practicable. As such time frame provided should be situation based; hence, inflexible.		

Table 4.47 (cont): Clause Analysis for JKR Sarawak Form of Contract 11.0

'Superintending Officer and Superintending Officer's Representatives'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clear Structured Framework for Project Management	P1	Procedures/ option to enhance project management	• As to whether the Contractor is to take representative's instructions and approvals seriously in managing the contract as SO reserves the right to overturn such approval at any time. • Employment of SO's representative's assistant without limiting the powers of such person can be confusing in term of site management. • Treatment of verbal instructions is unclear and this is not good for site management. • Coverage of instructions for emergency situations where means such as site diary can help enhances site management.	4	6
Role Distribution/ Fairness	P1	Balance rights and responsibilities of parties involved	• Role of SO, SO's representatives and assistant, are not well defined. • Contractor has seven (7) days to confirm and comply with SO's instructions and remedies. • There is no need for issuance of notice of default if Contractor does not comply within the time frame given. • SO does not need to formally confirm on verbal instructions that involves variation.	4	6
Risk Distribution	P1	Even distribution of negative impacts/ consequences	• SO does not need to formally confirm on verbal variation instructions. • No right for Contractor to disagree to the instruction and procedures to come to a consensus. • No right for Contractor to disagree with the variation works such as cardinal changes. • There is no need for issuance of notice of default if Contractor does not comply within the time frame given	4	6

Based on the deliberation format given in Section 3.4.6 and as shown in the example in Table 4.47, Level of Adequacy for each attribute for a specific clause is determined and calculation of the attributes' scores are made as shown in following Table 4.48.

Table 4.48: Attributes' Scores for JKR Sarawak Form of Contract 11.0

'Superintending Officer and Superintending Officer's Representatives'

Attributes	Importance Weighting in %	Level of Adequacy	Attribute's Score
Clarity	22.22	6	13.33
Comprehensiveness	16.67	6	10.00
Completeness	19.44	6	11.66
Consistency	13.89	6	8.33
Flexibility	11.11	6	6.67
Clear Structured Framework for Project Management	2.78	6	1.67
Role Distribution	5.56	6	3.34
Risk Distribution	8.33	6	4.99
		TES	**60.00**

The Level of Adequacy for each attribute and the Total Evaluation Score (TES) for all the clauses in JKR Sarawak Form of Contract are summarised in Table 4.49 as follows, (where 'Cl.' represents the form's Clause number).

Table 4.49: JKR Sarawak Form of Contract TES Scores for all 49 Clauses

Cl.	Clarity	Comprehen-siveness	Complee-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
1	8	8	8	8	8	8	8	8	80.00
2	8	8	8	8	6	8	6	4	73.33
3	6	6	6	8	8	6	4	4	62.26
4	8	8	8	8	6	8	8	8	77.78
5	8	8	8	8	6	8	8	6	76.12
6	8	6	4	6	6	6	4	4	57.78
7	8	6	6	6	6	6	4	4	61.66
8	6	6	8	8	8	8	8	8	75.00
9	8	8	8	8	8	8	8	8	80.00
10	8	6	6	8	8	8	8	8	72.77
11	6	6	6	6	6	6	6	6	60.00
12	8	6	6	8	6	6	6	6	67.22
13	6	6	6	6	6	6	6	6	60.00
14	8	6	8	8	8	6	6	6	73.33
15	8	6	6	8	8	6	8	8	72.22
16	8	6	6	6	6	6	6	6	64.44
17	8	8	8	8	8	8	8	8	80.00
18	8	6	6	8	8	6	6	6	69.44

Table 4.49 (Cont): JKR Sarawak Form of Contract TES Scores for all 49 Clauses

Cl.	Clarity	Comprehen-siveness	Complee -ness	Consis -tency	Flexib -ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
19	8	6	8	8	8	6	8	8	76.11
20	8	8	8	8	8	8	8	8	80.00
21	8	8	8	8	8	8	8	8	80.00
22	8	6	6	8	8	6	8	8	72.22
23	6	6	6	6	8	4	6	6	64.43
24	8	6	6	6	6	6	6	6	64.44
25	6	8	8	6	8	8	8	8	72.77
26	6	6	6	6	6	6	4	4	57.22
27	6	6	6	6	6	6	4	4	57.22
28	8	8	8	6	8	8	6	6	74.43
29	6	8	8	8	8	8	6	6	72.78
30	8	6	6	8	6	6	6	6	67.22
31	8	6	4	8	8	6	6	6	65.55
32	6	6	6	6	6	6	4	4	57.22
33	6	6	6	6	6	6	4	4	57.22
34	8	6	6	8	8	6	6	6	69.44
35	8	8	6	6	8	8	8	8	73.33
36	8	4	4	6	6	6	6	6	57.22
37	4	6	6	6	6	6	6	6	55.55
38	8	8	8	8	8	8	8	8	80.00
39	8	6	6	4	6	6	6	6	61.67
40	8	8	8	8	8	8	8	8	80.00
41	8	6	6	8	8	8	8	8	70.55
42	8	8	6	8	8	8	6	6	71.11
43	6	6	6	8	6	6	6	6	62.77
44	6	6	6	8	6	6	4	4	59.99
45	8	6	6	8	8	8	8	8	72.77
46	8	8	8	8	8	8	8	8	80.00
47	8	8	8	6	8	8	8	8	77.22
48	8	8	8	8	8	8	8	8	80.00
49	8	8	8	6	8	8	8	8	77.22

It is noted that from the clause analysis as shown above, eight clauses that scores 80, namely Clause 1, 9, 17, 20, 21 38 40 46 48. These clauses are rather basic clauses and are not deemed to be covering those typically critical issues in a standard form. They are generally very short clauses, which can be readily understood.

Clauses in between the 70.00 to 79.99 marks are generally positive scoring 8 under most attributes of evaluation with a few of attributes scoring 6 and hence, can be considered needing minor improvements. There are a total of twenty (20) clauses under this category. It

is suggested that clauses as such will need to be examined and updated at a regular intervals to improve on its validity. However, specific attentions when used on a project basis are not necessary.

There are fifteen (15) clauses scored low negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 60.0 to 69.99 in the clause analysis.

- Clause 3.0: Site Inspection
- Clause 7.0: Quality of Materials and Workmanship
- Clause 11.0: Superintending Officer and Superintending Officer's Representatives
- Clause 12.0: Contractor's Representatives
- Clause 13.0: Possession of Site and Commencement of Works
- Clause 16.0: Removal of Workmen and Other Personnel
- Clause 18.0: Unfixed Materials Goods and Equipment'
- Clause 23.0: Assignment and Sub Contracting/Subletting
- Clause 24.0: Indemnity for Injury to Persons and Property Damage
- Clause 30.0: Contractor's Design of Work
- Clause 31.0: Independent Contractors
- Clause 34.0: Completion of Works
- Clause 36.0: Partial Occupation by Employer
- Clause 39.0: Final Certificate
- Clause 43.0: Claims, Disputes and Disputes Resolution

There are seven (7) clauses scored negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 50.0 to 59.99 in the clause analysis.

- Clause 6.0: General Obligations of Contractor
- Clause 26.0: Nominated Sub-Contractors
- Clause 27.0: Nominated Suppliers
- Clause 32.0:Valuation of Variation
- Clause 33.0: Interim Certificates and Payment to Contractor
- Clause 37.0: Defects after Completion
- Clause 44.0: Determination of Contractor's Employment

All clauses with TES of less than 70 (referred to as Problematic Clauses) that has fallen under the two categories of negativity have problems associated with them and therefore, the Level of Adequacy is 6 or below in certain attributes. Problems and issues of these clauses are further discussed and verified by the key expert interviewees from the construction industry to make sure that the problems and issues are actually problematic to the construction industry. The following sections present the discussion and verification of the problematic clauses determined from the clause analysis.

4.5.3 Discussion and Verification of the Problematic Clauses

4.5.3.1 Interviewees' Profiles

Interviewees chosen are carefully selected based on the criteria set in Section 3.5.2. They are from the background of Civil Engineers and Quantity Surveyors from contractor, consultant and client. Their profiles are summarized in the following Table 4.50.

All five (5) standard forms are distributed equally among the eighteen (18) key expert interviewees. As JKR Sarawak Form of Contract is used in Sarawak, Malaysia largest state only, participants are limited to those conducting project in Sarawak. Five (5) key expert interviewees are willing to participate and relate their experience and expertise JKR Sarawak Form of Contract. As seen in Section 2.8.2.3, Phenomenological research which requires the individual to relate his or her experience on the forms, five (5) numbers of interviewees is adequate.

Table 4.50: Interviewees' Background Summary for JKR Sarawak Form of Contract

Interviewee	Type of Job/Position	Organization	Experience in construction industry or contract administration	Standard Form of Contract Used
1	Quantity Surveyor	Retired/ Consultancy	>30 years	PWD/JKR Form of Contract/PWD 75
2	Civil Engineer/Project Manager	State Power Company	>15 years	PWD/JKR Form of Contract/PWD 75
3	Quantity Surveyor/Procurement Manager	Semi-government agency	>15 years	PWD/JKR Form of Contract/PWD 75
4	Civil Engineer/Senior Partner	Civil Engineering Consultancy	>25 years	PWD/JKR Form of Contract/PWD 75
5	Civil Engineer/Project Manager	Private Developer	>10 years	JKR Form of Contract/PWD 75

4.5.3.2 Discussion and Verification

The following provide an example of how verification works are carried out. Based on the previous example of Clause 11.0 'Superintending Officer and Superintending Officer's Representatives', problems and issues of this problematic clause are discussed as follows:

Clause 11.0 'Superintending Officer and Superintending Officer's Representatives' is a long clause with 5 parts. Part 11.1 deal with SO and his representatives' duties. Use of the words 'reasonably' and 'timely' can be ambiguous and lack a standard of measurement. Whilst the representatives' instructions and approvals are binding between the contractor and Employer (as in Part 11.1b), SO reserves the right to overturn such approval (as seen in Part 11.1b (i)). This lacks consistency and thus, creates confusion when managing the contract on the contractor's part as whether to take the representatives' instructions and approvals seriously. Part 11.2 allows the SOs and his representatives to appoint any number of persons as assistants to them and they have different authority as compared the SOs and his representatives. Such practice can be confusing as there is no clear definition of the authorities and duties of such assistants.

SO's instructions and variations are part under this clause (Part 11.3). As these matters are generally common issues for any construction contract, to be given such emphasis undermines the importance of these matters. On the matter of instructions, it is not complete and comprehensive as there are no procedures or time frame for the issuance of instruction by the SO and his representatives; no coverage on emergency situation where SO's instructions are to be with immediate effects; disagreement to the instruction issued and procedures for ramifications; and effects of instructions other than loss and expenses. Part 11.3a describes the conditions necessitating the issuance of instructions and the matter is continued in Part 11.3d and e. Such structure can be confusion when reading the clause. It was given in Part 11.3d that contractor has 7 days to comply with the SO's instruction and remedies for non compliance are provided but the time frame given may not be practicable.

On the matter of variation, the coverage is limited to Part 11.3 b and c with no definition of variations and conditions precedent to the application of variations as such issues is not covered under any clauses in the form. It is commendable that verbal instructions including electronic messages involving a variation and contractor is to write to confirm on such instructions (written or verbal) within 7 days but this time frame is not so practicable. And if the SO does not disagree to the contractor's confirmation within 7 days (also may not be practicable), the contractor is to carry out the work. Essentially there is no need for the SO to

formally issue a variation order, which indicates an unequal distribution of role and risk, especially when disputes on time and cost are common with variations. Besides, there are no procedures for contractor to disagree with the variation works such as cardinal changes.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees and example of interviews results are as follows:

Interviewee 1:

First of all, Interviewee 1 disagreed that the clause is unclear. Although the clause is described in 5 parts, the language used is easy to understand. Besides that, he opined it is reasonable that no time frame is given for the issuance of instruction by the SO as it provides the flexibility to the contract.

However, the Interviewee 1 agreed that the clause is lack of consistency whereby this clause mentioned that when the representative's instruction and approval are binding between the contractor and Employer, the SO reserves the right to overturn such approval. Besides that, he also agreed that it is hard for the Contractor to do project management since there are no procedures for the contractor to disagree the variation works and hence, making the clause less flexible.

He agreed, in terms of SO's representatives and SO's representative's assistant, the roles of these two characters are confusing as there is no clear definition of the duties of such assistants. For example, he said, the SO's representative can be anyone and the assistant is referred as Clerk of Work. However, in this form of contract, it is not clearly defined.

As for the issue of seven days to be too short and unfair to the contractor to execute work, the interviewee explained that the seven (7) days is to start execute the work and not to finish the work. He agreed that it is confusing.

Interviewee 2:

Interviewee 2 said that there is no issue in this clause as the SO's representative and the SO's assistant role are well differentiated. The representative has more power than the assistant. In some projects especially the mega project, the assistants are needed to help the SO's representatives. However, she agreed that the clause has to cater for more contractual issues, including the power and decision made by the representatives and the assistants.

In terms of clarity, the Interviewee 2 agreed that the clause format is a bit hard to understand especially for new user. Also, the clause is less comprehensive as words such as 'reasonable' is used instead of a proper time frame. Other than this, Interviewee 2 agreed that Part 11.3a is inter-related with Part 11.3 (d) and (e). Hence, it should not be drafted as is currently.

Interviewee 3:

Interviewee 3 agreed that the clause's clarity is poor as the role of the personnel is not well defined. Supposedly, there should be clear definition between the SO's representative and the SO's assistant. This is important as their role and power is different.

On the other hand, the Interviewee is neutral with the time frame (7 days) given in Clause 11.3 (d) as too short. He said the time frame is for the Contractor to execute for instructions not to finish the works.

However, he agreed with the need to provide procedure which to instruct the Contractor of what to do if he disagrees with the SO's instruction. In this case, it is unfair to the contractor as there is no room to negotiate. It is also unfair to the contractor if he is not notified but asked to pay any price to other contractor to do his part.

Interviewee 4:

According to the Interviewee 4, he agreed that it is confusing to have Superintending Officer's Representative and the SO's assistant in government project. He mentioned, the SO's assistant is usually represented by the Clerk of Work (C.O.W). He said the SO's assistant whom represents by the C.O.W. can also be known as the Inspector of Work. However, it depends on the project.

With respect to the Clause 11.3 (d), Interviewee 4 disagreed with flexibility issue whereby he commented that to give a written notice within 7 days is too short as those 7 days is only for the Contractor to respond. He said that there is inadequate procedure and the clause 11.3 (b) and 11.3 (b) (i) is inconsistent. Also, with respect to the matter of variation, the coverage is limited to Part 11.3 (b) and (c) with no definition of variations and conditions. He agreed the project management framework is affected as well due to inadequate procedures.

Interviewee 5:

Based on the experience of the Interviewee 5, duties of a SO and SO's representative and duties are well distributed. According to him, SO has the right to appoint the SO's

Representative as an inspector to inspect all the works carried out at construction site. For some mega projects when the SO's Representative unable to carry out his duty effectively, the Superintending Office's Representative may request to appoint SO Representative's assistant in order to assist him in certain parts of works, such as M&E works, piling works and so on. SO Representative's assistant should report to the SO Representative on the works that have been carried out under his inspection. SO Representative then should report to the SO on the works carried out at site. He did not think that it is necessary to elaborate the duty.

If the SO's Representative fails to carry out his duty and approved the unsatisfied works, the SO has the right to make the right decision which is against the SO Representative's decision. In other words, the SO has the ultimate power in a project.

Responding to issue in Sub-clause 11.3, the Interviewee 5 said 7 days in contract form is just a reference whereby in actual practice it is shorter. Usually, contractor has within a few days to receive and start compliance. For some urgent works such as inspection before concreting, any unsatisfied works are to be rectified within 3 days.

It is a good point to add in the procedure for the Contractor when he disagrees with the SO's decision. In normal practice, the Contractor is to reply the SO in writing and explain the unsatisfied works. He can also explain if he disagrees with the SO's decision. However, the final decision is depended on the SO. It is one-sided clause as the SO has the ultimate power for final decision.

The following Table 4.51 shows the coding table for the interviews results. The respondents are to respond to the 'Problematic Clauses' which is defined by TES of less than 70 and the problem areas and the level of adequacy scores given based on the number of problem areas as stated in Table 4.47. Level of adequacy scores for the specific attributes which are 6 or below from Table 4.47, are reinstated in the following Table 4.51 for the purpose of coding of the interview's results.

Table 4.51: Coding Analysis from Interviews Results for Clause 11.0

Attributes	Score	Interviewee 1			Interviewee 2			Interviewee 3			Interviewee 4			Interviewee 5		
		A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
Clarity	6			✓	✓			✓			✓				✓	
Comprehensiveness	6			✓	✓			✓			✓					✓
Completeness	6	✓			✓			✓			✓					✓
Consistency	6	✓			✓				✓		✓				✓	
Flexibility	6	✓			✓				✓				✓		✓	
Clear Structured Project Management Framework	6	✓				✓		✓			✓			✓		
Fairness or Role Distribution	6	✓				✓			✓				✓	✓		
Risk Distribution	6	✓				✓			✓				✓	✓		

Where, A= Agree N= Neutral D= Disagree

From the coding analysis as seen in Table 4.51 above, a summary of the verification results are provided for in the following Table 4.52 below.

Table 4.52: Summary of Interviewees' Verification for Clause 11.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	1	1
Comprehensiveness	6	3	0	2
Completeness	6	4	0	1
Consistency	6	3	2	0
Flexibility	6	2	2	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	2	2	1
Risk Distribution	6	2	2	1

It was found that for example Clause 11.0 is strongly verified to have problems with completeness and clear structured framework for project management. In terms of clarity, comprehensiveness and consistency and flexibility, Clause 11.0 is verified to have problems with these attributes. Flexibility, role distribution and risk distribution are verified to be problems with low frequency of occurrences.

The above process is repeated for all the twenty two (22) problematic clauses in JKR Sarawak Form of Contract. Complete sets of interviews results are presented in *Appendix C*. Detailed discussion of problematic clauses and results and analysis of verification works are as shown below.

Clause 3.0 'Inspection of Site' is deemed as an incomplete clause as it does not provide a complete statement of the provision of the types of information regarding the site that needs to be checked by contractor and extent of those examinations; the types of information regarding the site that needs to be provided for by the Employer and his representatives; and inaccurate, insufficient or incomplete information. Clause is lack of procedures of examination and exchange of this information; remedies and/or contracting parties' responsibilities for inaccurate, insufficient or incomplete information. Even though, the contractor is to take and the information and document from the Employer at his own risk, there is no statement to request the contractor to price risks and any discrepancies accordingly. Clause as such does not encourage a good framework for proper contract management as role and risk are already distributed to side the Employer. In addition, the entire clause is expressed in two (2) sentences, making the sentences long and difficult to read.

The clause is found to be deficient in clarity, comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.53: Summary of Interviewees' Response for Clause 3.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	0	3
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	4	4	0	1
Risk Distribution	4	4	0	1

It was found that Clause 3.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution. Clarity is verified to be a problem with low frequency of occurrences.

Clause 6.0 'General Obligations of Contractor' defines the overall contractor's obligations. Words such as with 'due care and diligence' and 'to the satisfaction of the SO' can be ambiguous as to the standard of measurement of care, diligence and satisfaction. However, due to the lacking of better words, words as such still remain. Part 6.1a also calls for the contractor to design (to the extent required in the contract) but did not make known conditions precedent to the application of this component of his duties. It is unclear whether call for design by Contractor is an option (of which an option module is applicable) or design is a component of the contract. The drafting points to latter. Therefore, it is unclear of what constitutes design (proposed design/alternative design/specific design required by the contract) by the Contractor. In addition, it make no reference is made to the Part 6.2b and Clause 30 'Contractor's Design of Work' and hence, the inconsistency in the clause.

Part 6.2b calls for contractor to fully responsible for the design of the part of the works, notwithstanding any approval and endorsement by SO. Even though it is related Clause 30 'Contractor's Design of Work', there is no mention in this clause or Clause 30 with respect to the methods the Contractor to take the full responsibility especially in the absence of the Professional Indemnity Insurance, which generally covers the designers of the works. Part 6.2a does not detail out the responsibility of the Contractor in detailing out the Work Method

Statement which is directly related to Methods of Construction and the acceptance and endorsement by the SO of the statement.

Part 6.3 states that Contractor should indemnify the Employer against all and any loss expenses, costs, damages, liability and claim arising from Sub contractor default but does not mention how the Contractor could do so. Under Part 6.4 no time frame are provided for reporting, adjusting and resolving of the discrepancies. Part 6.4a states discrepancy in or between Contract Documents but does not mention whether site documents such as working drawings constitutes contract documents.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.54: Summary of Interviewees' Response for Clause 6.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Completeness	4	5	0	0
Consistency	6	4	0	1
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	5	0	0
Risk Distribution	4	5	0	0

It was found that Clause 6.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, role distribution and risk distribution.

Clause 7.0 'Quality of Materials and Workmanship' requires a quality plan from Contractor but does not indicate the relevant guidelines or details required for the plan and hence, making it difficult to price accordingly in the contractor. Requirements for an extensive quality plan may not be practical for small contracts, where the specifications provided would already suffice. Thus, this clause has lower flexibility. Part 7.2 and 7.3 does not furnish the conditions or the procedures for the SO to request vouchers and/or manufacturer's test certificates and samples of materials for further testing; and time frame for contractor's compliance to the requests. With respect to cost, references are not made to

Part 7.7 for better details. Part 7.4 requires the Contractor to provide notification to carry out testing and inspections and for matters where approvals of SO are required but does not provide for the procedures for the request and whether it must be done so in writing. It does not cover if the SO's failure to attend or send any representatives. Part 7.8 should provide a basic, practical time frame to demolish, reconstruct, substitute or remove any defects or defective material instead of using the word SO 'may' specify indicates that it is the choice of the SO whether he would specify a time frame or not. If he fails to do so, it could cause difficulties in the proper and effective management of the site. The clause also does not provide for warning for the Contractor when he fails to take action upon the instructions of the SO to make replacement, removal or correction to the work. The clause does not provide for the right of contractor to put forward his disagreement of such instructions, especially if the fault of the non compliance is due to design or latent site conditions. This gives rise to role and risk distribution issues.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.55: Summary of Interviewees' Response for Clause 7.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Completeness	6	3	1	1
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	4	3	0	2
Risk Distribution	4	3	0	2

It was found that Clause 7.0 is strongly verified to have problems with comprehensiveness and clear structured framework for project management. In terms of completeness, consistency and flexibility, role distribution and risk distribution Clause 7.0 is verified to have problems with these attributes.

Clause 12.0 'Contractor's Representatives' state that the contractor's representative must be capable of receiving instructions in English and Bahasa Malaysia but the same is not applicable to the SO's representatives and assistants. For the removal of Contractor's

representative, no conditions or reasons for such request are indicated. Instead the use of words such as 'unreasonably and vexatiously' is adopted, giving the SO a large extent in his power. No procedures for disagreement by the contractor are included. This does not enhance the element of good team, conflict and people management practice on site. The contractor is 'forthwith', which is with an immediate effect, to remove the site agent should the contractor be request to do so. It would be more appropriate to include a time frame should be given so that replacement can be found unless that offence of the site agents is of serious effects.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.56: Summary of Interviewees' Response for Clause 12.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 12.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, role distribution and risk distribution.

Clause 13.0 'Possession of Site and Commencement of Works' is as unclear as to whether the Letter of Acceptance is the Letter of Award. In addition referencing with many sub-parts are rather confusing and sentences are structure in a difficult way to read and understand, giving rise to clarity issue. And to possess the site specifically four (4) weeks from the date of Letter of Acceptance create inflexibility should the site possession can be done with immediate effect. It does not link the Possession of Site with Commencement of Works as Possession of site must be the condition precedent to the commencement of works. The clause in many ways are incomplete and incomprehensive as it does not have enough coverage on matters on sectional possession of site and make the necessary references to sectional completion and the calculation of and effects it has on date of completion. In

addition, should due to conditions as stated that possession of site cannot be given, it can only constitutes a ground for extension of time and has no mentioned on claims for loss and expenses.

Part 13.2 stipulates that the contractor is to inform the SO on the date of commencement of work whereas it would be appropriate that upon the possession of site, the SO to inform on the commencement date. Grounds for not to commence work is limited to insurance only and hence incomplete. It would also be advisable that Contractor to submit the working programme, followed by the work method statement and related quality and safety plan upon receiving the notification to commence work.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.57: Summary of Interviewees' Response for Clause 13.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	4	0	1
Flexibility	6	2	2	1
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 13.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, role distribution and risk distribution. In terms of clarity, and clear structured framework for project management, Clause 13.0 is verified to have problems with these attributes. Flexibility is verified to have problems with low frequency of occurrence.

Clause 16.0 'Removal of Workmen and Other Personnel' uses many words such as 'good character', 'skilled', 'incompetent', which can be ambiguous and subjective to the opinion of the SO. The SO is at liberty to object and require the Contractor to remove immediately the persons employed by the Contractor, which gives a large extent of power to the SO as the

grounds for such removal is not clearly and explicitly stated. The Contractor is not allow to making claim for expenses under this clause but there is no mentioned on the claim for time in the event of delay due labour/workmen/tradesmen shortages. The Contractor is with immediate effect, to remove the workmen or personnel upon request by SO. It would be more appropriate to include a time frame should be given so that replacement can be found unless the offence. References to workers' unions should be noted as well. Consistency reduce to 6 and total is 66.64

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.58: Summary of Interviewees' Response for Clause 16.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 16.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of consistency, flexibility and clear structured framework for project management, Clause 16.0 is verified to have problems with these attributes.

Clause 18.0 'Unfixed Materials, Goods and Equipment' gives rise to legal issues regarding ownership of the materials and goods as it does not cover the fact that only certain percentage of the value of materials and goods are made and not the full amount. The Government may have the possession but not the legal title of the materials and goods. It also fails to cover the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter. As a short clause that is easy to read and understand, it fails to be comprehensive and complete as it does not cover the Government as it seems to be. The Contractor shall remain responsible for loss and damage of the materials and goods remains ambiguous. The clause does not state the conditions precedent to payment for such items.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.59: Summary of Interviewees' Response for Clause 18.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	3	0	2
Risk Distribution	6	3	0	2

It was found that Clause 18.0 is strongly verified to have problems with comprehensiveness, completeness and clear structured framework for project management. In terms of role distribution and risk distribution, Clause 18.0 is verified to have problems with these attributes.

Clause 23.0 'Assignment and Sub Contracting/Subletting' has two components. Component on Assignment is fairly clear that no assignment of the contract is allowed without the Employer's consent. Assignment full or part of works will create difficulties for good management of the project. Assignment should not be done unless for insurance or financing purpose. Furthermore, it does not cover conditions precedent to assignment; and rights of Employer to assign. And, further conditions for assignment in Part 23.4 states that if the Employer allows assignment, further conditions and terms may be stipulated and this will further complicates the administration and execution of the contract. However Part 23.2 Void Assignment is long and difficult to read, reducing the clarity of the clause. However, component on Sub-contracting fails to cover matters with respect to conditions precedent to employment of sub contractor; default payment by contractor to sub-contractors and the Employer's rectification actions; whether or not the SO and Employer can directly deal with subcontractors in the matter of instructions, payment, variations and other contractual matters; objections of SO to Contractor's subcontractors; responsibility of contractor for subcontractors.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert

interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.60: Summary of Interviewees' Response for Clause 23.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	3	2	0
Clear Structured Framework for Project Management	4	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 23.0 is strongly verified to have problems with clarity comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution. In terms of consistency, Clause 23.0 is verified to have problems with this attribute.

Clause 24.0 'Indemnity for Injury to Persons and Property Damage' basically states that the contractor needs to indemnify the Employer against injury to persons, workmen, environment and damage property. The clause generally focuses on the Contractor's responsibilities when the contractor and his agents or representatives default. Part 24.1 to 24.4 do not cover default by Employer and his agents or servants and in fact state that the indemnities will not be reduced even if the Employer or the SO or their representatives default. The unequal risk and role distribution is blatantly obvious. This principle however contradicts with Part 24.5 Injury to Workmen, which the Employer is not liable except an accident or injury is from the default of the Employer, its agent and servants. It also states that the contractor is to continue to keep the Employer indemnify causing an evident inconsistency in the part itself and with other parts. Part 24.7 Environment Protection does not make any reference to external requirement (authorities' or otherwise). Even though, Part 24.6 Notification of claim state the contractor to inform the Employer on the claims submitted to him or vice versa, the clause does not state how (methods and procedures) the Contractor is to indemnify the Employer or make reference to the next Clause 25 on the matter of insurance.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5)

key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.61: Summary of Interviewee's Response for Clause 24.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	2	2	1
Completeness	6	2	2	1
Consistency	6	4	1	0
Flexibility	6	2	2	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 24.0 is strongly verified to have problems with consistency, clear structured framework for project management, role distribution and risk distribution. Flexibility, comprehensiveness and completeness are verified to have problems with low frequency of occurrences.

Clause 26.0 'Nominated Sub-Contractors' is listed as one of the clause which the Limitations of SO's Power (Part 11.5) applies and yet it is stated here in 26.1 the SO has at his 'complete disposal' to nominate such persons as selected by the Employer. The drafting here is inconsistent and better words is suggested. Part 26.1 states the matter on PC sum but there is no definition of PC sums and how to effect PC sums. Typo error is seen in Part 26.2c (i) where instead of 26.2b, 26.2a shall apply. And in the event of non conformance or non compliance by the nominated subcontractor, the clause does not state any remedies or actions to be taken before the full termination is activated and whether any delay due to the termination constitutes the ground for extension of time. It is also seen that the responsibilities of the Contractor in providing a list of attendance services to nominated sub contractors is too specific and lacking of flexibility.

Part 26.6 states that the Employer is entitled to pay the nominated sub-contractor directly but fails to draft out the procedures and conditions for doing so. Direct payment if not properly managed, can create difficulties for the Contractor to manage the works as he would lose the full authority over the nominated sub-contractors. Part 26.7 gives that SO can pay the sub-contractor the final payment if the subcontractor has satisfactorily indemnified the Contractor against any defects. Once again, with what method can the nominated subcontractor indemnified the Contractor and what are the grounds to necessitate such action. If the contractor is fully responsible for the nominated sub-contractors' works, actions, defaults; it is

only reasonable that the Employer and the SO to not interfere with the management of the Contractor over the nominated sub-contractor. This part will cause difficulties for the Contractor to manage the nominated sub-contractor. And it is noted that there is no contractual relationship between the nominated sub-contractor and the Employer as clearly stated in Part 26.8.

Part 26.6a uses many times 'any' in the clause. Part 26.6b does not make complete referencing to 'this sub-clause' as of which sub-clause. Overall, this clause is long clause and various parts have long sentences.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.62: Summary of Interviewees' Response for Clause 26.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	4	1	0
Flexibility	6	3	1	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	4	0	1
Risk Distribution	4	4	0	1

It was found that Clause 26.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, role distribution and risk distribution. In terms of flexibility, Clause 27.0 is verified to have problems with this attribute.

Clause 27.0 'Nominated Suppliers' is drafted similarly with Clause 26.0 and hence, the same scoring is applicable.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5)

key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.63: Summary of Interviewees' Response for Clause 27.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	4	1	0
Flexibility	6	3	1	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	4	0	1
Risk Distribution	4	4	0	1

It was found that Clause 27.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, role distribution and risk distribution. In terms of flexibility, Clause 27.0 is verified to have problems with this attribute.

Clause 30.0 'Contractor's Design of Work' explains on the Contractor's responsibility if he is to undertake the design of any part of the works. The clause does not list out the conditions which require the contractor to do the design and the various types of design which he is to submit. In addition, the clause requires the Contractor to the liable for the design but it is unclear as with what methods can the Contractor take up full responsibility of the design works especially in the absence of the Professional Indemnity Insurance, which generally covers the designers of the works and the contractor may not have take up. The clause states that the Contractor's liability is the same as those of the professional designers but make no further explanation on this is to be done. Therefore, enforcing a clause as such may not really cover the Employer as it seems. If the SO or the Engineer is to endorse the design, there should be a joint liability for the design.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.64: Summary of Interviewees' Response for Clause 30.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	1	1
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 30.0 is strongly verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. In terms of clear structured framework for project management and flexibility, Clause 30.0 is verified to have problems with these attributes.

Clause 31.0 'Independent Contractors' states the Employer's right to employ other contractors. Upon detection of discrepancies on other contractors' works, the time frame for reporting by the contractor and issuance of instructions by the SO are not given and a more comprehensive procedures be included (including expenses of rectifications, execution of works to proceed without instructions, claim of loss and expenses, extension of time should the discrepancies required rectifications by other contractors). It will also enhance good management practice on site should the SO be put responsible for the coordination of works among the contractors working on site.

The clause is found to be deficient comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.65: Summary of Interviewees' Response for Clause 31.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	4	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 31.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution.

Clause 32.0 'Valuation of Variation' gives an attempt at the definition of variation in Part 32.1 but remains unclear as to what constitutes a variation besides that increase/decrease in provisional quantity is not a variation. Hence, this part is incomplete. It is neither comprehensive as it does not provide the guidelines as to the role and actions of the contracting parties for the execution of the variation clause. It only provides that if the Contractor deemed the instructions of the SO as a variation, he can notify the SO within fourteen (14). Any follow on actions are not mentioned. Clause 32.1b states that Contractor shall not make any variation without instruction from SO but there is no mentioned on related delays should the instructions be delay or make reference to relevant clauses. And he is to execute the variation even the valuation of the variation is pending but does not cover circumstances on disagreement to carry out the works and/or dispute over the quantity and rate or make references to relevant clause or parts.

Part 32.2 and 32.3 states out the method of valuation based on Bills of quantities and Drawings and Specification. Both stated that reasonable and fair valuation is to be make by the SO should the work is not of similar character or executed under similar conditions. This is ambiguous as to what standard will SO base the rate on. There is no mention on the disagreement of the Contractor the valuation of SO, making these parts unequal in roles and risks. Explanations on calculation are seen as unclear and can be better expressed in a formula method.

Part 32.5 explains on if the Contractor is to propose and submits a variation and the SO is to approve, it has to be in writing. And SO is not obliged to approve. Besides, it states the Contractor is to not entitle to extra payment but can be subjected to deduction and the SO has the right to decide on the matters. This does not give rise to good management on site if the variation proposed is genuine and necessary for the completion of works and is seen as unequal in role and risk distribution.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.66: Summary of Interviewees' Response for Clause 32.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	1	4	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	3	1	1
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	4	1	0
Risk Distribution	4	4	1	0

It was found that Clause 32.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, role distribution and risk distribution. In terms of consistency, Clause 32.0 is verified to have problems with this attribute. Clarity is verified to have problems with low frequency of occurrences.

Clause 33.0 'Interim Certificates and Payment to Contractor' is overall difficult to understand. Calculation for amount due should be expressed in formula instead of a descriptive format. It also make reference to many other clauses but only clause number and not the clauses name are mentioned, making it difficult to cross reference. This clause also state that delay in payment beyond the stated thirty (30) days is not a breach of contract and nor it is a ground for extension of time. This is not only unequal in risk and role distribution, it is not complete and comprehensive as there is no inclusion of remedies for the Contractor upon delay in payment; and time frame which constitutes extreme delays and remedies for that. Besides, for the unfixed material goods and equipment, no payment can be made unless the Contractor has proves of payment being made by him to the suppliers. This is not reasonable as the Employer is interfering with the management of Contractor, which is his general obligation to not do so.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.67: Summary of Interviewees' Response for Clause 33.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	4	0	1
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	5	0	0
Risk Distribution	4	5	0	0

It was found that Clause 33.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution. In terms of clarity, Clause 33.0 is verified to have problems with this attribute.

Clause 34.0 'Completion of Works' does not include the issue of testing and commissioning but works on the term 'inspection of works', which is insufficient to describe the activities pertaining to the closing out of the project. There should be a guideline is doing testing, inspection and commissioning of the works as certificate of practical completion is only issued when the SO deemed appropriate. This is subjective (hence, unequal in terms or risk and role distribution) and procedures and guidelines should be in place to avoid dispute over the matter of practical completion.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.68: Summary of Interviewees' Response for Clause 34.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	2	2	1
Risk Distribution	6	2	2	1

It was found that Clause 34.0 is strongly verified to have problems with comprehensiveness, and completeness. In terms of clear structured framework for project management, Clause

34.0 is verified to have problems with this attribute. Role distribution and risk distribution are verified to have problems with low frequency of occurrences.

Clause 36.0 'Partial Occupation by Employer' states that the Employer can with or without the consent of the contractor to take over and occupied certain portion of the works. Part 36.2 explains on the consequential effect of such action. It, however, fails to cover issues with respect to payment for the occupied parts, performance bond and the calculation of retention sum. It also does not discuss various risks involved in partial occupation. As the site is partially occupied but the work is not fully completed for other parts, insurance coverage for the end-users and occupiers would not be the same as those to the workmen, labour or site personnel. Certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. In addition, the clause does not cover the contractor's work flow (working programme and work method) with respect to partial occupation. Instead of having full possession, the Contractor who has partial possession may find his work flow being disturbed in his attempt to complete the various parts of the uncompleted works. Part of the unoccupied works may also be disturbed by the occupiers and end users. Defects liability and delays are will be issues for the uncompleted works but no coverage is provided in this clause. Contractor's safety precautions and plans for the end users and occupiers should be included. This clause on Partial Occupation should be improved with respect to these issues mentioned in order to have a better risk and role distribution.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.69: Summary of Interviewees' Response for Clause 36.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	4	1	0
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 36.0 is strongly verified to have problems with consistency, flexibility, clear structured framework for project management. In terms of completeness, comprehensiveness, role distribution and risk distribution, Clause 35.0 is verified to have problems with these attributes.

Clause 37.0 'Defects after Completion' is generally difficult to read as sentences used for this clause are long. Some sentences are worded and structured in a difficult to understand way. One of such is Part 37.5 Defects Liability Period of Remedial Works which is unclear as to whether it refers to the remedial works for defects or remedial works in the general contract is to be treated like the other works in the contract. And the defect liability period for such remedial works is treated as a separate defect liability period of the defects that appears within the defect liability period. However, this part makes reference to Part 37.1 and 37.2 which explains on the normal defects. Inconsistency exists within the part. Method of diminution in the value of works is not comprehensive. It does not cover also the serving of the notice of default including the calculation of cost of remedying the defects by others to the contractor before such deduction is made; time frame for the SO to issue certificate of making good defects is not indicated nor is the procedures for return of performance security bond and retention monies made or referred to after the issuance of certificate of making good defects. In all circumstances in this clause, the SO is the key person in determining whether the making good of defects is well carried out or not. And it is unclear to which standard would then SO be using as basis for his opinion.

The clause is found to be deficient in clarity, comprehensiveness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.70: Summary of Interviewees' Response for Clause 37.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	4	3	2	0
Comprehensiveness	6	3	1	1
Completeness	6	3	2	
Consistency	6	2	3	0
Flexibility	6	2	3	0
Clear Structured Framework for Project Management	6	2	2	1
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 37.0 is strongly verified to have problems with role distribution and risk distribution. In terms of clarity, comprehensiveness and completeness, Clause 37.0 is verified to have problems with these attributes. Consistency flexibility and clear structured framework for project management are verified to have problems with low frequency of occurrence.

Clause 39.0 'Final Certificate' requires the Contractor to send in full particular of his account no later than three (3) months from the issuance of Certificate of Practical completion for the final certificate and payment. The clause does not mention the Penultimate certificate and payment. This gives rise to inconsistency in the procedures for account after certificate of practical completion. It is not practical to submit the full application for final accounting nine months ahead (based on normal 12 months defect liability period) as this contradicts the submission of as-built drawings and issues of outstanding defects. SO only need to assess the submission within the three (3) months after the expiry of Defect Liability Period or three (3) months after the issuance of certificate of completion of making good defects. The clause does not have procedures for requesting for additional documents by SO; Contractor to agree on the final account, procedures should he disagree; and reference to dispute resolution should there be disagreement with final account. The final certificate does not include the payment of retention sum, performance bond, additions by variation and make reference to the permitted deductions. The statutory declaration does not cover payment make to supplier.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.71: Summary of Interviewees' Response for Clause 39.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Consistency	4	3	2	0
Flexibility	6	2	3	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 39.0 is strongly verified to have problems with role distribution and risk distribution. In terms of comprehensiveness, completeness, clear structured framework for project management and consistency, Clause 39.0 is verified to have problems with these attributes. Flexibility is verified to have problems with low frequency of occurrence.

Clause 43.0 'Claims, Disputes and Disputes Resolution' uses difficult to read as sentences are long and structured in a way which is not readily understood. Usage of up to 4 layers of sub-clauses (43.3, 43.3a, 43.3a (i), 43.3a (iii) aa) can be complicated for contract administrators. In circumstance where SO and Employer are to give response, no time frame will be provided; instead the word used is 'as soon as practicable'. This lacks comprehensiveness. When Contractor is to provide notices and information with respect to claim and notice for dispute, a time is provided for and is marked as essential for the validity of the claims and procedures. This indicates an unequal risk and role distribution. On the Part 43.3b Work to Proceed requires the Contractor to proceed with work but does not cover if the works has already been suspended due to dispute (there is no suspension clause in the form). The form also fails to provide and encourage good management of the site, if the risk and role is so unequally distributed. Coverage is also not made for the adjudication process, which is becoming more common and increasing in popularity due to the procedure's effectiveness and efficiency.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.72: Summary of Interviewee's Response for Clause 43.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	2	1
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 43.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, flexibility, role distribution and risk distribution. In terms of clear structured framework for project management, Clause 43.0 is verified to have problems with this attribute. Clarity is verified to have problems with low frequency of occurrence.

Clause 44.0 'Determination of Contractor's Employment' is a clause wholly on contractor's employment being terminated by the Employer. Note that there is no coverage in the form on Contractor's Determination of the Works. The clause uses the words 'reasonable', 'diligently', 'regularly' in the absence of better words is rather ambiguous. The clause is generally not comprehensive in terms of the procedures for termination stating the SO need to serve notice specifying the default. And Contractor only have 14 days after such notice 'has been sent out' instead of 'receiving the notice' to react. It also does not cover the contractor's disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated, which may be a better framework for site management and contract administration. Many sentences were also long and hence, difficult to read. Procedures after determination are somehow lacking with respect to Contractor being underpaid during determination; and proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.73: Summary of Interviewees' Response for Clause 44.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	4	1	0
Risk Distribution	4	4	1	0

It was found that Clause 44.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution. In terms of flexibility, Clause 44.0 is verified to have problems with this attribute.

4.6 Form Analysis – PAM 2006

4.6.1 Overall Form Performance

Based on the intensive form analysis of Pertubuhan Arkitek Malaysia 2006 Standard Form of Building Contract (PAM 2006), there are total of seven (7) clauses scoring the TES of 80 point in the Positive Category, eighteen (18) clause scoring in between the TES of 70-79 Low Positive Category ten (10) clauses scoring in between the TES of 60-69 in the Low Negative Category and three (3) clauses scoring in between the TES of 50-59 in Negative Category. This makes the total of 25 clauses in the positive evaluation category while rest of the 13 clauses are in the category of negative evaluation category.

Figure 4.9 shows the percentage of Clauses/Option Modules under different Magnitude of Evaluation.

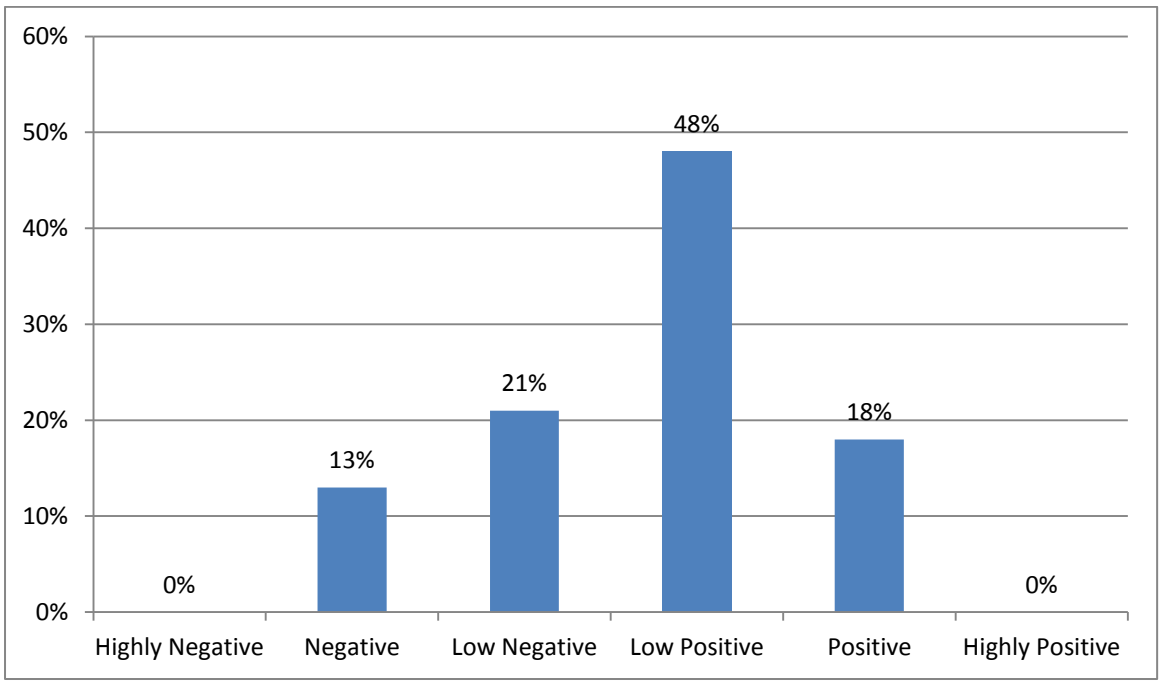


Figure 4.9: Percentages of Clauses/Option Modules under Different Magnitude of Evaluation in PAM 2006

From the Figure 4.9 shown above, there are total of 66% of the clauses fallen under positive section which consist of 47% of Low positive clauses and 18% of positive clauses while 34% of the clauses have fallen under the negative section with 21% as low negative and 13% as negative. It is noted that this form has a good percentage of positivity. Negativity is generally lower.

The result of percentage of clauses fallen under the five (5) level of Adequacy based on the Attributes of Evaluation is as summarised in Table 4.74 as shown below.

Table 4.74: Percentages of Clauses under Each Level of Adequacy based on Attributes of Evaluation for PAM 2006

No.	Attributes of Evaluation	Level of Adequacy				
		2	4	6	8	10
1	Clarity	0%	0%	7.7%	89.7%	0%
2	Comprehensiveness	0%	7.7%	66.7%	23.1%	0%
3	Completeness	0%	7.7%	28.2%	61.5%	0%
4	Consistency	0%	2.6%	41.0%	53.9%	0%
5	Flexibility	0%	0%	38.5%	59.0%	0%
6	Clear Structured Management Framework	0%	0%	48.7%	48.7%	0%
7	Fairness or Role Distribution	0%	2.6%	41.0%	41.0%	0%
8	Risk Distribution	0%	2.6%	41.0%	41.0%	0%

The positivity of the overall performances of PAM 2006 is contributed by the three (3) attributes of evaluation namely clarity, completeness and flexibility. Whilst negativity is

contributed mainly by the Comprehensiveness, Consistency and Clear Structured Framework for Project Management attribute. This result shows consistency with the various commentaries of PAM 2006 which indicates the form is found having clear language and coverage of many issues previously not there in the traditional form. This study found it lacking of comprehensiveness as it lacks many procedures and time frame which leads to difficulties in managing the project practically but provide higher flexibility for the form users to act on a project by project basis.

It is also noted there are a high percentage of clauses that needs General Improvement as a good percentage of clauses are rated with '6' in all the attributes. Hence, albeit having good percentage of clauses which only need Minor Improvement and considering that the form is the latest revised version of the PAM 2006 of Contract, the form is actually still in need of some major and general improvement. The overall performance of this contract is considered as **Low Positive**. The following section explains in more details of the form's performance in terms of the clauses analysed.

4.6.2 Clause Analysis

This section explains the results of clause analysis for PAM 2006 with respect to the clauses' TES. In order to explain the results of TES for each clause in a more comprehensible way, the following puts forward an example of how clause analysis is carried out to arrive at its TES. Example provided is PAM 2006 Clause 21.0 'Date of Commencement, Postponement and Completion Date'. A complete set of example of analysis of Problematic Clauses with respect to each attributes of evaluation is provided for in *Appendix B*. Standard form chosen as example is the IEM 89 CE standard form.

Table 4.75: Clause Analysis for PAM 2006 Clause 21.0 'Date of Commencement, Postponement and Completion Date'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clarity	P1	Language used	• 'Date of commencement' needs further clarification as in whether it is the date based on letter of award, instructions by Architect or as stated in the Appendix. • The clause does not use the typical terms such as delay in possession but instead use the word 'postponement' without much explanation.	2	8
	P2	Structure of sentence	-		
	P3	Length of sentence	-		
Comprehensiveness	P1 & P2	Details of procedures, including Time frame/s	No procedures: • to handle postponement within period of delay • To handle postponement that is over the period of delay • To handle procedures after suspension due to delay in giving possession of site. • For Contractor to initiate suspension of works due to prolong postponement. • Follow on actions after the work is too proceed after postponement in giving site possession or suspension by Architect.	4	6
Completeness	P1	Coverage of relevant issues	Covering 3 parts in the same clause ~ Date of Commencement, Postponement and Completion Date but coverage on each part is inadequate: • Date of commencement need further clarification and whether it is based on possession of site and effects if possession is not given • Postponement does not fully detail out the relevant issues such as delay in giving site possession, within and/or exceeding the period of delay stated, and site possession giving	5	6

Table 4.75 (cont): Clause Analysis for PAM 2006 Clause 21.0 'Date of Commencement, Postponement and Completion Date'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Completeness	P1	Coverage of relevant issues	suspension. • Effects of date of completion as a result of delay in site possession. • Effects of sectional commencement.	5	6
Consistency	P1	Conflict between clauses, references, cross referencing to other clause/ external law	• Does not make any reference to delay and extension of time • Does not link date of commencement with date of completion • Does not clearly indicate the linkage between postponement and date of commencement and completion. • Make reference to suspension but does explain the linkage to postponement possession of site and suspension of works • No reference to suspension related clause. • Clause touches on sectional commencement but does not relate it to suspension or postponement.	6	4
Flexibility	P1	Procedures/ options for application of various situation	• Postponement does not fully detail out the relevant issues such as delay in giving site possession within and/or exceeding the period of delay stated, and site possession given after suspension • Effects of sectional commencement	4	6
	P2	Open ended/close ended	• This clause implies that possession is given on the date of commencement whereas it should be just a condition precedent. • Postponement does not cover the Contractor to suspend.		

Table 4.75 (cont): Clause Analysis for PAM 2006 Clause 21.0 'Date of Commencement, Postponement and Completion Date'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clear Structured Framework for Project Management	P1	Procedures/option to enhance project management	Clause is unclear of : • Effects of postponement within period of delay and that over the period of delay • Effects of date of completion as a result of postponement in site possession. • Effects of sectional commencement in relations to overall site possession	3	6
Role Distribution/ Fairness	P1	Balance rights and responsibilit-ies of parties involved	• Contractor is not to suspend work • Only Architect can suspend work when there is a delay in giving possession of site does not exceed the Period of Delay. • There is no mention the scenario when period of delay is exceeded. • Contractor's rights if postponement occurs, exceeding or not exceeding the Period of Delay. • Contractor's right to not proceed after prolong postponement that is over the period of delay.	4	6
Risk Distribution	P1	Even distribution of negative impacts/ consequences	• Contractor cannot suspend work even if the period of delay in exceeded. • Follow on actions after the work is too proceed after postponement in giving site possession or suspension by Architect. • Contractor's right to not proceed after prolong postponement that is over the period of delay.	3	6

Based on the deliberation format given in Section 3.4.6 and as shown in the example in Table 4.75, Level of Adequacy for each attribute for a specific clause is determined and calculation of the attributes' scores are made as shown in following Table 4.76.

Table 4.76: Attributes' Scores for PAM 2006 Clause 21.0 'Date of Commencement, Postponement and Completion Date'

Attributes	Importance Weighting in %	Level of Adequacy	Attribute's Score
Clarity	22.22	8	17.78
Comprehensiveness	16.67	6	10.00
Completeness	19.44	6	11.66
Consistency	13.89	4	5.56
Flexibility	11.11	6	6.67
Clear Structured Framework for Project Management	2.78	6	1.67
Fairness or Role Distribution	5.56	6	3.34
Risk Distribution	8.33	6	4.99
		TES	**61.67**

The Level of Adequacy for each attribute and the Total Evaluation Score (TES) for all the clauses in PAM 2006 are summarised in Table 4.77 as follows, (where 'Cl.' represents the form's Clause number).

Table 4.77: PAM 2006 TES Scores for all 38 Clauses

Cl.	Clarity	Comprehen-siveness	Complee-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
1	8	6	6	8	8	6	6	6	69.44
2	8	4	4	6	6	6	6	6	57.22
3	8	6	8	6	8	8	6	6	71.11
4	8	6	6	8	6	6	6	6	67.22
5	8	6	6	8	6	6	6	6	67.22
6	8	4	4	6	8	6	6	6	59.44
7	8	6	8	6	8	8	8	8	73.89
8	8	6	6	8	6	6	6	6	67.22
9	8	6	8	8	6	6	6	6	71.11
10	8	8	8	8	8	8	8	8	80.00
11	6	4	4	6	6	6	4	4	50.00
12	8	6	6	8	6	6	8	8	70.00
13	8	8	8	6	8	8	6	6	74.44
14	8	6	6	8	8	6	6	6	69.44
15	6	4	4	6	6	6	6	6	52.77
16	8	4	4	6	6	6	6	6	57.22
17	8	6	6	8	6	6	8	8	70.00
18	8	6	8	8	6	8	6	6	71.67
19	8	8	8	8	8	8	8	8	80.00
20	8	8	8	8	8	8	8	8	80.00
21	8	6	6	4	6	6	6	6	61.67
22	8	8	8	6	8	8	8	8	77.22

Table 4.77 (cont): PAM 2006 TES Scores for all 38 Clauses

Cl.	Clarity	Comprehen-siveness	Complee -ness	Consis -tency	Flexib -ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
23	8	6	8	6	8	8	6	6	71.11
24	8	6	8	6	8	8	8	8	73.89
25	8	6	8	8	8	6	6	6	73.33
26	8	8	8	8	8	8	8	8	80.00
27	8	6	8	6	8	6	6	6	70.55
28	8	6	8	6	8	6	6	6	70.55
29	8	6	6	8	6	6	6	6	67.22
30	6	6	8	8	6	6	6	6	69.44
31	8	6	8	6	8	8	8	8	73.89
32	8	6	8	6	8	8	8	8	73.89
33	8	8	8	8	8	8	8	8	80.00
34	8	6	8	8	6	8	8	8	74.44
35	8	8	8	8	8	8	8	8	80.00
36	8	6	8	8	6	8	8	8	74.44
37	8	6	8	6	8	8	6	6	71.11
38	8	8	8	8	8	8	8	8	80.00

It is noted that from the clause analysis as shown above, seven (7) clauses that scores 80, namely Clause 10, 19, 17, 20, 26, 3, 38 These clauses are rather basic clauses and are not deemed to be covering those typically critical issues in a standard form.

Clauses in between the 70.00 to 79.99 marks are generally positive scoring 8 under most attributes of evaluation with a few of attributes scoring 6 and hence, can be considered needing minor improvements. There are a total of eighteen (18) clauses under this category. It is suggested that clauses as such will need to be examined and updated at a regular intervals to improve on its validity. However, specific attentions when used on a project basis are not necessary.

There are eight (8) clauses scored low negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 60.0 to 69.99 in the clause analysis.

- Clause 1.0: Contractor's Obligations
- Clause 4.0: Statutory Obligations, Notices, Fees and Charges
- Clause 5.0: Levels and Setting Out of Works
- Clause 8.0: Site Agent

- Clause 14.0: Material and Goods
- Clause 21.0: Date of Commencement, Postponement and Completion Date
- Clause 29.0: Works by Craftsmen, Tradesmen or Other Contractor Employed or Engaged by Employer
- Clause 30.0: Certificates and Payment

There are five (5) clauses scored negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 50.0 to 59.99 in the clause analysis.

- Clause 2.0: Architect's Instruction (AI)
- Clause 6.0 Materials and Workmanship to conform to Description, Testing and Inspection
- Clause 11.0 :Variations, Provisional and Prime Cost Sum
- Clause 15.0: Practical Completion and Defects Liability
- Clause 16.0: Partial Possession by Employer

All clauses with TES of less than 70 that has fallen under the two categories of negativity have problems associated with them and therefore, the Level of Adequacy is 6 or below in certain attributes. Problems and issues of these clauses are further discussed and verified by the key expert interviewees from the construction industry to make sure that the problems and issues are actually problematic to the construction industry. The following sections present the discussion and verification of the problematic clauses determined from the clause analysis.

4.6.3 Discussion and Verification of the Problematic Clauses

4.6.3.1 Interviewees' Profiles

Interviewees chosen are carefully selected based on the criteria set in Section 3.5.2. They are from the background of Architects, Construction Lawyers, Arbitrators and some actually have a combination of backgrounds. Their profiles are summarized in the following Table 4.78.

All five (5) standard forms are distributed equally among the eighteen (18) key expert interviewees. Five (5) key expert interviewees are willing to participate and relate their experience and expertise with PAM 2006. As seen in Section 2.8.2.3, Phenomenological research which requires the individual to relate his or her experience on the forms, five (5) numbers of interviewees are deemed as adequate.

Table 4.78: Interviewees' Background Summary for PAM 2006

Interviewee	Type of Job/Position	Organization	Experience in construction industry or contract administration	Standard Form of Contract Used
1	Architect/Senior Partner	Consultancy	>25 years	PAM
2	Architect/Arbitrator/ Senior Partner	Architecture Consultancy	>20 years	PWD/PAM
3	Quantity Surveyor/Project Manager	Contractor	>15 years	PWD/PAM
4	Architect/Arbitrator/ Senior Partner	Engineering and Claim Consultancy	>25 years	PWD/PAM
5	Architect/Senior Partner	Contractor	>30 years	PAM/IEM

4.6.3.2 Discussion and Verification

The following provide an example of how verification works are carried out. Based on the previous example of Clause 21.0 'Date of Commencement, Postponement and Completion Date', problems and issues of this problematic clause are discussed as follows:

Clause 21.0 'Date of Commencement, Postponement and Completion Date' has essentially three (3) components, the regular date of commencement and completion date in Part 21.1, Sectional commencement and completion in Part 21.2 and 21.3 and postponement or suspension of works in Part 21.4. 'Date of commencement' needs further clarification as in whether it is the date based on letter of award, instructions by Architect or as stated in the Appendix. This clause indicates that possession is given on the date of commencement. There should be some time frame included to give flexibility. Date of completion and its calculation is not covered at all here, albeit the title of the clause does include the date of completion. Part 21.4 explains on suspension works but does not clearly and comprehensively states that the suspension here is related to postponement in site possession or suspension in general. Hence, clause lacks consistency. If suspension is related postponement in site possession, matters regarding delay and extension of time and loss and expenses incurred by Contractor. The clause covers that Contractor is not to suspend work and Architect can suspend work when delay of possession of site does not exceed the Period of Delay but does not mention the scenario when period of delay is exceeded. It states extensively on the matter of insurance but does not touch on performance bond should the works be suspended or postponed.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role

distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees and example of interviews results are as follows:

Interviewee 1:

Interviewee 1 agreed that the clause is poor in dealing with the issue of suspension of works due to pro-long postponement in the handing over of the site. It is also unclear as what if the period of delay of site handing over has exceeded the allowable period. If the site is resume back after a pro-long delay in handing over the site and contract was suspended, the follow on procedures are not stated as well.

Besides, Interviewee 1 thought that the date of possession of site and date of commencement can be different to allow for some flexibility. But possession of site is not necessary the date of commencement of work. He opined that clause does not fully cover the various possibilities for these dates and hence, very much lacking in this aspect.

Interviewee 1 also opined that the clause is very brief in covering for issue of postponement in site possession issue. Overall, he suggested that the clause need serious improvements.

b) Interviewee 2:

Interviewee 2 thought that Contractor is entitled to claim extension of time if the possession of site is delayed but he cannot claim for loss and damages will be somewhat inconsistent. In some cases, if the site cannot be possessed and Contractor cannot start work, there will be procedures to follow. One of such remedies is suspension. Suspension can only be activated after a pro-long period of delay which is over the allowable period (which is stated in the appendix of this form). Interviewee 2 agreed that there is no coverage of such matters.

Interviewee 2 also agreed that the clause does not make possession of site a condition precedent to commencement of works. To have the commencement of works on the same date as possession of site is common and hence, he has no problem with that. In fact, he opined that it is better as such as the Contractor knows for sure works can be started. And there would not be issued whether contract period starts on possession of site or commencement of works (after confirmation by notification by Architect).

Interviewee 2 also noted that sectional completion does not tie in with partial occupation. The section completed may not be occupied but in the event that it may be (which is common), there should be some references made.

Interviewee 3:

Interviewee 3 mentioned that it is important to understand that possession of site is a condition for commencement of works. No contract is valid if the work is to commenced first without a full/partial possession of site. It may be true to say that with the Letter of Award, the commencement of works will be valid. If that is condition, then the clause can cover that. The reason for drafting as such is so that the form can do away with such complication. And hence, state that date of possession of site will be same as date of commencement.

He agreed that the clause should clearly have better define suspension due to pro-longed delay in site possession. It definitely can be improved with respect to procedures to resume works after suspension, conditions for suspension. The clause could have also clearly mentioned the follow actions should the period of delay of possession of sites exceeded the stated allowable period. If the suspension is pro-longed, Interviewee 3 did not see any reason why the Contractor should not be entitled the claim on loss and expenses due to late possession of site, provided that he is to agree to extend the validity of the contract.

Interviewee 4:

Interviewee 4 mentioned that in the case where the delay of possession of sites has exceeded the allowable period of delay should be clearly elaborated in the clause. If delay has happened, the Contractor will be allowed for only Extension of Time. But if there is a pro-longed delay, the remedy for the Contractor and Employer is not clearly stated.

Besides, the term suspension in the clause should be defined clearly to avoid any confusion as suspension of contract which has not started and suspension of works due to other reasons are two completely different matters that required different treatment. Interviewee 4 thought that the clause is very brief and bare on these important matters.

Interviewee 5:

Interviewee 5 totally agreed that the clause is unclear and incomplete. It does not state that possession of site is a condition precedent to commencement of works and what are the consequential effects if possession of site cannot be given on time.

He was in the opinion that if there is a pro-long delay in handing over of site, the Contractor can opt to pull out, i.e. to determinate the contract or suspend the works with the consent of the Employer. This is because validity of the pricing may not be able to stand after a pro-longed delay in commencement of works on top of facing losses in opportunity and need to

have additional cost when managing the resources when the site is delay in possession. To be fair, if the Contractor cannot start works after given possession of site and notice to start work, method of sanctioning and/or determination of Contractor should also be in place. He agreed that the clause should explain on the issue of claiming for loss and expenses by both parties due to delay in possession of site.

The following Table 4.79 shows the coding table for the interviews results. The respondents are to respond to the 'Problematic Clauses' which is defined by TES of less than 70 and the problem areas and the level of adequacy scores given based on the number of problem areas as stated in Table 4.75. Level of adequacy scores for the specific attributes which are 6 or below from Table 4.75, are reinstated in the following Table 4.79 for the purpose of coding the interview's results.

Table 4.79: Coding Analysis from Interviews Results for Clause 21.0

Attribute	Score	Interviewee 1			Interviewee 2			Interviewee 3			Interviewee 4			Interviewee 5		
		A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
Comprehensiveness	6	✓				✓		✓				✓		✓		
Completeness	6	✓				✓		✓				✓		✓		
Consistency	4		✓		✓			✓			✓				✓	
Flexibility	6		✓			✓			✓		✓			✓		
Clear Structured Project Management Framework	6	✓				✓			✓			✓			✓	
Fairness or Role Distribution	6		✓		✓			✓				✓		✓		
Risk Distribution	6		✓		✓			✓				✓		✓		

Where, **A**= Agree, **N**= Neutral, **D**= Disagree

From the coding analysis as seen in Table 4.79, summary of the verification results are provided for in the following Table 4.80.

Table 4.80: Summary of Interviewees' Response for Clause 21.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Consistency	4	3	2	0
Flexibility	6	2	3	0
Clear Structured Project Management Framework	6	2	3	0
Fairness/Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 21.0 is verified to have problems with comprehensiveness, completeness, consistency, role distribution and risk distribution. Clear structured framework for project management and flexibility are verified to have problems with low frequency of occurrences.

The above process is repeated for all the thirteen (13) problematic clauses in PAM 2006. Complete set of interviews results are presented in *Appendix C*. Discussion of problematic clauses and results and analysis of verification works are as shown in the following.

Clause 1.0 'Contractor's Obligations' covers the contractor's obligation in the contract. It is to note that Engineer's and Employer's obligations are not covered by the form. Part 1.1 and 1.2 covers the general obligations of the contractor with respect to carrying out the works and site operation. Contractor is to carry out the works with material, goods and standards of workmanship of the quality and standard described in the Contract Documents and /or required by the Architect in accordance with the provisions of the Contract. It is not clear which provisions the part is referring to and whether contract means contract documents. Part 1.3 indicates that there is an option for contractor's to provide alternative design but the acceptance by the Architect does not relieve the Contractor of his responsibilities. However, in order for better site management, joint liability for alternative design may be necessary. In addition, better coverage should be included in terms of indemnification of the design works carried out by the contractor should be given. As Contractor does not have the Professional Liability Insurance which covers the designer, by holding Contractor's liable may not be sufficient to cover the Employer. Part 1.4 amplifies the duties of the Contractor to look for discrepancies. In terms of role distribution and fairness, it is seen that procedures informing about the discrepancies are to be initiated by the Contractor but he has no duties to search for

it. However, if he found it, he will report and he can also then use the discrepancy of the contract as additional advantage to lessen his obligations. It may be more effective for the administration of the contract should the Architect to also take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found. The shared responsibilities should enhance the framework for good project management on site. The part does not include the procedures and time frame for informing on the discrepancies (stating instead 'sufficient time before commence of the affected works'); and approval or further instructions (stating instead a period which would not materially delay the progress of the affect work') are not provided for. These terms are ambiguous and the part lacks of comprehensiveness.

The clause is found to be deficient in comprehensiveness, completeness, structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.81.: Summary of Interviewees' Response for Clause 1.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Clear Structured Project Management Framework	6	5	0	0
Fairness/Role Distribution	6	3	0	2
Risk Distribution	6	3	0	2

It was found that Clause 1.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management. In terms of role distribution and risk distribution, Clause 1.0 is verified to have problems with these attributes.

Clause 2.0 'Architect's Instruction' does not states what constitutes an AI (drawings, details and/or written instructions, emails). It does not state the grounds of which the Engineer can issue instructions and the procedures for issuance of AI except that it must be in writing. Part 2.3 covers the Contractor can ask for clarification as to which provision of the conditions empowers the Architect to issue such instructions but it does not cover the procedures for the Contractor to disagree with instruction issues and a mean to come to a consensus. This is not conducive for good site management. Part 2.4 states the Contractor must comply within seven (7) days of receiving of AI as stated but this time frame stated may not be practicable if the scope of the instructions is big and involves additional costs and expenses, which is then subjected to conditions of other clauses. Hence, the clause lacks flexibility. The clause does

not cover the consequential effects of issuance and compliance of AI such as delays, loss and expenses, change in working method and working programme. It also does not cover on emergency situation where Architect's instructions are required immediately.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.82: Summary of Interviewees' Response for Clause 2.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	5	0	0
Completeness	4	5	0	0
Consistency	6	4	1	0
Flexibility	6	1	1	3
Clear Structured Project Management Framework	6	1	1	3
Fairness/Role Distribution	6	2	0	3
Risk Distribution	6	2	0	3

It was found that Clause 2.0 is strongly verified to have problems with comprehensiveness, completeness and consistency. Clear structured framework for project management, flexibility, role distribution and risk distribution are verified to have problems with low frequency of occurrences.

Clause 4.0 'Statutory Obligations, Notices, Fees and Charges' does not cover the fees and charges required and relevant for a specific contract, which can be list in the Appendix; and fees and charges payable by the Employer (such as capital contribution, fees related to planning and zoning). It does not state the Employer's responsibility in obtaining approval and provision of the related documents to the Contractor. This will serve a reminder to the Contractor as to what should take note of to assist with better contract administration on site. In order to improve the administration of the contract, assistance to be provided by Employer and its representatives should be included as certain authorities require the submission of documents and liaison specifically from the Employer's representatives. It does not cover the method of how the Contractor can indemnify the Employer against the charges and penalties; effects when Employer defaults in payment; and changes in statutory requirement over the period of the contract. Part 4.2 and 4.3 basically transfer the checking for inconsistencies to the Contractor.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.83: Summary of Interviewees' Response for Clause 4.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Flexibility	6	5	0	0
Clear Structured Project Management Framework	6	3	2	0
Fairness/Role Distribution	6	3	0	2
Risk Distribution	6	3	0	2

It was found that Clause 4.0 is strongly verified to have problems with flexibility. In terms of comprehensiveness, completeness, clear structured framework for project management, role distribution and risk distribution, Clause 4.0 is verified to have problems with these attributes.

Clause 5.0 'Levels and Setting Out of Works' is a serious clause in building construction but only briefly covered. It does not cover that the Contractor is to set up accordingly to the levels and dimensions given by Architect; errors or inaccuracies in setting due to errors in Architect's information or due to Contractor's carelessness and costs of rectifying to be borne by which parties; Architect to check the Contractor's setting out and levels; and Contractor's to maintain the setting up. It states the Contractor is to borne all costs from inaccuracies in setting out, making this clause fairly unequal in role and risk distribution in the absence of the explanation of sources of the errors. Legally, accurate dimensions given by Architect are not necessary but on the ground practice, it will enhance the site management especially to reduce reworking problems later.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.84: Summary of Interviewees' Response for Clause 5.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Project Management Framework	6	3	1	2
Fairness/Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 5.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, role distribution and risk distribution. In terms of clear structured framework for project management, Clause 5.0 is verified to have problems with this attribute.

Clause 6.0 'Materials and Workmanship to conform to Description, Testing and Inspection' attempts at impressing on the contractor the quality aspects works and material as described in the contract documents and required by the Architect in accordance with the provisions of the Contract. It is unclear of which provisions or whether contract is the contract documents stated. On the matter of testing, to better explain the terms, conditions pertaining to the need of such requirements; and carrying out of tests elsewhere in another location can be included. The remedies stated in Part 6.5 can be further extended. The clause does not mention on the submission of quality plan and work method statement for the endorsement of the Architect in order for work to be more efficient managed on site. It does not include procedures for opening up of the work, which is relevant to the inspection part of the clause. Part 6.7 states that the Employer has the right to employ someone to carried out the subject matter if the contractor does not comply with the AI to do so but legally, consent from Contractor is necessary. Part 6.8 states that if any manufacturer, sub-contractor or supplier is to give warranty or guarantee for any proprietary systems, material or goods, the contractor is to submit it to the Employer but it does not release or relieve the contractor from any liabilities. The method of sanctioning the contractor is not provided for.

The clause is found to be deficient in comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.85: Summary of Interviewees' Response for Clause 6.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Consistency	6	3	2	0
Clear Structured Project Management Framework	6	5	0	0
Fairness/Role Distribution	6	2	1	2
Risk Distribution	6	2	1	2

It was found that Clause 6.0 is strongly verified to have problems with comprehensiveness, completeness and clear structured framework for project management. In terms of consistency, Clause 6.0 is verified to have problems with this attribute. Role distribution and risk distribution are verified to have problems with low frequency of occurrences.

Clause 8.0 'Site Agent' explains on the matter of contractor's site agent/site representatives. Part 8.1 is not clear about the procedures should the site agent is absent and contractor does not replace him with anybody. Part 8.3 relating to the removal of Contractor's site agent does not state the conditions or reasons precedent the removal. Instead the use of words such as 'unreasonably and vexatiously' is adopted, giving the Architect a large extent in his power. No procedures for disagreement by the Contractor are included. This does not enhance the element of good team, conflict and people management practice on site. The Contractor must immediately remove the site agent should the Contractor be request to do so. And this may not be practicable and it would be more appropriate to include a time frame should be given so that replacement can be found to improve the flexibility of the clause unless that offence of the site agents is of serious effects such as breaking the law.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.86.: Summary of Interviewees' Response for Clause 8.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	3	2	0
Clear Structured Project Management Framework	6	4	1	0
Fairness/Role Distribution	6	2	1	2
Risk Distribution	6	2	1	2

It was found that Clause 8.0 is strongly verified to have problems with comprehensiveness, completeness and clear structured framework for project management, role distribution and risk distribution. In terms of consistency, Clause 8.0 is verified to have problems with this attribute. Role distribution and risk distribution are verified to have problems with low frequency of occurrences.

Clause 11.0 'Variations, Provisional and Prime Cost Sum' essentially has three (3) components. The clause focuses heavily on Variations. Part 11.1 clearly defines the term variations and what constitutes a variation. Part 11.3 states that variation can be issued before the issuance of certificate of practical completion, except when it is necessitated by authority and service provider. However, there are no procedures for emergency situations (safety of the structure and people working) when the Architect's instructions or that of the other designers are required immediately. The clause stated that Architect 'may' to order variations in writing, which implies that he has a choice to issue or not issue a variation, which makes this clause lack consistency and rather ambiguous. Besides, in the event of emergency situations, verbal instructions with record on site diary and the follow up procedures must be included to make this a more complete, comprehensive and flexible clause to enhanced site management. There are no procedures for the Contractor to disagree with the variation works such as cardinal changes. The Architect has the power to order variation or sanction a variation made by the Contractor. There is basically no limitation to the power of Architect and thus affect the rights of the Contractor and Employer.

Besides the Contractor is to carry out the work before valuation is ready, which does put the Contractor at a disadvantage especially disagreement with valuation is not provided for and basis for valuation is a just 'fair adjustment'. There is no mentioned of industry standard or a third party to help to determine should the Contractor and Architect to be in disagreement with price and rates. Part 11.5 and 11.6 relates to valuation of variations and states that valuations of variations are done by Quantity Surveyors. This may add to confusion in terms of site management. There is no specific clause in the form state the duties of Architect and

Quantity Surveyor respectively. The clause is fairly complete covering various issues on the valuation of variations in terms of prices and rates. But it clause does not provide adequate coverage on measurement of the quantity of work and how the measurement is to be carried out or make reference to the relevant clauses. If variation is to caused additional expenses as stated in Part 11.7, time frame for the Contractor intending to submit a claim is given but time frames proposing and approval by the Architect are not mentioned. It is noted that on the matters on Provisional sums and Prime Cost sums, no definitions are given for both terms and conditions precedent to the engagement of both items are not covered. Methods of calculation of rates and prices are given to be similar to a variation but details of addition and deduction of the contract sum is not covered. Provisional and prime cost sum should be covered as separate matter to variations to avoid confusion. Works on re-measurement of Provisional Quantities are also to be carried out by Quantity Surveyor. There is no reference to any 'measurement' clause/s.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.87: Summary of Interviewees' Response for Clause 11.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	1	1
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Project Management Framework	6	4	1	0
Fairness/Role Distribution	4	3	0	2
Risk Distribution	4	3	0	2

It was found that Clause 11.0 is strongly verified to have problems with consistency and clear structured framework for project management. In terms of, comprehensiveness, completeness, consistency, flexibility, role distribution and risk distribution, Clause 11.0 is verified to have problems with these attributes.

Clause 14.0 'Material and Goods' gives rise to legal issues regarding ownership of the materials and goods as it does not cover the fact that only certain percentage of the value of materials and goods are made in payment or included in the interim certificates and not the full amount. The Employer may have the possession but not the legal title of the materials and goods. It is commendable that it covers that Contractor to give warranty that he has title of goods free from encumbrances, which would cover the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter. The Contractor shall remain responsible for loss and damage of the materials and goods remains unclear as to how he can do when method is not stated. This clause does not have equal risk and role distribution nor does it help to enhance good site management in terms of inventory and material control on site.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.88: Summary of Interviewees' Response for Clause 14.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	2	0
Completeness	6	3	2	0
Clear Structured Project Management Framework	6	3	2	0
Fairness/Role Distribution	6	2	2	1
Risk Distribution	6	2	2	1

It was found that Clause 14.0 is verified to have problems with comprehensiveness, completeness and clear structured framework for project management. Role distribution and risk distribution are verified to have problems with low frequency of occurrences.

Clause 15.0 'Practical Completion and Defects Liability' states that works are practically completed when in the opinion of the Architect, the Employer can have full use of the works for the intended purpose. This is too subjective and extends the power of the Architect. Part 15.1 b states the other requirements but it does not give a clear definition of what constitutes other requirements. One of such other requirements can be issuance of with the issuance of authorities' certificates. The clause does not tie in the issuance of Certificate of Practical Completion with those of the authorities. It is noted that the length of the defect liability period is not stated or indicated to be stated in other parts of the contract documents.

The clause does not define the terms 'defects' and the types of defects (patent or latent) which the contractor is liable for and instead use the terms 'minor defects', which can be ambiguous, is used. Time frame given for such defects is twenty eight (28) days. However, even though, the clause covers critical and emergency defects occur during defect liability period but uses the terms 'critical defects', 'urgent rectification' and 'reasonable time', which may not enhanced good site management. Furthermore, the remedies for the Employer should Contractor fail to carry out the rectification works for the defects do not extend to the cancellation of Certificate of Practical Completion or lengthening of the defect liability period. It does not state that a notice of default or the consent of the Contractor is needed when Employer employs someone else to do it or make appropriate deduction for such defects. Upon issuing or non issuance of the certificate of making good, the follow on actions are not mentioned. Whether the Contractor is relieved from his responsibilities, payment, removal of workmen and equipment and any continuous warranty, if necessary, is not clearly stated and leaving the clause hanging.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.89: Summary of Interviewees' Response for Clause 15.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Consistency	6	2	3	0
Flexibility	6	2	2	1
Clear Structured Project Management Framework	6	2	3	0
Fairness/Role Distribution	6	3	0	2
Risk Distribution	6	3	0	2

It was found that Clause 15.0 is strongly verified to have problems with clarity, comprehensiveness and completeness. In terms of role distribution and risk distribution, Clause 15.0 is verified to have problems with these attributes. Clear structured framework for project management, consistency and flexibility are verified to have problems with low frequency of occurrences.

Clause 16.0 'Partial Possession by Employer' states that the Employer can with the consent of the contractor to take over and occupied certain portion of the works. Part 16.1a-f explains on the consequential effect of such action. Issues of performance bond and insurance are not covered. It, however, fails to discuss various risks involved in partial occupation. As the site is partially occupied but the work is not fully completed for other parts, insurance coverage for the end-users and occupiers would not be the same as those to the workmen, labour or site personnel. Certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. In addition, the clause does not cover the contractor's work flow (working programme and work method) with respect to partial occupation. Instead of having full possession, the contractor who has partial possession may find his work flow being disturbed in his attempt to complete the various parts of the uncompleted works. Part of the unoccupied works may also be disturbed by the occupiers and end users. Defects liability and delays can be issues for the uncompleted works but no coverage is provided in this clause. Contractor's safety precautions and plans for the end users and occupiers should be included. This clause on Partial Occupation should be improved with respect to these issues mentioned in order to have a better risk and role distribution. It is noted that no time frame is given for the contractor to remove his site facilities, plant and equipment and material or goods from the site is given.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.90: Summary of Interviewees' Response for Clause 16.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	2	3	0
Flexibility	6	2	3	0
Clear Structured Project Management Framework	6	3	2	0
Fairness/Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 16.0 is verified to have problems with comprehensiveness, completeness, clear structured framework for project management, role distribution and risk

distribution. Consistency and flexibility is verified to be problems with low frequency of occurrences.

Clause 29.0 'Works by Craftsmen, Tradesmen or Other Contractor Employed or Engaged by Employer' states the Employer's right to employ craftsmen, tradesmen or other contractor. There is no mention on contractor's responsibility in reporting their works should there be any discrepancies with the contractor's further on works. There is no coverage on the time frame for reporting by the contractor and issuance of instructions by the Engineer are not given and a more comprehensive procedures be included (including expenses of rectifications, execution of works to proceed without instructions, claim of loss and expenses, extension of time should the discrepancies required rectifications by other contractors). It will also enhance good management practice on site should the SO be put responsible for the coordination of works among the contractors working on site.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.91: Summary of Interviewees' Response for Clause 29.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Project Management Framework	6	4	1	0
Fairness/Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 29.0 is strongly verified to have problems with comprehensiveness, completeness and clear structured framework for project management. In terms of role distribution and risk distribution and flexibility, Clause 29.0 is verified to have problems with these attributes.

Clause 30.0 'Certificates and Payment' is a long clause stating issues of interim certificates and payment, retention funds, suspension of works, final account, final certificates and payment. The whole clause can be broken up into at least two different sections configurations to enable better understanding and easy reading. Part 30.2 uses the terms 'stage

payments' which is not commonly used and the clause can be better present in a formulae rather than long sentences to describe the amount due. The clause did not make reference the part of the form states the Period of Honouring certificates. The clause can be more comprehensive in the types of documents and particulars required by listing them in the Appendix in the contractor's application for better site administration. Part 30.4 describes set off by the Employer and it is unclear to what it means by 'complete details of their assessment of such set-off'. Part 30.5 on retention fund sees that Employer 'may' retain the percentage of the total works, materials and goods referred to in Clause 30.2. The term 'may' is not appropriate as the Employer is certainly going to retain the retention fund. Set-off under clause 30.4 does not mention liquidated damages. In Part 30.7 to 30.9 explains on the issue of suspension of works. Parts are not complete in covering the related issues. Grounds for suspension are not complete and procedures for suspension are unclear. Part 30.10 to 30.15 on the matter of final account, it is unclear of which item has come first; certificate of practical completion and start of defects liability period which ties in with Schedule of Defects and Certificate of Making Good Defects, then penultimate certificate and payment, and lastly final account, final certificates and final payment. The clause indicates that preparation of final account is started upon certificate of practical completion. However, this may not be practical as the certificate of making good defects is still pending. On the issue of penultimate certificate, it should be issued upon the issuance of certificate of practical completion but stated here issue only upon the certificate of making good defects. Payment of penultimate claim, period of honouring and details in penultimate certificate are not stated. It is also suggested that the Statutory Declaration pertaining to payment of all contributions and wages to workmen, etc that it is a common condition precedent to the issue of the Final Certificate to be included in included in clause 30.15.

The clause is found to be deficient in clarity, comprehensiveness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.92: Summary of Interviewees' Response for Clause 30.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	4	1	0
Flexibility	6	3	2	0
Clear Structured Project Management Framework	6	4	1	0
Fairness/Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 30.0 is strongly verified to have problems with clarity, comprehensiveness, and clear structured framework for project management. In terms of role distribution, risk distribution and flexibility, Clause 30.0 is verified to have problems with these attributes.

4.7 Form Analysis - IEM 89 CE

4.7.1 Overall Form Performance

Based on the intensive form analysis of IEM Form of Contract for Civil Engineering Works 1989 (IEM 89 CE), there are total of ten (10) clauses scoring the TES of 80 point in the Positive Category, nineteen (19) clause scoring in between the TES of 70-79 Low Positive Category twenty five (25) clauses scoring in between the TES of 60-69 in the Low Negative Category and three (3) clauses scoring in between the TES of 50-59 in Negative Category. This makes the total of 29 clauses in the positive evaluation category while rest of the 28 clauses are in the category of negative evaluation category.

Figure 4.10 shows the percentage of Clauses/Option Modules under different Magnitude of Evaluation.

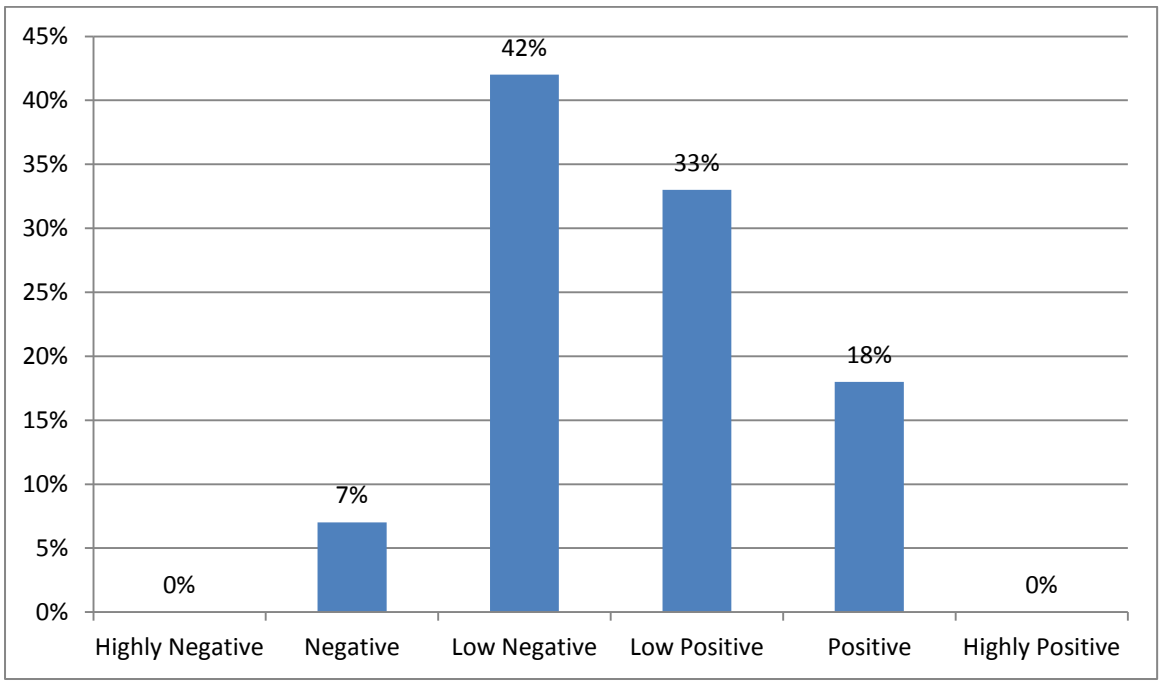


Figure 4.10: Percentages of Clauses/Option Modules under Different Magnitude of Evaluation in IEM 89 CE

From the Figure 4.10 shown above, there are total of 51% of the clauses fallen under positive section which consist of 33% of Low positive clauses and 18% of positive clauses while 49% of the clauses have fallen under the negative section with 34% as low negative and 5% for negative. It is noted that the percentage of positivity and negativity is almost the same making this one of lower performance form studied.

The result of percentage of clauses fallen under the five (5) levels of adequacy based on the Attributes of Evaluation is as summarised in Table 4.93 as shown below.

Table 4.93: Percentages of Clauses under each Level of Adequacy based on Attributes of Evaluation for IEM 89 CE

No.	Attributes of Evaluation	Level of Adequacy				
		2	4	6	8	10
1	Clarity	0%	0%	22.8%	77.2%	0%
2	Comprehensiveness	0%	7%	68.4%	24.6%	0%
3	Completeness	0%	7%	49.1%	43.9%	0%
4	Consistency	0%	0%	28.1%	71.9%	0%
5	Flexibility	0%	0%	45.6%	54.4%	0%
6	Clear Structured Management Framework	0%	0%	47.4%	52.6%	0%
7	Fairness or Role Distribution	0%	8.8%	43.9%	47.4%	0%
8	Risk Distribution	0%	8.8%	43.9%	47.4%	0%

The positivity of the overall performances of IEM 89 CE is contributed by the three (3) attributes of evaluation namely clarity, consistency and flexibility. Whilst negativity is

contributed mainly by the Comprehensiveness, Completeness, Fairness/Role Distribution and Risk Distribution attribute.

The form has short clauses which are not difficult to read but it lacks coverage on many issues while procedures and time frame for the existing issues are left bare as well. Flexibility is given to the Engineer to decide on many issues. For a form that has not been revised since 1989, this is outdated. In terms of role and risk distribution, the results shown are consistent with the fact that this form evolved for the older version of government form such as the old JCT and PWD.

Even though positivity is seen there are a high percentage of clauses that needs General Improvement as a good percentage of clauses are rated with '6' in all the attributes. This version of IEM form of contract is suggested to be improved as soon as practicable as the form is actually in need of some major and general improvement.

The overall performance of this contract is considered as **Low Negative**. The following section explains in more details of the form's performance in terms of the clauses analysed.

4.7.2 Clause Analysis

This section explains the results of clause analysis for IEM 89 CE with respect to the clauses' TES. In order to explain the results of TES for each clause in a more comprehensible way, the following puts forward an example of how clause analysis is carried out to arrive at its TES. Example provided is IEM 89 CE Clause 45.0 'Defects after Completion'. A complete set of example of analysis of Problematic Clauses with respect to each attributes of evaluation using IEM 89 CE standard form is provided for in *Appendix B.*

Table 4.94: Clause Analysis for IEM 89 CE Clause 45.0 'Defects after Completion'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clarity	P1	Language used	Ambiguities are defects certification is subjected to the opinion of the Engineer Defects not defined	2	8
	P2	Structure of sentence	-		
	P3	Length of sentence	-		
Comprehensive-ness	P1 & P2	Details of procedures, including Time frame/s	This clause does not provide: • time frame for Engineer to generate the Schedule of defects after site inspection, testing and commissioning and/or after issuance of Certificate of Practical completion; • time frame to rectify the necessary defect; • procedure and time frame to handle critical and emergency defects; • procedures for assessment of defect works such as further retesting and access for contractor to come in to rectify defects • follow on actions upon issuance of the certificate of making good; and • procedures if Engineer decides that certificate of making good defects is not to be issued as yet	6	4
Completeness	P1	Coverage of relevant issues	This clause does not provide: • definition in terms of defects and types of defect which is the contractor to be liable of; • assessment of defect works such as call for retesting and commissioning on defective parts during defect liability period and/or after the issuance of Certificate of Completion; • critical or emergency defects; • remedies for the Employer when contractor fail to carry out the rectification works for the defects; • follow on actions after the certificate of making good defect (whether the contractor is relieved from his responsibilities, payment, removal of workmen and equipment and any continuous warranty, if necessary); and	6	4

Table 4.94 (cont): Clause Analysis for IEM 89 CE Clause 45.0 'Defects after Completion'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
			• actions if Engineer decides that certificate of making good defects is not to be issued as yet		
Consistency	P1	Conflict between clauses, references, cross referencing to other clause/ external law	• No reference make to other related issues such as payment, retention sum • No reference make to removal of workman and equipment. • Reference should also be made to issues related with warranty.	3	6
Flexibility	P1	Procedures/ options for application of various situation	• This clause does not cover critical and emergency defects occur during defect liability period. • No coverage of situations where the certificate of making good defects is not issued as yet.	4	6
	P2	Open ended/close ended	• If there is no stated, the defect completion period is 6 months, which is tight and rather uncommon.. • Defects on the schedule of must be completed with reasonable time but no later than 3 month, which is too open ended.		
Clear Structured Framework for Project Management	P1	Procedures/ option to enhance project management	• This clause does not cover critical and emergency defects occur during defect liability period and not practical of site management. • Follow on actions after certificate of making good defects is issued or not issued. • Coverage on testing and commissioning of certain parts are not provided for.	3	6

Table 4.94 (cont): Clause Analysis for IEM 89 CE Clause 45.0 'Defects after Completion'

Attributes	Parameters	Description of Problem Areas	Total Problem areas	Level of Adequacy
Role Distribution/ Fairness	P1 Balance rights and responsibilit-ies of parties involved	• Contractor role is make good of defects after completion , but no coverage of how he is handle: i. defects ; ii. types of defects ; iii. emergency defect occur during defect liability period • Engineer role is to generate schedule of defects but no time frame is provided for. • Employer can get others contractor to rectify but procedures for doing so is not clear.	3	6
Risk Distribution	P1 Even distribution of negative impacts/ consequence s	• follow on actions after the certificate of making good defect (whether the contractor is relieved from his responsibilities, payment, removal of workmen and equipment and any continuous warranty, if necessary); and • actions if Engineer decides that certificate of making good defects is not to be issued as yet • Employer can get others contractor to rectify but procedures for doing so is not clear.	3	6

Based on the deliberation format given in Section 3.4.6 and as shown in the example in Table 4.94, Level of Adequacy for each attribute for a specific clause is determined and calculation of the attributes' scores are made as shown in following Table 4.95.

Table 4.95 Attributes' Scores IEM 89 CE Clause 45.0 'Defects after Completion'

Attributes	Importance Weighting in %	Level of Adequacy	Attribute's Score
Clarity	22.22	8	17.78
Comprehensiveness	16.67	4	6.67
Completeness	19.44	4	7.78
Consistency	13.89	6	8.33
Flexibility	11.11	6	6.67
Clear Structured Framework for Project Management	2.78	6	1.67
Role Distribution	5.56	6	3.34
Risk Distribution	8.33	6	4.99
		TES	**57.22**

The Level of Adequacy for each attribute and the Total Evaluation Score (TES) for all the clauses in IEM 89 CE are summarised in Table 4.96 as follows, (where 'Cl.' represents the form's Clause number).

Table 4.96: IEM 89 CE TES Scores for all 57 Clauses

Cl.	Clarity	Comprehen-siveness	Complee-ness	Consis-tency	Flexib-ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
1	8	8	8	8	6	8	8	8	77.78
2	8	6	6	6	6	6	6	6	64.44
3	6	6	6	6	8	8	8	8	65.56
4	8	6	6	6	8	8	4	4	64.44
5	6	6	6	6	6	6	6	6	60.00
6	8	6	6	8	8	8	8	8	72.78
7	8	6	8	8	8	8	8	8	76.67
8	6	6	6	6	6	6	6	6	60.00
9	6	4	4	6	6	6	6	6	52.78
10	8	6	6	8	6	6	6	6	67.22
11	8	6	6	6	8	6	6	6	66.67
12	8	6	6	6	8	6	6	6	66.67
13	8	6	8	8	6	6	6	6	71.11
14	6	6	6	8	6	6	4	4	60.00
15	8	8	8	8	8	8	8	8	80
16	8	8	8	8	8	8	8	8	80
17	8	6	6	8	6	6	8	8	70
18	6	6	6	8	6	6	6	6	62.78
19	8	8	8	8	8	8	8	8	80
20	8	8	8	8	8	8	8	8	80
21	6	6	6	8	8	8	4	4	62.78
22	8	6	8	8	8	6	6	6	73.33
23	8	6	6	6	6	6	4	4	61.67
24	6	6	6	8	8	6	6	6	65.00
25	8	8	8	8	8	8	6	6	77.22
26	6	6	6	6	6	8	8	8	63.33
27	8	6	6	8	6	6	6	6	67.22
28	8	6	6	6	6	6	6	6	64.44
29	8	8	8	6	8	8	8	8	77.22
30	8	8	8	8	8	8	8	8	80
31	8	6	6	8	6	6	6	6	67.22
32	8	6	6	6	6	6	6	6	64.44
33	8	6	8	8	8	8	8	8	76.67
34	8	6	8	8	8	8	8	8	76.67
35	8	6	8	8	8	8	8	8	76.67
36	8	6	8	8	8	8	8	8	76.67
37	8	6	8	8	8	8	8	8	76.67

Table 4.96 (cont): IEM 89 CE TES Scores for all 57 Clauses

Cl.	Clarity	Comprehen-siveness	Complee -ness	Consis -tency	Flexib -ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
38	6	6	6	6	6	6	6	6	60.00
39	8	6	6	6	6	6	6	6	64.44
40	8	6	8	8	8	8	6	6	73.88
41	8	6	8	8	8	8	8	8	76.67
42	8	4	4	6	6	6	6	6	57.22
43	6	4	4	8	6	6	6	6	55.56
44	8	6	6	8	6	6	6	6	67.22
45	8	4	4	6	6	6	6	6	57.22
46	6	8	8	8	8	8	8	8	75.56
47	8	6	6	8	6	8	8	8	70.55
48	8	6	6	6	6	6	6	6	64.44
49	8	6	8	8	6	6	4	4	68.33
50	8	8	8	8	8	8	8	8	80.00
51	6	6	6	8	6	6	6	6	62.78
52	8	6	6	8	8	6	8	8	72.22
53	8	8	8	8	8	8	8	8	80.00
54	8	8	8	8	8	8	8	8	80.00
55	8	6	6	8	8	8	8	8	72.78
56	8	8	8	8	8	8	8	8	80.00
57	8	8	8	8	8	8	8	8	80.00

It is noted that from the clause analysis as shown above, eight clauses that scores 80, namely Clause 15, 16, 19, 20, 30, 50, 53, 54, 56, 57. These clauses are rather basic clauses and are not deemed to be covering those typically critical issues in a standard form. They are generally very short clauses, which can be readily understood.

Clauses in between the 70.00 to 79.99 marks are generally positive scoring 8 under most attributes of evaluation with a few of attributes scoring 6 and hence, can be considered needing minor improvements. There are a total of twenty (20) clauses under this category. It is suggested that clauses as such will need to be examined and updated at a regular intervals to improve on its validity. However, specific attentions when used on a project basis are not necessary.

There are twenty four (24) clauses score low negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 60.0 to 69.99 in the clause analysis.

- Clause 2.0: Duties of Engineer and Engineer's Representatives
- Clause 3.0: Scope of work

- Clause 4.0: Works to be to the satisfaction of Engineer'
- Clause 5.0: Engineer's Instruction
- Clasue 8.0: Sufficiency of contract Documents
- Clause 10.0:Unfixed materials and Goods
- Clause 11.0: Statutory Obligations
- Clause 12.0: 'Patent Rights and Royalties
- Clause 14.0: 'Inspection of Site
- Clause 18.0: Contractor's Superintendence
- Clause 21.0: Removal of Workmen
- Clause 23.0: Variations
- Clause 24.0: Measurement and Valuation of Works Including Variations
- Clause 26:0: Measurement
- Clause 27.0: Sub-letting and Assignment
- Clause 28.0: Nominated Sub-Contractor and/or Nominated Suppliers
- Clause 31.0: Artisans and Tradesmen
- Clause 32.0: Indemnities to Employer with respect to Personal Injuries and Damage to Property
- Clause 38.0: 'Commencement Time and Delays
- Clause 39.0: Completion of Works'
- Clause 44.0: Loss and Expenses caused by Delays
- Clause 48.0: Final Account Certificates
- Clause 49.0: 'Effect of Engineer's Certificates
- Clause 51.0: Termination of Contractor's

There are four (4) clauses scored negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 50.0 to 59.99 in the clause analysis.

- Clause 9.0: Materials and Workmanship
- Clause 42.0: Partial Occupation by Employer Final Certificate
- Clause 43.0: Delay and Extension of Time
- Clause 45.0: Defects after Completion

All clauses with TES of less than 70 that has fallen under the two categories of negativity have problems associated with them and therefore, the Level of Adequacy is 6 or below in certain attributes. Problems and issues of these clauses are further discussed and verified by the key expert interviewees from the construction industry to make sure that the problems and

issues are actually problematic to the construction industry. The following sections present the discussion and verification of the problematic clauses determined from the clause analysis.

4.7.3 Discussion and Verification of the Problematic Clauses

4.7.3.1 Interviewees' Profiles

Interviewees chosen are carefully selected based on the criteria set in Section 3.5.2. They are from the background of Engineers, Construction Lawyers, Arbitrators and some actually have a combination of backgrounds. Their profiles are summarized in the following Table 4.97.

All five (5) standard forms are distributed equally among the eighteen (18) key expert interviewees. Five (5) key expert interviewees are willing to participate and relate their experience and expertise with IEM 89 CE. As seen in Section 2.8.2.3, Phenomenological research which requires the individual to relate his or her experience on the forms, five (5) no of interviewees is deemed as adequate.

Table 4.97: Interviewees' Background Summary for IEM 89 CE

Interviewee	Type of Job/Position	Organization	Experience in construction industry or contract administration	Standard Form of Contract Used
1	Civil Engineer/Arbitrator/ Senior Partner	Engineering Consultancy	>30 years	PWD/IEM
2	Civil Engineer/Construction Manager	Contractor	>15 years	PWD/IEM
3	Civil Engineer/Construction Lawyer/Arbitrator/Senior Partner	Legal Firm	>20 years	IEM/CIDB
4	Civil Engineer/ Managing Director	Contractor	>20 years	PWD/PAM/IEM
5	Civil Engineer/Senior Partner	Engineering Consultancy	>20 years	PWD/PAM/IEM

4.7.3.2 Discussion and Verification

The following provide an example of how verification works are carried out. Based on the previous example of Clause 45.0 'Defects after Completion', problems and issues of this problematic clause are discussed as follows:

Clause 45.0 'Defects after Completion' shall define the method of making good defect. The clause does not define the terms 'defects' and the types of defects (patent or latent) which the Contractor is liable for. No time frame is given for the Engineer to generate the Schedule of

defects after site inspection, testing and commissioning and/or after issuance of Certificate of Practical completion and hence, inconsistent. Part 47b covers only Schedule of Defects to be generated and delivered to Contractor no later than 14 days before end of Defect Liability. In addition, no time frame is given for Contractor to rectify the necessary defects. Part 47b gives that for schedule of defects generated before end of Defects Liability Period, it must be completed with reasonable time but no later than three (3) months. The lack of comprehensiveness here may seem as flexible but it does not give rise to good and effective management on site. The coverage also does not extend to critical and emergency defects occur during defect liability period. Furthermore, the remedies for the Employer should Contractor fail to carry out the rectification works for the defects do not extend to the cancellation of Certificate of Practical Completion or lengthening of the defect liability period and hence, not exhaustive. It does not state that a notice of default or the consent of the Contractor is needed when Employer employs someone else to do it or make appropriate deduction for such defects. The clause does not cover further retesting and access for Contractor to come in to rectify defects. Upon issuance of the certificate of making good, the follow on actions are not mentioned. Whether the Contractor is relieved from his responsibilities, payment, removal of workmen and equipment and any continuous warranty, if necessary, is not clearly stated and leaving the clause hanging. If Engineer decides that certificate of making good defects is not to be issued as yet, follow on actions are not provided for.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees and example of interviews results are as follows:

Interviewee 1:

Interviewee 1 stated that his very first impression of this clause is that the typical defects liability period of 6 months if not otherwise mentioned is short and outdated. Typically, it will be 12 months. He agreed that the clause is lacking of definition of the term ‘defects’. According to him, the term ‘defects’ is a common word and may lead to confusion if it is not properly defined under contract form. He added the types of defects which the Contractor is liable for are not listed clearly under this clause. In his opinion, the purpose of why drafters of this form did not define the term as mentioned above properly could most probably of their thought of regular form users can understand the term easily.

Besides, he also pointed out another problematic issue under this clause. This clause fails to cover the critical and emergency defects occur during defect liability period. In his experience, there are some construction works need immediate remedies as any delay of them can cause more serious problems. For example, if the leakage of pipe is detected, the Contractor should be given instruction to do his repair work immediately. Of course, the Engineer has to issue him a higher claim of pay on behalf of the Employer for that action.

Interviewee 2:

Interviewee 2 stated that there should be a time frame given for the Engineer to generate the schedule of defects after site inspection, testing and commissioning and/or after issuance of certificate of practical completion. This is to create a more systematic project management framework and where the Contractor can refer to. Besides, he also thinks that this clause is lacking to cover the serving the notice of default including the calculation of cost of remedying the defects by others to the Contractor before such deduction is made; calculation for diminution in the value of work. He added all these suggestions are to protect the Contractor's right instead of placing all risk on him only.

Interviewee 3:

According to Interviewee 3, the guideline or procedure to act as the remedies for the Employer when the Contractor fails to carry out the rectification works for the defects is not provided. He provided some suggestions regarding to issue mentioned above. For example, the issuance of certificate of practical completion can be extended or the defect liability period can be lengthening if the Contractor fails to complete his task due to rectification works. In addition, this clause should cover further retesting and access for Contractor to come in to rectify defects in Interviewee 3's opinion. He explained that this procedure of retesting is reasonable as the Contractor has to liable with all the testing works including retesting upon the Engineer's instruction as mentioned in Clause 5.

Interviewee 4:

Interviewee 4 stated that this clause is complete and comprehensive in term of content as it able to cover all procedures and guidelines required regarding to defects after completion in

his opinion. However he suggested that the clause should define the term "defects" properly as he does not understand what kind of defects that Contractor needs to cover.

Interviewee 5:

According to Interviewee 5, he disagreed with the time frame described for the schedule of defects generated before end of Defects Liability Period under part 47 b). He furthered, the words "reasonable time" used to describe the period for the schedule of defects to be generated is not appropriate and lack of comprehensive. He therefore suggested the words "reasonable time" can be replaced by a range of time, said three (3) to five (5) days maybe.

Besides, he also thinks that this clause should cover the permit for Contractor to relieve from his responsibilities, payment, removal of workmen and equipment and any continuous warranty if necessary. The Contractor should not bond to all these issues as mentioned above if he has done all his rectification works accordingly.

The following Table 4.98 shows the coding table for the interviews results. The respondents are to respond to the 'Problematic Clauses' which is defined by TES of less than 70 and the problem areas and the level of adequacy scores given based on the number of problem areas as stated in Table 4.94. Level of adequacy scores for the specific attributes which are 6 or below from Table 4.94, are reinstated in the following Table 4.98 for the purpose of coding the interview's results.

Table 4.98: Coding Analysis from Interviews Results for Clause 45.0

Attribute	Score	Interviewee 1			Interviewee 2			Interviewee 3			Interviewee 4			Interviewee 5		
		A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
Comprehensiveness	4	✓				✓		✓				✓		✓		
Completeness	4	✓				✓		✓				✓		✓		
Consistency	6		✓		✓			✓			✓				✓	
Flexibility	6		✓			✓			✓		✓			✓		
Clear Structured Project Management Framework	6	✓				✓		✓			✓				✓	
Fairness or Role Distribution	6	✓			✓			✓				✓		✓		
Risk Distribution	6	✓			✓			✓				✓		✓		

Where, **A**= Agree, **N**= Neutral, **D**= Disagree

From the coding analysis as seen in Table 4.98, summary of the verification results are provided for in the following Table 4.99.

Table 4.99: Summary of Interviewee's Response for Clause 45.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	3	2	0
Completeness	4	3	2	0
Consistency	6	3	2	0
Flexibility	6	2	3	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 45.0 is strongly verified to have problems with role distribution and risk distribution. In terms of comprehensiveness, completeness, consistency and clear structured framework for project management, the clause is verified to have problems with these attributes. Flexibility is verified to have problem with low frequency of occurrences.

The above process is repeated for all the twenty-eight (28) problematic clauses in IEM 89 CE. Complete set of interviews results are presented in *Appendix C*. Discussion of problematic clauses and results and analysis of verification works are shown in the following.

Clause 2 'Duties of Engineer and Engineer's Representatives' states the SO and his representatives' duties. The clause in Part 2a is not complete and comprehensive as it does not cover or refer to the various duties of the Engineer as the administrator of the contract. The duties include among others, timely instructions and direction; sufficiency of information and design to be provided; decisions on issues such as variation, loss and expenses, extension of time. Nor does it lists out the limitation to the Engineer's power, which can be topple the balance in role and risk distribution for all the contracting parties. Part 2b states the duties and limitation of the power of the Engineer's representatives. The Engineers from time to time can delegate the representatives' powers and authorities vested in the Engineer and any instruction and approval by the representatives would then be binding between the contractor and Employer (as in Part 2c). Part 2c (i) however states if the Engineer's fail to disapprove, the Engineer reserve the right to do so after. This lacks consistency and thus, creates confusion when managing the contract on the contractor's part as whether to take the representatives' and approvals seriously. Part 2c (ii) mentions that if the contractor is

dissatisfied with the decision of the Engineer's Representative he can refer to the Engineer. There are no procedures for the disagreement.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.100: Summary of Interviewees' Response for Clause 2.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Consistency	6	3	1	1
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	4	0	1
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 2.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, role distribution and risk distribution. In terms of consistency, Clause 2.0 is verified to have problems with this attribute.

Clause 3.0 'Scope of work' instead of stating matter related to the scope of work, the clause discuss more on the Contractor's general obligations.

The clause is found to be deficient in clarity, comprehensiveness, completeness and consistency. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.101: Summary of Interviewees' Response for Clause 3.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	0	2
Comprehensiveness	6	3	1	1
Completeness	6	3	1	1
Consistency	6	3	1	1

It was found that Clause 3.0 is verified to have problems with clarity, comprehensiveness, completeness and consistency.

Clause 4.0 'Works to be to the satisfaction of Engineer' indicates the power of the Engineer and to comply and strictly adhere to the Engineer's instructions and directions. This clause provides an absolute power to decide with no limitations on the Engineer's power. As a standalone clause, this is putting a strong emphasis on the Engineer's power. It may be more appropriate to combine the clause with the clause/s on Contractor's responsibility for better completeness and comprehensiveness.

The clause is found to be deficient in comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.102: Summary of Interviewees' Response for Clause 4.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	2
Completeness	6	3	0	2
Consistency	6	3	0	2
Fairness or Role Distribution	4	3	0	2
Risk Distribution	4	3	0	2

It was found that Clause 4.0 is verified to have problems with comprehensiveness, completeness, consistency, role distribution and risk distribution.

Clause 5.0 'Engineer's Instruction' states the grounds of which the Engineer can issue further drawings, details and/or written instructions and the procedures for execution of Engineer's instructions. However, the clause is not fully complete and comprehensive as it does not cover the procedures for the Contractor to disagree with instruction issues and a mean to come to a consensus. This is not conducive for good site management. Contractor must comply within seven (7) days as stated but this time frame stated may not be practicable if the scope of the instructions is big and involves additional costs and expenses, which is then subjected to conditions of other clauses. Hence, the clause lacks flexibility. The clause does in Part d state that the Contractor can write to inform on his intention to claim loss and expense but does not cover other effects like delays or extra time needed to carry out the instruction.

Clause does not make reference to Extension of time clauses. It also does not cover on emergency situation where Engineer's instructions are required immediately.

In addition sentences used are long and structured in a difficult to understand manner. For such instances, Part c state that all instruction must be in writing and oral instructions has no immediate effect. Contractor is to confirm within seven (7) days the oral instruction given and the Engineer is does not reply within the next seven (7) days, Contractor's confirmation will take effect based on the latter seven (7) days. The repetition of 7 days can cause confusion to the reader especially if the Engineer's is to confirm within seven (7) days his oral instructions, the above is not applicable. When instructions are to be in writing, providing a choice for the Engineer to confirm his oral instruction in writing is a form of contradiction. Part b also states that the contractor should 'forthwith', which has an immediate effect, to comply with instructions but subsequently, in the following sentence, he has seven (7) days. In addition, Part d states that the contractor shall within thirty (30) days of receipt of such instruction, give notice in writing of his intension to claim for such loss or expense to the Engineer, together with an estimate of the amount of such loss and/or expense, subject always to Clause 48 hereof. However in clause 48, it stated that as is practicable but not later than three (3) months after practical completion of the Works, the Contractor shall submit full particulars of all claims made by him under Clause 5 (d). There is a lack of consistency in the parts itself. Besides that, the clause states that the Engineer has 'absolute discretion' to give instructions and hence, does not limit the Engineer's power, which can affect the rights of the contractor and Employer.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.103: Summary of Interviewees' Response for Clause 5.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	1	1
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Consistency	6	4	0	1
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	2	2	1
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 5.0 is strongly verified to have problems with, comprehensiveness, completeness, consistency, flexibility, role distribution and risk distribution. In terms of clarity, Clause 5.0 is verified to have problems with this attribute. Clear structured framework for project management is verified to have problems with low frequency of occurrences.

Clause 8.0 'Sufficiency of contract Documents' does not have exact definition of the contract documents or refer to it in other clauses and hence, lacking in comprehensiveness. Procedures and time frame for informing on the discrepancies; approval or further instructions are not provided for. Part 8 b has long sentences and is difficult to read especially with the use of exception parts. And in terms of role distribution and fairness, it is seen that procedures informing about the discrepancies are to be initiated by the contractor who can then use the discrepancy of the contract as additional advantage to lessen his obligations. In fact, only when expenses are expected, the Engineer need to response. It may be more effective for the administration of the contract should the Engineer to also take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found. The shared responsibilities should enhance the framework for good project management on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.104: Summary of Interviewees' Response for Clause 8.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	5	0	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 8.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, consistency, role distribution and risk distribution. In terms of flexibility and clear structured framework for project management, Clause 8.0 is verified to have problems with these attributes.

Clause 9.0 'Materials and Workmanship' attempts at impressing on the Contractor the quality aspects works and material. It is noted that sentences are long especially with respect to Part 9b but focuses very briefly on testing of material and goods; and opening up for inspection works covered up. In order to achieve better completeness and comprehensive, it may be better to separate both issues. On the matter of testing, to better explain the terms better with respect to conditions pertaining to the need of such requirements; tests that are intended and provided for or not intended; carrying out of tests elsewhere in another location; conditions for costs of test to be borne by Employer. On the matter of opening up, to better explain the terms better with respect to notice from Contractor to Engineer before cover up; Engineer fails to show up; effects of opening up on time and cost; reinstating back the opening up; conditions for cost of opening up to be borne by Employer. It also does not mention on the submission of quality plan and work method statement for the endorsement of the Engineer in order for work to be more efficient managed on site. The clause essentially does not give a equal distribution to the role and risk to the Contractor as it is stated Engineer can instruct for opening up and testing without stating the conditions precedent to it and costs to be borne by Contractor for such circumstances.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.105: Summary of Interviewees' Response for Clause 9.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	4	5	0	0
Completeness	4	5	0	0
Consistency	6	5	0	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	3	0	2
Risk Distribution	6	3	0	2

It was found that Clause 9.0 is strongly verified to have problems with clarity, comprehensiveness, completeness and consistency. In terms of flexibility, clear structured framework for project management, role distribution and risk distribution, Clause 9.0 is verified to have problems with these attributes.

Clause 10.0 'Unfixed materials and Goods' gives rise to legal issues regarding ownership of the materials and goods as it does not cover the fact that only certain percentage of the value of materials and goods are made and not the full amount. The Employer may have the possession but not the legal title of the materials and goods. It also fails to cover the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter. As a short clause that is easy to read and understand, it fails to be comprehensive and complete and it does not cover the Government as it seems to be. The Contractor shall remain responsible for loss and damage of the materials and goods remains unclear as to how he can do so when the method or sanction is not stated. This clause does not help to enhance good site management in terms of inventory and material control on site.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.106: Summary of Interviewees' Response for Clause 10.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 15.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, role distribution and risk distribution.

Clause 11.0 'Statutory Obligations' does not cover the fees and charges required and relevant for a specific contract, which can be list in the Appendix and serve a reminder to the contractor as to what should take note of. In order to improve the administration of the contract, assistance to be provided by Employer and its representatives should be included as certain authorities require the submission of documents and liaison specifically from the Employer's representatives. It does not cover the procedures of the Contractor does not comply or default with payment of the required fees and charges; effects when Employer default in payment of fees and charges; reporting on inconsistencies of the Contract documents with statutory obligations and variations arising out of compliance.) Part 11d does not make reference to the specific clauses on variations and instructions for better consistency.

The clause is found to be deficient in comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.107: Summary of Interviewees' Response for Clause 11.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	4	1	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	3	1	1
Risk Distribution	6	3	1	1

It was found that Clause 11.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, clear structured framework for project management. In terms of role distribution and risk distribution, Clause 11.0 is verified to have problems with these attributes.

Clause 12.0 'Patent Rights and Royalties' is a simple clause stating the Contractor's responsibilities to make sure that patent rights and royalties for use of machinery, plant and material are catered for. However, there is no reference to the specific acts, regulations or law of which it may be relevant. In addition it does not cover the methods for indemnifying the Employer; and procedures should the infringement comes from the compliance with instructions or design of the Engineer or an overlook by all the contracting parties and the remedies for such circumstances. The incompleteness will cause an unequal distribution of role and risk especially to the Contractor. The clause does not cover potential situations arising during contract administration, hence lack of flexibility.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.108: Summary of Interviewees' Response for Clause 12.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 12.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution.

Clause 14.0 'Inspection of Site' is deemed as an incomplete clause as it does not provide a complete statement of the provision of the types of information regarding the site that needs to be checked by Contractor and extent of those examinations; the types of information regarding the site that needs to be provided for by the Employer and his representatives; and inaccurate and insufficient or incomplete information. Clause is lack of procedures for the examination and exchange of this information; remedies and/or contracting parties' responsibilities for inaccurate, insufficient or incomplete information. Even though, the Contractor is to take and the information and document from the Employer at his own risk, there is no statement to request the Contractor to price risks and any discrepancies accordingly and look into the sufficiency of the contract sum. Clause as such does not encourage a good framework for proper contract management as role and risk are already distributed to side the Employer. In addition, the entire clause is expressed in two (2) sentences, making the sentences long and difficult to read.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.109: Summary of Interviewees' Response for Clause 14.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	1	1
Comprehensiveness	6	4	0	1
Completeness	6	4	0	0
Flexibility	6	4	0	0
Clear Structured Framework for Project Management	6	4	0	0
Fairness or Role Distribution	4	4	0	1
Risk Distribution	4	4	0	1

It was found that Clause 14.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. In terms of clarity, Clause 14.0 is verified to have problems with this attribute.

Clause 18.0 'Contractor's Superintendence' uses the word 'Superintendence' which is not a commonly used and readily understandable word. The clause basically explains that presence of the contractor and his representatives on site to manage the Contractor obligations under the contract. However, it does not fully state the duties of the Contractor and his representatives. With respect to removal of Contractor's representatives, no conditions or reasons precedent the removal are indicated. Any approval for Contractor's agent can be 'withdrawn at any time', giving the Engineer a large extent in his power. No procedures for disagreement by the Contractor are included. This does not enhance the element of good team, conflict and people management practice on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.110: Summary of Interviewees' Response for Clause 18.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	1	1
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	4	0	1
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 18.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. In terms of clarity, Clause 18.0 is verified to have problems with this attribute.

Clause 21.0 'Removal of Workmen' uses words such as 'good character' and 'efficient', 'incompetent', which can be ambiguous and subjective to the opinion of the Engineer. Furthermore, if the Engineer in his 'sole opinion' that the workmen misconducts or causes delays or are incompetent, he can direct the Contractor in writing to remove such person/s. This once again extends large power to the Engineer without placing any limitations. And the grounds for such removal are not explicitly explained. Procedures for disagreement are not stated as well. The Contractor is not allow to making claim for expenses under this clause but there is no mentioned on the claim for time in the event of delay due labour/workmen/tradesmen shortages. References to workers' unions should be noted as well.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.111: Summary of Interviewees' Response for Clause 21.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	2	0
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Fairness or Role Distribution	4	5	0	0
Risk Distribution	4	5	0	0

It was found that Clause 21.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, risk distribution and role distribution. In terms of clarity, Clause 21.0 is verified to have problems with this attribute.

Clause 23.0 'Variations' put forward a definition of variation and the necessary works constituting a variation. Besides, there are no procedures for Contractor to disagree with the variation works such as cardinal changes. The Engineer has the power to order variation. Once again, there is no limitation to the power of Engineer and thus affect the rights of the Contractor and Employer. It is stated that no variations is to be made by Contractor without an order in writing but subsequently allows for verbal instructions, if Engineer deemed necessary and contractor to comply with such order. Verbal instructions can be confirmed with written instruction before or after the execution of work and will be deemed as written instruction. This is a contradiction within the clause and hence lack of consistency. This part put additional power onto the hand of Engineer as he essentially has a choice to issue verbal or written instructions. Besides, there is no time frame for written instructions to follow verbal instruction given in the clause. When applying Part 23b to emergency situation (which is not mentioned), verbal instructions may be practical but for good site management, such instructions can be included in the site diary record to prevent future disputes. The clause does not cover when contractor is to offer a proposal for variations and how that can be treated.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.112: Summary of Interviewees' Response for Clause 23.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	4	5	0	0
Risk Distribution	4	5	0	0

It was found that Clause 23.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution.

Clause 24.0 'Measurement and Valuation of Works Including Variations' has long sentences in each parts and use fairly legalistic language with many exception parts. Part 24c on the net effect of all variations can be clearer if shown in a formulae format. The clause is fairly complete covering various issues on the valuation of variations in terms of prices and rates. But it clause does not provide adequate coverage on measurement of the quantity of work and how the measurement is to be carried out. Time frame for the Contractor intending to submit a claim is given but time frames proposing and approval by the Engineer are not mentioned. In terms of risk and role distribution, the Engineer is to fix all rates and prices which in his opinion are reasonable and proper and if the original rates and prices proposed are deemed unreasonable, he is to change them. And to what standard is 'reasonable' and 'proper' being based upon. There is no mentioned of industry standard or a third party to help to determine should the Contractor and Engineer be in disagreement with price and rates. The clause as with many others in this form requires the Contractor's complete submission to the Engineer's authorities, which is against the modern principle of a fair form and it does not enhanced good management practice on site.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.113: Summary of Interviewees' Response for Clause 24.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	5	0	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Clear Structured Framework for Project Management	6	4	0	1
Fairness or Role Distribution	6	4	1	1
Risk Distribution	6	4	1	0

It was found that Clause 24.0 is strongly verified to have problems with in clarity, comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution.

Clause 26.0 'Measurement' is unclear as to whether it is applicable to a Bill of Quantities contract or a contract based on drawing and specification with provisional and prime cost items. The clause is not presented to be an option but a specific clause which states that the quantities set in the Bill of Quantities are estimated value. This is not consistent with the basis of the contract and does not extend the coverage for a contract based on drawing and specification with provisional items. Subsequent action after informing on the disagreement over the measurement is not stated. Part 26c states that permanent works will be measured despite of any general and local customs. It is unclear of the terms 'general and local customs'.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency and flexibility. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.114: Summary of Interviewees' Response for Clause 26.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	4	0	1
Flexibility	6	4	0	1

It was found that Clause 26.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, consistency and flexibility.

Clause 27.0 'Sub-letting and Assignment' has two components. Emphasis is being put on sub-letting, which is essentially sub-contracting. The term sub-letting is fairly out of date and may cause confusion. Component on Sub-letting is fairly clear (covered in Part 27a and b) but fails to cover matters with respect to conditions precedent to employment of sub contractor/s; not to sub-let the whole work; default payment to sub-contractors by Contractor and the Employer's rectification actions; whether or not the Engineer and Employer can directly deal with subcontractors in the matter of instructions, payment, variations and other contractual matters; and objections of Engineers to Contractor's subcontractors and how to come to a consensus. Part 27c is brief on the component on Assignment where no assignment of the

contract is allowed without the Employer's consent. Assignment full or part of works will create difficulties for effective project and contract management of the project on site. Assignment should not be done unless for insurance or financing purpose. Furthermore, it does not cover conditions precedent to assignment; any specific terms and conditions necessary to effect the assignment; and rights of Employer to assign.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.115: Summary of Interviewee's Response for Clause 27.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 24.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution.

Clause 28.0 'Nominated Sub-Contractor and/or Nominated Suppliers' describes the engagement of Nominated Sub-contractor and nominated suppliers to be nominated and decided by the Engineer, which once again show the power of the Engineer in the form. The clause does not cover the disagreement of contractor with the choice of nominated sub-contractor and/or nominated suppliers, the ground for disagreement and the procedures for putting forward the disagreement and the remedies for it. If the disagree with the choice, he would refuse to enter into a contract with the nominated sub-contractor and/or nominates supplier. Part 2b (ii) states that nominated sub-contractor is indemnify the Contractor from and against any negligence but method of indemnification are not provided. Part 2c states that Employer is entitled to pay the nominated sub-contractor directly but fails to draft out the procedures and conditions for doing so. Direct payment if not properly managed, can create difficulties for the Contractor to manage the works as he would lose the full authority over the

nominated sub-contractors. If the Contractor is fully responsible for the nominated sub-contractors' works, actions, defaults; it is only reasonable that the Employer and the Employer to not interfere with the management of the Contractor over the nominated sub-contractor.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.116: Summary of Interviewee's Response for Clause 28.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	0	1
Risk Distribution	6	4	0	1

It was found that Clause 28.0 is strongly verified to have problems with comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution.

Clause 31.0 'Artisans and Tradesmen' is a very simple one sentence clause stating the Employer's right to employ artisans or tradesmen or other. There is no mention on Contractor's responsibility in reporting their works should there be any discrepancies with the contractor's further on works. There is no coverage on the time frame for reporting by the contractor and issuance of instructions by the Engineer are not given and a more comprehensive procedures be included (including expenses of rectifications, execution of works to proceed without instructions, claim of loss and expenses, extension of time should the discrepancies required rectifications by other contractors). It will also enhance good management practice on site should the SO be put responsible for the coordination of works among the contractors working on site.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role

distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.117.: Summary of Interviewee's Response for Clause 31.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 31.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution.

Clause 32.0 'Indemnities to Employer with respect to Personal Injuries and Damage to Property' focuses on the contractor's responsibilities to indemnify the Employer against any loss, expenses, costs, damages, liability or claim arising from law or statue with respect to damage of property and personal injury to or death of any person during the execution of the works. This clause also does not make references to the matters of insurances which are well covered in latter clauses. In addition, the question remains whether the clause actually protect the Employer when the clause does not cover the methods (deduction in payment, insurance) for the Contractor to indemnify. If the death, injury or damage is caused by any act or neglect by the Employer and his representatives, there is no reduction in the proportion liable by the Contractor.

The clause is found to be deficient in comprehensiveness, consistency, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.118: Summary of Interviewees' Response for Clause 32.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	
Consistency	6	1	4	0
Flexibility	6	2	3	0
Clear Structured Framework For Project Management	6	2	3	
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 32.0 is strongly verified to have problems with comprehensiveness, flexibility, risk distribution and role distribution. In terms of consistency, flexibility and clear structured framework for project management, Clause 32.0 is verified to have problems with these attributes but with low frequency of occurrences.

Clause 38.0 'Commencement Time and Delays' is a confusing heading for the clause. The clause basically explains on commencement time and possession of site. Issues of delays are covered in Clause 43. Hence, consistency is lacking herewith. Work on site should commence within the stated period and after receiving a written notice from the Engineer. There is no mention on date stated on letter of award (which could be different from the tender document) and make reference to the possession of site as commencement of work is directly affected by possession of site. Hence, clause lack of flexibility. It does not mentioned condition precedent to commencement of work such as performance bond and insurance and/or submission of working programme and method of statement including quality and safety plan.

Contractor should be entitled to possess the site before commencement of work as the foremost condition. However, the clause in Part 38b fails to address that and explains on the effect of delay in full possession of site on issues such as time frame for delay, extension of time, loss and expenses and suspension of works. Explanations are more focused on partial possession and covering extension of time and certifying a sum to cover for failure of Employer to give possession of other parts of works. With many issues and procedures not covered, it would be difficult to carry out good site management on site. Part 38b (ii) states the matter regarding to charges and payments for wayleaves, which is in fact more relevant to Clause 11.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5)

key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.119: Summary of Interviewees' Response for Clause 38.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	5	0	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	3	2	0
Flexibility	6	5	0	0
Clear Structured Framework for Project Management	6	5	0	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 38.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, flexibility and clear structured framework for project management. In terms of consistency, risk distribution and role distribution, Clause 38.0 is verified to have problems with these attributes.

Clause 39.0 'Completion of Works' explains on the matters on completion date and certificate of practical completion. Part 39a can include a statement or formulae for calculation of date of completion to improve the clarity attribute. Part 39b briefly describes issuance of the certificate of practical completion but does not address issues with respect to testing and commissioning; time frame the Engineer has to issue a certificate of practical completion; standards/criteria the Engineers based on to issue the certificate (instead of to his satisfaction); contractor to initiate CPC process and inform the work has been complete and if Engineer decide otherwise and state the reasons for that or agree and issue Certificate of Practical completion. The issuance of certificate also requires the Engineer to put in the date on which the works has been completed.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.120: Summary of Interviewees' Response for Clause 39.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 39.0 is strongly verified to have problems with comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. Flexibility and consistency are verified to have problem with these attributes

Clause 42.0 'Partial Occupation by Employer' states that the Employer can with the consent of the contractor to take over and occupied certain portion of the works. Part 42a- f explains on the consequential effect of such action. It, however, fails to cover certificate of non completion for incomplete part and payments and discuss various risks involved in partial occupation. As the site is partially occupied but the work is not fully completed for other parts, insurance coverage for the end-users and occupiers would not be the same as those to the workmen, labour or site personnel. Certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. In addition, the clause does not cover the contractor's work flow (working programme and work method) with respect to partial occupation. Instead of having full possession, the contractor who has partial possession may find his work flow being disturbed in his attempt to complete the various parts of the uncompleted works. Part of the unoccupied works may also be disturbed by the occupiers and end users. Defects liability and delays can be issues for the uncompleted works but no coverage is provided in this clause. Contractor's safety precautions and plans for the end users and occupiers should be included. This clause on Partial Occupation should be improved with respect to these issues mentioned in order to have a better risk and role distribution. Clause does not give any explanation on occupation without consent from Contractor and hence lacking in flexibility.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert

interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.121: Summary of Interviewees' Response for Clause 42.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Consistency	6	3	2	
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	5	0	0
Risk Distribution	6	5	0	0

It was found that Clause 42.0 is strongly verified to have problems with comprehensiveness, completeness, risk distribution and role distribution. Flexibility, consistency and clear structured framework for project management are verified to have problems with these attributes.

Clause 43.0 'Delay and Extension of Time' puts forward that the Contractor should immediately submit a written given notice of the causes of the delay to the Engineer and the Engineer would as soon as possible give a decision. The entire clause is incomplete and incomprehensive. It basically gives minimal coverage on the procedures for notification of delay; and application of extension of time by the Contractor and all the necessary time frame, necessary documents (working programme, prove of work as a critical activity, previous applications) needed are not included. On the Engineer's part, there are no guidelines and time frame on how he is to assess the applications including consideration for extension previously granted, concurrent delay, effect of additional and deduction of provisional quantities; request for additional information; procedures for approving or rejecting the extension of time application base on other than reasons stated in 43a-k, as reasons stated can be further expanded to include other potential risks. Terms such as 'neither unreasonably distant from nor unreasonably close to the date', 'in the opinion of the Engineer', 'fair nor reasonable' are ambiguous. The clause imply that the Engineer is final; does not mention the Employer's right in this matter; whether the Contractor can disagree with extension granted or not granted and the procedures for disagreement; and without the proper procedures in place, risk and role distribution can be severely affected.

The clause is found to be deficient in clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution.

The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.122: Summary of Interviewees' Response for Clause 43.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	3	0
Comprehensiveness	4	4	1	0
Completeness	4	4	1	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 43.0 is strongly verified to have problems with comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. Clarity is verified to have problems with low frequency of occurrences.

Clause 44.0 'Loss and Expenses caused by Delays' covers loss and expenses resulted from delays under 43c, f, g or i. Coverage is insufficient. Loss and expenses due to reasons other than delays should be included for a fairer and comprehensive form. The clause fails to cover the procedures for claim and the procedures and conditions precedent to the Engineer's decision of approval or disapproval.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.123: Summary of Interviewees' Response for Clause 44.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Completeness	6	4	0	1
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	3	1	1
Risk Distribution	6	3	1	1

It was found that Clause 44.0 is strongly verified to have problems with in comprehensiveness, completeness, flexibility and clear structured framework for project management. In terms of role distribution and risk distribution, Clause 44.0 is verified to have problems with these attributes.

Clause 48.0 'Final Account Certificates' have three (3) components. Description of part 48a is implied that this is on the issue of penultimate certificate but there is no use the term 'penultimate certificate and payment'. The part is no complete on the matter of penultimate claim as to how the Engineer should certify with a certain time frame; agreed upon by the contractor; calculation of the penultimate payment; and when the payment should be settled. Part 48 b and c describes the final account certificates but it does not cover when the Engineer is to make the assessment of the defects in the Schedule of Defects previously mentioned in Clause 45; procedures if the contractor disagrees with the final account; and the period of honouring the certificate by the Employer.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility and clear structured framework for project management. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.124: Summary of Interviewees' Response for Clause 48.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	1	0
Completeness	6	4	1	0
Consistency	6	3	2	0
Flexibility	6	3	2	0
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	6	3	2	0
Risk Distribution	6	3	2	0

It was found that Clause 48.0 is strongly verified to have problems with comprehensiveness, and completeness. In terms of consistency, flexibility, clear structured framework for project management, role distribution and risk distribution, the clause is verified to have problems with these attributes.

Clause 49.0 'Effect of Engineer's Certificates' state that no certificates of the Engineer are considered as conclusive evidence and binding in any dispute between the Employer and the contractor. It does not define certificates and does not make exception for the final certificates to have effect in dispute resolution proceeding/s which is common in other forms. Hence, the clause has an equal distribution of risk and role and is deemed as inflexible.

The clause is found to be deficient in comprehensiveness, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.125: Summary of Interviewees' Response for Clause 49.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	4	0	1
Flexibility	6	4	0	1
Clear Structured Framework for Project Management	6	3	2	0
Fairness or Role Distribution	4	3	2	0
Risk Distribution	4	3	2	0

It was found that Clause 49.0 is strongly verified to have problems with comprehensiveness, flexibility. In terms of role distribution and risk distribution, Clause 49.0 is verified to have problems with these attributes.

Clause 51.0 'Termination of Contractor's Employment' is a clause on Contractor's employment being terminated by the Employer. The clause uses the words 'reasonable', 'diligently', 'regularly' in the absence of better words is rather ambiguous. The clause is generally not comprehensive in terms of the procedures for termination stating that the Engineer only needs to serve notice specifying the default. And Contractor only have fourteen (14) days after such notice receiving the notice' to react. It does not cover the contractor's disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated, which may be a better framework for site management and contract administration. Many sentences especially Part 52c were also long and hence, difficult to read. (In terms of the effects of termination (on the procedures after determination) are incomplete as it does not cover procedures for joint site inspection to determine the works done, material and goods delivered; and proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site as this may involve legality issues in terms of possession and legal title; and the determination of the final account that is agreed by both parties and make reference to dispute resolution, if necessary. It does not cover the situation when the Contractor is underpaid during determination (consequence of work being slowed down due to payment reason).) It is noted that the form cover in Clause 52 'Default of Employer' but fails to cover at all the issue on suspension of works by either the Employer and/Contractor, which are related to both Clause 51 and 52.

The clause is found to be deficient in clarity, comprehensiveness, completeness, , flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.126: Summary of Interviewees' Response for Clause 51.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	4	1	0
Comprehensiveness	6	5	0	0
Completeness	6	5	0	0
Flexibility	6	4	1	0
Clear Structured Framework for Project Management	6	4	1	0
Fairness or Role Distribution	6	4	1	0
Risk Distribution	6	4	1	0

It was found that Clause 51.0 is strongly verified to have problems with clarity, comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution.

4.8 Form Analysis –CIDB 2000

4.8.1 Overall Form Performance

Based on the intensive form analysis of Construction Industry Development Board Standard form of Building Contract 2000(CIDB 2000), there are total of fourteen (14) clauses scoring the TES of 80 point in the Positive Category, twenty one (21) clause scoring in between the TES of 70-79 Low Positive Category twenty (22) clauses scoring in between the TES of 60-69 in the Low Negative Category This makes the total of 35 clauses in the positive evaluation category while rest of the 22 clauses are in the category of negative evaluation category.

Figure 4.11 shows the percentages of Clauses/Option Modules under different Magnitude of Evaluation.

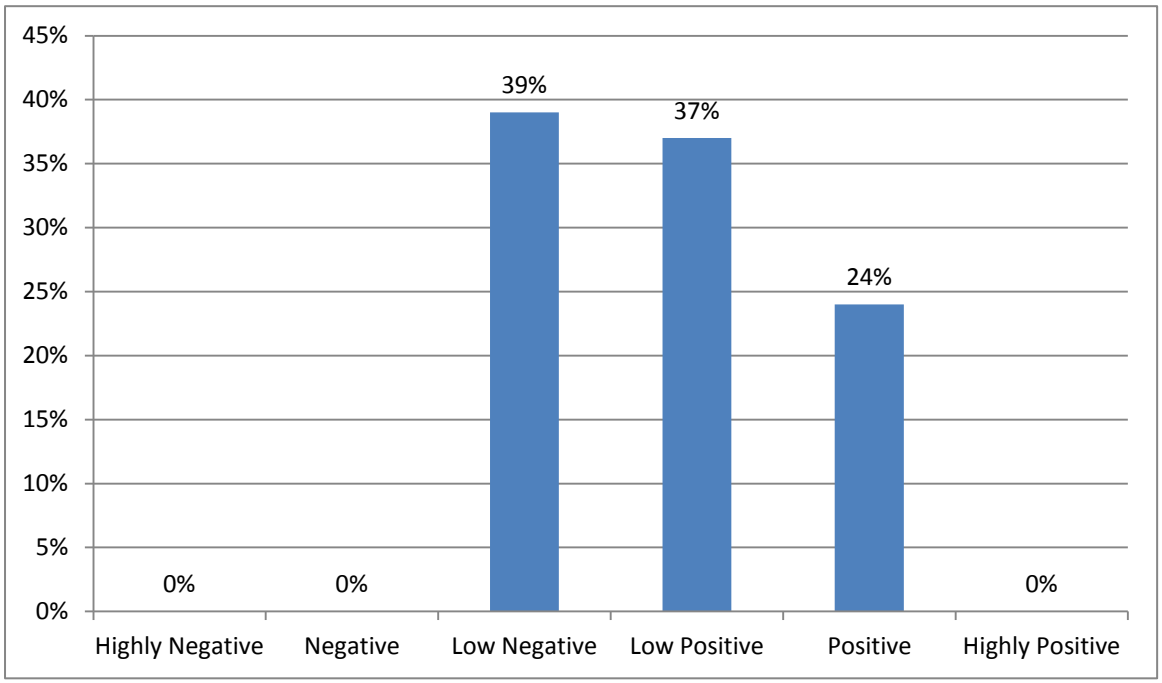


Figure 4.11: Percentages of Clauses/Option Modules under Different Magnitude of Evaluation in CIDB 2000

From the Figure 4.11 as shown above, there are total of 61% of the clauses fallen under positive section which consist of 37% of Low positive clauses and 24% of positive clauses

while 39% of the clauses have fallen entirely under the low negative section It is noted the form has more positive clauses and even those under negative is mainly on the low negative section which indicates that the problems are less serious. There are no clauses under negative or highly negative of evaluation.

The results of percentage of clauses fallen under the five (5) level of adequacy based on the Attributes of Evaluation, the result is as summarised in Table 4.127 as shown below.

Table 4.127: Percentages of Clauses under Each Level of Adequacy based on Attributes of Evaluation for CIDB 2000

No.	Attributes of Evaluation	Level of Adequacy				
		2	4	6	8	10
1	Clarity	0%	0%	17.5%	82.5%	0%
2	Comprehensiveness	0%	0%	45.6%	54.3%	0%
3	Completeness	0%	1.7%	42.1%	56.2%	0%
4	Consistency	0%	0%	43.8%	56.1%	0%
5	Flexibility	0%	0%	12.3%	87.7%	0%
6	Clear Structured Project Management Framework	0%	0%	40.4%	59.6%	0%
7	Fairness or Role Distribution	0%	1.7%	35.1%	63.2%	0%
8	Risk Distribution	0%	1.7%	35.1%	63.2%	0%

The positivity of the overall performances of CIDB 2000 is contributed by the three (4) attributes of evaluation namely clarity, flexibility and its role and risk distribution. Whilst negativity is contributed mainly by the comprehensiveness, completeness and consistency attributes.

CIDB 2000 is written in a simple, clear and concise manner, enhancing the understanding of the clauses. Most sentences (with exception of some clauses) are short and readable. With the available option modules and options in certain clauses, CIBD 2000 scores well under the flexibility attribute. Based on the clause analysis, it is seen that clauses are drafted in such a way that it caters for various possible situation that could arise and give rise to problems in contract administration. In addition, it is the one form in Malaysia which does the role and risk distribution among the contracting parties fairly well, with effort to state the parties' rights and obligations in an equal approach.

The negativity of the form came from comprehensiveness and completeness of the form. This is seen in clauses where certain issues and/or their procedures are missed out or not included. With respect to the consistency attribute, certain cross referencing are missed out/ no included. This will caused difficulties and confusion in contract administration and management of the project as clauses maybe deemed as irrelevant to another clause when in

fact it is relevant. However, as seen in the scoring analysis in the preceding section, the form needs only minor and general improvements. Only a small number of clauses needed major improvements.

It is worthwhile to note that albeit being an overall positive form, the form is actually overall moderately positive. It has still fallen short of an ideal form to be applied in the Malaysian construction industry. There are issues and procedures to be clarified and incorporated; words to be used and sentences to be improved; efforts to be make for better consistency, role and risk distribution; and enhancement clauses to provide better flexibility and better structure for project management. Clause analysis will further pinpoint to the areas in need of improvement. The overall performance of CIDB 2000 is considered as **Low Positive.** The following section explains in more details of the form's performance in terms of the clauses analysed.

4.8.2 Clause Analysis

This section explains the results of clause analysis for CIDB 2000 with respect to the clauses' TES. In order to explain the results of TES for each clause in a more comprehensible way, the following puts forward an example of how clause analysis is carried out to arrive at its TES. Example provided is CIDB 2000 Clause 40.0 'Assignment and Sub-contracting'. A complete set of example of analysis of Problematic Clauses with respect to each attributes of evaluation is provided for in *Appendix B*. Standard form chosen as example is the IEM 89 CE standard form.

Table 4.128: Clause Analysis for CIDB 2000 Clause 40.0 'Assignment and Sub-contracting'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Clarity	P1	Language used	-	1	8
	P2	Structure of sentence	-		
	P3	Length of sentence	Long sentences seen in parts.		
Comprehensiveness	P1 & P2	Details of procedures, including Time frame/s	There is no procedure for the matter of sub-contracting with respect to: • SO and Employer's disagreement over the employment and selection of sub-contractor. • SO and Employer to deal with subcontractors in various contractual and site matters such as payment, instructions, variations should the contractor leaves his responsibilities. • Objections and removal of sub-contractors, if necessary	3	6
Completeness	P1	Coverage of relevant issues	The clause does not cover the issues of: • Conditions precedent to employment of sub-contractor • Related to removal of sub-contractor and SO or Employer's right to disagree over appointment. • Payment or non-payment to sub-contractors • Employer's rectification actions, if necessary should the contractor default and whether the SO or Employer have to/should/can directly deal with sub-contractors in the matter of instruction, payment, variations and other contractual matters • Responsibilities of Contractor to the Employer with respect to the works of his sub-contractors.	5	6

Table 4.128(cont): Clause Analysis for CIDB 2000 Clause 40.0 'Assignment and Sub-contracting'

Attributes	Parameters		Description of Problem Areas	Total Problem areas	Level of Adequacy
Consistency	P1	Conflict between clauses, references, cross referencing to other clause/ external law	• Incorporation of sub-contractor agreement for better coordination • Make referencing to external or contractual criteria for sub-contractor selection. • Removal of sub-contractor in accordance to any external law. • Referencing to external regulations with respect to assignment.	4	6
Flexibility	P1	Procedures/options for application of various situation	• The clause fails to cover the procedures and conditions precedent for Employer to deal directly with sub-contractors, when necessary. • Incorporation of sub-contract agreement to be read as part of contract	3	6
	P2	Open ended/close ended	• Should not allow any full sub-contracting or assignment of contract		
Clear Structured Framework for Project Management	P1	Procedures/ option to enhance project management	• Incorporation of sub-contract agreement to be read as part of contract to enhance site management. • No coverage or procedures for disagreement of SO • Removal of sub-contractor not mentioned. • How to arrive a mutual consensus when issues of sub-contractor are disputed. • Employer's right should the Contractor default against sub-contractors	5	6

Table 4.128 (cont): Clause Analysis for CIDB 2000 Clause 40.0 'Assignment and Sub-contracting'

Attributes	Parameters	Description of Problem Areas	Total Problem areas	Level of Adequacy
Role Distribution/ Fairness	P1 Balance rights and responsibilit-ies of parties involved	• The component on sub-contracting fails to cover matters with respect to conditions precedent to employment of subcontractor, • and disagreement of SO over choice of sub-contractor/s • How to come to the mutual consensus. • Employer's right should the Contractor default against sub-contractors.	4	6
Risk Distribution	P1 Even distribution of negative impacts/ consequences	• The component on sub-contracting fails to cover matters with respect to conditions precedent to employment of subcontractor, • and disagreement of SO over choice of sub-contractor/s • How to come to the mutual consensus. • Employer's right should the Contractor default against sub-contractors.	4	6

Based on the deliberation format given in Section 3.4.6 and as shown in the example in Table 4.128, Level of Adequacy for each attribute for a specific clause is determined and calculation of the attributes' scores are made as shown in following Table 4.129.

Table 4.129: Attributes' Scores for CIDB 2000 Clause 40.0 'Assignment and Sub-contracting'

Attributes	Importance Weighting in %	Level of Adequacy	Attribute's Score
Clarity	22.22	8	17.78
Comprehensiveness	16.67	6	10.00
Completeness	19.44	6	11.66
Consistency	13.89	6	8.33
Flexibility	11.11	6	6.67
Clear Structured Framework for Project Management	2.78	6	1.67
Role Distribution	5.56	6	3.34
Risk Distribution	8.33	6	4.99
		TES	**64.44**

The Level of Adequacy for each attribute and the Total Evaluation Score (TES) for all the clauses in CIDB 2000 are summarised in Table 4.130 as follows, (where 'Cl.' represents the form's Clause number and Op. Represents Option modules number).

Table 4.130: CIDB 2000 TES Scores for all 51 Clauses and 6 Option Modules

Cl./ OP.	Clarity	Comprehen-siveness	Complee -ness	Consis -tency	Flexib -ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
1	8	8	6	8	8	8	8	8	76.11
2	8	8	8	8	8	6	6	6	76.67
3	8	8	8	8	8	8	8	8	80.00
4	8	8	8	8	8	8	8	8	80.00
5	8	8	8	8	8	8	6	6	77.22
6	8	8	8	6	6	6	6	6	67.76
7	8	6	6	6	8	8	6	6	67.22
8	8	6	6	8	8	6	8	8	72.22
9	8	6	8	6	8	8	8	8	73.89
10	8	6	8	8	8	6	6	6	73.33
11	8	8	8	8	8	8	8	8	80.00
12	8	8	8	8	8	8	8	8	80.00
13	6	6	6	6	8	6	6	6	62.22
14	8	6	8	6	6	6	8	8	71.11
15	8	8	8	6	6	6	6	6	71.67
16	8	6	6	6	6	6	8	8	67.22
17	8	6	8	6	8	8	8	8	73.89
18	8	6	6	8	8	6	6	6	69.44
19	8	6	6	6	6	8	6	6	65.00
20	8	8	8	8	8	6	8	8	80.00
21	8	8	8	6	8	8	8	8	77.22
22	8	6	6	6	8	6	8	8	69.44
23	8	6	6	8	6	6	6	6	67.22
24	6	6	6	8	8	8	6	6	65.56
25	8	8	8	8	8	8	8	8	80.00
26	6	8	8	8	8	8	8	8	75.56
27	6	6	6	6	8	6	6	6	62.22
28	6	6	6	6	8	6	6	6	62.22
29	8	8	8	8	8	8	8	8	80.00
30	6	8	8	8	8	8	8	8	75.56
31	8	8	8	6	8	8	6	6	74.44
32	8	6	6	8	8	8	6	6	69.99

Table 4.130 (cont): CIDB 2000 TES Scores for all 51 Clauses and 6 Option Modules

Cl./ OP.	Clarity	Comprehen-siveness	Complee -ness	Consis -tency	Flexib -ility	Clear structured project management framework	Fairness or role distribution	Risk distribution	TES
33	8	6	6	6	8	6	6	6	66.67
34	8	6	6	6	8	8	6	6	67.22
35	8	6	8	6	6	8	8	8	71.67
36	8	8	8	8	8	8	8	8	80.00
37	8	8	8	8	8	8	8	8	80.00
38	8	8	8	8	8	8	8	8	80.00
39	8	8	8	8	8	8	8	8	80.00
40	8	6	6	6	6	6	6	6	64.44
41	6	8	8	8	8	8	6	6	72.78
42	8	8	8	8	8	8	8	8	80.00
43	6	8	8	6	8	6	6	6	69.44
44	6	6	6	6	8	6	6	6	62.22
45	6	8	8	8	8	8	8	8	75.56
46	8	8	8	8	8	8	8	8	80.00
47	8	6	6	8	8	8	8	8	72.78
48	8	6	6	6	8	8	4	4	64.44
49	8	8	8	8	8	8	8	8	80.00
50	8	8	8	8	8	8	8	8	80.00
51	8	8	8	8	8	8	8	8	80.00
A	8	6	6	6	8	6	8	8	69.44
B	8	6	6	6	8	6	8	8	69.44
C	8	6	6	6	8	6	8	8	69.44
D	8	8	8	8	8	8	6	6	77.22
E	8	6	6	6	8	6	8	8	69.44
F	8	6	6	6	8	6	8	8	69.44

It is noted that from the clause analysis as shown above, fourteen (14) clauses that scores 80, namely Clause 3, 4, 11, 12, 25, 36, 37, 38, 39, 42, 46, 49, 50, 51. These clauses are rather basic clauses and are not deemed to be covering those typically critical issues in a standard form. They are generally very short clauses, which can be readily understood.

Clauses in between the 70.01 to 80 marks are averagely positive scoring Level 8 under most attributes of evaluation with a few of attributes scoring Level 6. There are a total 18 clauses and 1 option module under this category. It is suggested that clauses as such will need to be examined and updated at a regular intervals to improve on its validity. However, specific attentions when used on a project basis are not necessary.

There are twenty two (22) clauses scored low negative in clause analysis as stated below. These clauses obtained the total evaluation score in between range of 60.0 to 69.99 in the clause analysis.

- Clause 7.0: General Obligations of the Contractor
- Clause 13.0: Site Administration
- Clause 16.0: Labour
- Clause 18.0: Other Contractors
- Clause 19.0: Suspension
- Clause 22.0: Sectional Completion
- Clause 23.0: Partial Occupation by Employer
- Clause 24.0: Delay and Extension of Time
- Clause 27.0: Defects Liability after Completion'
- Clause 28.0: Variations
- Clause 21.0: Removal of Workmen
- Clause 32.0: Procedures for claim
- Clause 33.0: Construction Plant, Temporary Works, Materials and Good
- Clause 34.0: General Responsibilities
- Clause 43.0: Effect of SO's Certificate
- Clause 44.0: Determination by Employer
- Clause 48.0: Recovery by the Employer
- Option A: Bills of Quantities
- Option B: Unfixed Equipment Materials or Goods Stored off Site
- Option C: Nominated Sub contractors and/or Nominated Suppliers
- Option E: Payment Bond
- Option F: Performance Security Deposit

All clauses with TES of less than 70 that has fallen under the two categories of negativity have problems associated with them and therefore, the Level of Adequacy is 6 or below in certain attributes. Problems and issues of these clauses are further discussed and verified by the key expert interviewees from the construction industry to make sure that the problems and issues are actually problematic to the construction industry. The following sections present the discussion and verification of the problematic clauses determined from the clause analysis.

4.8.3 Discussion and Verification of the Problematic Clauses

4.8.3.1 Interviewees' Profiles

Interviewees chosen are carefully selected based on the criteria set in Section 3.5.2. They are from the background of Engineers, Construction Lawyers, Arbitrators and some actually have a combination of backgrounds. Their profiles are summarized in the following Table 4.131.

All five (5) standard forms are distributed equally among the eighteen (18) key expert interviewees. Three (3) of five key expert interviewees expressed willingness to participate and relate their experience and expertise of CIBD 2000; this is perhaps in line with the lack of uptake of this form nationally. As usage of the form is lower, key expert interviewees who have experience of this standard forms reflects this.

Notwithstanding the circumstances, the verification results on CIDB 2000 are analysed with three (3) interviews. Therefore, none of the problems and issues with this form will be strongly verified based on the measurement set in Section 3.5.3, which requires 4-5 key expert interviewees agreeing to the problems to be strongly verified.

Table 4.131: Interviewees' Background Summary for CIDB 2000

Interviewee	Type of Job/Position	Organization	Experience in construction industry or contract administration	Standard Form of Contract Used
1	Civil Engineer/Construction Lawyer/Arbitrator/Senior Partner	Legal Firm	>20 years	IEM/CIDB
2	Construction Lawyer/ Senior Partner	Legal Firm	>20 years	PWD/CIDB
3	Construction Lawyer/ Senior Partner	Legal Firm	>15 years	PWD/CIDB/PAM

4.7.3.2 Discussion and Verification

The following provide an example of how verification works are carried out. Based on the previous example of Clause 40.0 'Assignment and Sub-contracting', problems and issues of this problematic clause are discussed as follows:

Clause 40.0 'Assignment and Sub-contracting' has two components. Component on Assignment is fairly clear and comprehensive. However, component on Sub-contracting fails to cover matters with respect to conditions precedent to employment of sub contractor; payment or non payment to sub-contractors and the Employer's rectification actions; whether

or not the SO and Employer can directly deal with subcontractors in the matter of instructions, payment, variations and other contractual matters; objections of SO to contractor's subcontractors; responsibility of Contractor for subcontractors. The form also does not touch on the matter of suppliers. Option Module C drafted out the matters related to Nominated Subcontractors and Nominated Suppliers. But Clause 40 fails to make any reference to Option C.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our five (5) key expert interviewees and example of interviews results are as follows:

Interviewee 1:

According to Interviewee 1, the Contractor usually has the its discretion to employ any number and any kind of sub-contractors as it sees fit in order to fulfil its obligations under the main contract. But in view of the rampant sub-contracting trend in Malaysia, Interviewee 1 believed that it is better if consent is obtained before the engagement.

And Contractor's obligations towards an employer would remain intact and unabated regardless of whether sub-contractors are privately engaged or nominated. Basically, to put in simply, Contractor would be liable to Employer for any failure, default or neglect on the part of its sub-contractors. Hence if it is nominated sub-contractor, most standard forms allow the Contractor to raise objection against the nomination of any particular sub-contractor if it has reason to suspect the capability or ability of that particular sub-contractor. It is not unusual for Employer to require nominated sub-contractors to provide the former with direct warranties or indemnities in relation to the sub-contractors' performance.

Interviewee 2:

It can be clearly seen that the idea of CIDB to implement good project management principles when it stated that no whole of works can be sub-contracted or assigned out. He opined that full sub-contracting is certainly difficult to manage.

Interviewee 3:

There is no discussion of fairness issue for sub-contractors as such fairness depend on his agreement with the Main Contractor. Employer will not have any contact with the sub-

contractors. But he agreed that the clause is lacking in terms of sub-contracting and the issues cover under sub-contracting can be better extended in order to be more explicit.

He also opined that it is important that the Contractor have to have the similar conditions for the Contract to be translated to the sub-contract. Say the SOSCO and time sheets and so forth. Usually it would be better if there is a sub-contract agreement attached to the main form to achieve for better consistencies.

The following Table 4.132 shows the coding table for the interviews results. The respondents are to respond to the 'Problematic Clauses' which is defined by TES of less than 70 and the problem areas and the level of adequacy scores given based on the number of problem areas as stated in Table 4.128 Level of adequacy scores for the specific attributes which are 6 or below from Table 4.128, are reinstated in the following Table 4.132 for the purpose of coding the interview's results.

Table 4.132: Coding Analysis from Interviews Results for Clause 40.0

Attribute	Score	Interviewee 1			Interviewee 2			Interviewee 3		
		A	N	D	A	N	D	A	N	D
Comprehensiveness	6	✓				✓		✓		
Completeness	6	✓				✓		✓		
Consistency	6	✓			✓			✓		
Flexibility	6	✓				✓			✓	
Clear Structured Project Management Framework	6	✓				✓			✓	
Fairness or Role Distribution	6		✓		✓			✓		
Risk Distribution	6		✓		✓			✓		

Where, **A**= Agree, **N**= Neutral, **D**= Disagree

From the coding analysis as seen in Table 4.132, summary of the verification results are provided for in the following Table 4.133.

Table 4.133: Summary of Interviewees' Response for Clause 40.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	2	1	0
Completeness	6	2	1	0
Consistency	6	2	1	0
Flexibility	6	1	2	0
Clear Structured Framework for Project Management	6	1	2	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 40.0 is verified to have problems with comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, role distribution and risk distribution but low frequency of occurrences.

The above process is repeated for all the twenty two (22) problematic clauses in CIDB 2000. Complete set of interviews results are presented in *Appendix C*. Discussion of problematic clauses and results and analysis of verification works are as shown in the following.

Clause 7.0 'General Obligations of the Contractor' defines the overall contractor's obligations. Words such as with 'due care and diligence' can be ambiguous as to which standard of measurement. However, due to the lacking of better words, words as such still remain. Part 7.3 also calls for the Contractor to be responsible for the design of that part of the Works designed by the Contractor (in which Option D will apply) and as stated in Option Module D, the Contractor is to obtain all design warranties from his professional consultants, who would have Professional Indemnity Insurance. But the question remains whether this would adequately cover the Employer as it seems. Under Part 7.4, no time frames are provided for reporting, adjusting and resolving of the discrepancies. This Clause needs to be cross reference to other clauses like Clause 34 to improve the completeness, comprehensiveness and consistency of the clause.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3)

key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.134: Summary of Interviewees' Response for Clause 7.0

Attributes	Score	Total Number of Interviewee Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 7.0 is verified to have problems with comprehensiveness, and completeness. Consistency, flexibility, clear structured framework for project management, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 13.0 'Site Administration' concentrates on Days and Hours of Working; Contractor's Representatives; Removal of Workmen and other Personnel; and Access of SO. It however does not cross reference with Clause 5 on Working Programme and Work Method Statement, which are essential to Site administration and hence lacking of completeness, comprehensiveness and a clear framework for project management. References to the issues are made in Clause 17 and hence, lack of consistency. For Part 13.4 Access of SO, there is no mention of SO providing certain notices and the procedures for doing so before accessing the factories and workshops as such places are not under the direct control of the Contractor. Besides in the absence of better words, the term 'reasonable', 'careful, skilled and experienced', 'vexatiously' and 'unreasonably' are somewhat immeasurable terms which can be arguable and subjective to the opinion of the SO. The SO is at liberty to object and require the Contractor to remove immediately the persons employed by the Contractor, which gives a large extent of power to the SO as the grounds for such removal is not clearly and explicitly stated. The Contractor is not allow to making claim for expenses under this clause but there is no mentioned on the claim for time in the event of delay due labour/workmen/tradesmen shortages. The Contractor is with immediate effect, to remove the workmen or personnel upon request by SO. It would be more appropriate to include a time frame should be given so that replacement can be found unless the offence. Reference to worker's unions is not included.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency and clear structured framework for project management. The problems and issues stated are

put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.135: Summary of Interviewees' Response for Clause 13.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	3	0	0
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 7.0 is verified to have problems with comprehensiveness, and completeness. Consistency, clear structured framework for project management, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 16.0 'Labour' is incomplete and incomprehensive in terms of the various issues that it covers with respect to labour. There is no mention on source of labour; requirement precedent to employment of foreign labours, compliance with Government Law such as the Employment Act 1955, labour law; wages' sheets; discharge of labour; failure of contractor to pay the labour.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.136: Summary of Interviewees' Response for Clause 16.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Flexibility	6	1	2	0
Clear Structured Framework for Project Management	6	1	2	0

It was found that Clause 16.0 is verified to have problems with comprehensiveness and completeness. Consistency, flexibility and clear structured framework for project management are found to have problems with low frequency of occurrences.

Clause 18.0 'Other Contractors' states the Employer's right to employ other contractors. Upon detection of discrepancies on other contractors' works, the time frame for reporting by the contractor and issuance of instructions by the SO are not given and a more comprehensive procedures be included (including expenses of rectifications, execution of works to proceed without instructions, claim of loss and expenses, extension of time should the discrepancies required rectifications by other contractors). It will also enhance good management practice on site should the SO be put responsible for the coordination of works among the contractors working on site.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.137: Summary of Interviewee's Response for Clause 18.0

Attributes	Score	Total Number of Interviewee Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Clear Structured Framework for Project Management	6	3	0	0
Fairness or Role Distribution	6	3	0	0
Risk Distribution	6	3	0	0

It was found that Clause 18.0 is verified to have problems with comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution.

Clause 19.0 'Suspension' covers the matter on suspension of work, reasons for suspension and procedures for suspension. However, there is no coverage on Contractor's right to suspend the work on site due to failure or delay in payment by the Employer in this clause or reference to be made to Clause 42. And upon the works proceed on site after such suspension, whether the Contractor can claim loss and expense, and extension resulted or reference to be made to Clause 42 for this matter.

The clause is found to be deficient in comprehensiveness, completeness, consistency, flexibility, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.138: Summary of Interviewee's Response for Clause 19.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	3	0	0
Flexibility	6	3	0	0
Fairness or Role Distribution	6	3	0	0
Risk Distribution	6	3	0	0

It was found that Clause 19.0 is verified to have problems with comprehensiveness, completeness, consistency, flexibility, risk distribution and role distribution.

Clause 22.0 'Section Completion' does not include the effects and calculation of sectional completion date in relation to overall completion date. Section 22.1a (i) should be reference to clause 20 instead of clause 20.2 only. The effect of sectional completion is not fully covered and it may affect the contract management of overall contract.

The clause is found to be deficient in comprehensiveness, completeness, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.139: Summary of Interviewees' Response for Clause 22.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	2	1	0

It was found that Clause 22.0 is verified to have problems with comprehensiveness and completeness. Consistency and clear structured framework for project management are found to have problems with low frequency of occurrences.

Clause 23.0 'Partial Occupation by Employer' states that the Employer can with the consent of the Contractor to take over and occupied certain portion of the works. Part 23.2a explains on the consequential effect of such action. Issues of payments and certificate for incomplete parts are not covered. It, however, fails to discuss various risks involved in partial occupation. As the site is partially occupied but the work is not fully completed for other parts, insurance coverage for the end-users and occupiers would not be the same as those to the workmen, labour or site personnel. Certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. In addition, the clause does not cover the Contractor's work flow (working programme and work method) with respect to partial occupation. Instead of having full possession, the contractor who has partial possession may find his work flow being disturbed in his attempt to complete the various parts of the uncompleted works. Part of the unoccupied works may also be disturbed by the occupiers and end users. Defects liability and delays can be issues for the uncompleted works but no coverage is provided in this clause. Contractor's safety precautions and plans for the end users and occupiers should be included. This clause on Partial Occupation should be improved with respect to these issues mentioned in order to have a better risk and role distribution. It is noted that no time frame is given for the contractor to remove his site facilities, plant and equipment and material or goods from the site is given.

The clause is found to be deficient in comprehensiveness, completeness, flexibility, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.140: Summary of Interviewees' Response for Clause 23.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	2	1	0
Completeness	6	2	1	0
Consistency	6	2	1	0
Flexibility	6	2	1	0
Clear Structured Framework for Project Management	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 23.0 has problems with low frequency of occurrences in terms of comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution.

Clause 24.0 'Delay and Extension of Time' is extensive and comprehensive as it covers various problems and issues that deals with delay and extension time. The clause is procedural. However, some sentences are long and usage of words such as 'fair' and 'reasonable' can be ambiguous. Part 24.1q on any other ground for extension of time can be too opened can create undue risks to Employer and would require re-phrasing. The clause also does not mention whether the SO's decision is final; the Employer's right in this matter; and whether the Contractor has the right to disagree.

The clause is found to be deficient in clarity, comprehensiveness, completeness, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.141: Summary of Interviewees' Response for Clause 24.0

Attributes	Score	Total Number of Interviewee Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	1	2	0
Comprehensiveness	6	2	1	0
Completeness	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 24.0 is verified to have problems with comprehensiveness, consistency, clarity, risk distribution and role distribution are found have problems with low frequency of occurrences.

Clause 27.0 'Defects Liability after Completion' fails to define the meaning of defects and any outstanding works in the contract as in the conditions precedent to using the defects and outstanding works. It also uses the words 'works of reconstruction' which can has too large a scope to be included in the defect liability clause. Sentences for this clause are long and the method of diminution in the value of works is not comprehensive. Reference can be made Clause 29 Valuation of variations or similar clauses. The clause does not include serving of the notice of default including the calculation of cost of remedying the defects by others to the contractor before such deduction. Time frame for the issuance of certificate of making good

defects is not indicated nor is the procedures for return of performance security bond and retention monies made or referred to after the issuance of certificate of making good defects.

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.142: Summary of Interviewees' Response for Clause 27.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	1	2	0
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	1	2	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 27.0 is verified to have problems with comprehensiveness and completeness. Clarity, consistency, clear structured framework for project management, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 28.0 'Variations' does not properly defines the terms variations and the conditions precedent to using the terms variations. It lacks the procedures and time frames with respect to the application by Contractor; issuance of or recommendation by SO's order for variation; and approval/disapproval by the Government on the issue Variation. There should also be cross referencing made with clauses related to SO's instructions and Contractor's need for complying and doing variation works urgently needed based on oral instruction by the SO. It does not cover whether the Contractor can claim extension and expenses due to lengthening of time of contract caused by variation and basis of which contractor can reject the variation proposed (i.e. cardinal changes).

The clause is found to be deficient in clarity, comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert

interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.143: Summary of Interviewees' Response for Clause 28.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	1	0
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	1	2	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 13.0 is verified to have problems with comprehensiveness and completeness. Clarity, consistency, clear structured framework for project management, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 32.0 'Procedures for Claim' fails to include the procedures for the Superintending SO's to provide for approval or disapproval of the claims. The clause fails to include the conditions precedent to the SO's decision of approval or disapproval of claims. The clause stated that SO has the power of approval or disapproval for Contractor's claim but it does not include the disagreement over the decision.

The clause is found to be deficient in comprehensiveness, completeness, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.144: Summary of Interviewees' Response for Clause 32.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	2	1	0
Completeness	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 32.0 is verified to have problems with comprehensiveness, completeness, risk distribution and role distribution but with low frequency of occurrences.

Clause 33.0 'Construction Plant, Temporary Works, Materials and Good' is drafted by combining all these items together in the clause. However, focus is generally placed on Construction plant and equipment. As three of these items are of different nature, it would be more appropriate to draft the clause based on each items specifically to improve the completeness, comprehensiveness and consistency of parts. It is also cover the ownership issues but even so drafted in clause, the legal title of the items still remains with the contractor. The clause may not appropriately cover the Employer as it may seem. The clause also does not cover the matters on the payment (full or partial) made on the materials and good on site.

The clause is found to be deficient in comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.145: Summary of Interviewees' Response for Clause 33.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	1	2	0
Fairness or Role Distribution	6	3	0	0
Risk Distribution	6	3	0	0

It was found that Clause 33.0 is verified to have problems with comprehensiveness, completeness, consistency, risk distribution and role distribution. Clear structured framework for project management and consistency are found to have problems with low frequency of occurrences.

Clause 34.0 'General Responsibilities' seems to follow on from Clause 7.0 'General Obligations of the Contractor'. As a standalone, this clause will not complete nor comprehensive in drafting out the responsibilities of the Contractor. Cross referencing to Clause 7 should be made to improve the consistency of the clause. In addition, usage of words such as 'satisfaction of the SO' is seen as ambiguous and definition of excepted risk is also not provided.

The clause is found to be deficient in comprehensiveness, completeness, consistency, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.146: Summary of Interviewees' Response for Clause 34.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 34.0 is verified to have problems with comprehensiveness and completeness. Consistency, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 43.0 'Effect of SO's Certificate' covers all certificates issued by the SO and no certificate, besides the Final Certificate, is conclusive evidence. But it is unclear of what is certificate is conclusive evidence with respect to. Part 43.2 Effect of final certificate is drafted to be related to dispute resolution proceeding in clause 47 but not Part 43.1. This clause generally has long sentences and is structured in a way which is not readily understandable. In terms of role and risk distribution, Part 43.1 does not take SO's certificate as conclusive evidence and it does not relieve the Contractor from his liability to amend or make good defects. This also contradicts the effect of final certificate where it is conclusive evidence in any proceedings.

The clause is found to be deficient in clarity, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.147: Summary of Interviewees' Response for Clause 43.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	1	2	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	1	2	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 43.0 is found to have problems with low frequency of occurrences in clarity, consistency, clear structured framework for project management, risk distribution and role distribution.

Clause 44.0 'Determination by Employer' draft out the various aspects of determination of works by the Employer due to Contractor's default/s. The clause is generally clear and comprehensive with detail procedures of the execution of determination. However, usage of words such as 'due diligence', 'unreasonably' or 'vexatiously' in the absence of better words is rather ambiguous. Many sentences were also long and hence, difficult to read. It also does not cover the Contractor's disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated, which may be a better framework for site management and contract administration. The Employer deeming the construction plant, temporary works and structures, tools, goods and so on as his property and his continuous usage is not correct legally as he does not own the legal title to the items. The part 44.3c (i) may not be advantageous for the Employer.

The clause is found to be deficient in comprehensiveness, completeness, consistency, clear structured framework for project management, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.148: Summary of Interviewees' Response for Clause 44.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Clarity	6	2	1	0
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	2	1	0
Fairness or Role Distribution	6	2	1	0
Risk Distribution	6	2	1	0

It was found that Clause 44.0 is verified to have problems with comprehensiveness and completeness. Clarity, consistency, clear structured framework for project management, role distribution and risk distribution are found to have problems with low frequency of occurrences.

Clause 48.0 'Recovery by the Employer' provides a special emphasis on the right to the Employer to recover any amount that is due as furnish in the contract. No reference is made to the relevant clauses where such amount may be due and hence lacking of consistency. Procedures for recovery are not covered as well. Contractor's right to recovery of any amount due to him especially after determination by contractor and after proceedings for dispute resolution are not mentioned.

The clause is found to be deficient in comprehensiveness, completeness, consistency, risk distribution and role distribution. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in *Appendix C* and the summary of verification is as follows:

Table 4.149: Summary of Interviewees' Response for Clause 48.0

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Fairness or Role Distribution	4	3	0	0
Risk Distribution	4	3	0	0

It was found that Clause 48.0 is verified to have problems with comprehensiveness, completeness, role distribution and risk distribution. Consistency is found to have problems with low frequency of occurrences.

CIDB 2000 has 6 option modules for the users of the form to choose in order to streamline the contract form to the needs of the project respectively.

The Option Module A 'Bills of Quantities' enables the users to use the contract as a BQ (Bills-of Quantities) contract. However, the clause does not state the conditions upon which this option module can be enforced. Under A2 'Quantities and Description', it only the states that quantities is deemed to be that set out in bills of Quantities. No mentioned on description or rates. The question remains whether the rate will follow the ones set out in the bills of Quantities or the original schedule of rate. Under A3 'Provisional Quantities', no reference is to clause on measurement. Basically, the existence of option module is commendable but without being properly cross referenced to all the relevant clauses, the clause may cause difficulties in the contract management of the project.

Option Module B 'Unfixed Equipment Materials or Goods Stored off Site' does not make known of the conditions for the application of this clause and cross reference it to other relevant clauses. Without being properly cross referenced to all the relevant clauses, the clause (especially an option clause) may cause difficulties in the contract management of the project.

Option Module C 'Nominated Sub contractors and/or Nominated Suppliers' as well does not make known of the conditions for the application of this clause and cross reference it to other relevant clauses. Without being properly cross referenced to all the relevant clauses, the clause (especially an option clause) may cause difficulties in the contract management of the project.

Option Module E 'Payment Bond' is a rare clause in any contract form as it drafts out the Employer giving the Contractor a payment security deposit. Hence, it is important but not stated here the situations or conditions when this option can be enforced.

Option Module F 'Performance Security Deposit' or commonly known as performance bond should be a must for any contract form instead of being list under as an optional clause. Various types of performance security deposit can be an option for the Contractor to take up but a form of performance security deposit is imperative.

The option modules are found to be deficient in comprehensiveness, completeness, consistency and clear structured framework for project management. The problems and issues stated are put forward to be verified with our three (3) key expert interviewees. Interviews results are as shown in Appendix B and the summary of verification is as follows:

Table 4.150: Summary of Interviewees' Response for Option A, B, C, E, F

Attributes	Score	Total Number of Interviewee/s Agreeing On Score Given		
		Agree (/5)	Neutral (/5)	Disagree (/5)
Comprehensiveness	6	3	0	0
Completeness	6	3	0	0
Consistency	6	2	1	0
Clear Structured Framework for Project Management	6	1	2	0

It was found that Option Module A, B, C, E, F are verified to have problems with comprehensiveness and completeness. Consistency and clear structured framework for project management are found to have problems with low frequency of occurrences.

4.9 Section Summary

There are several findings to be noted from Chapter 4. First and more foremost, a complete and systematic method for form-analysis has been established based on attributes that are weighted and ranked by the construction industry via an extensive quantitative questionnaires survey approach. The method of clauses deliberation is established based on the parameters within the eight (8) attributes of evaluation and hence, established a system that is structured and repeatable for clauses deliberation for person/s with contract administration expertise and experience.

From the weights and deliberation of the clauses, the TES scores for all the five (5) standard forms are determined. From the above form-analyses carried on the five (5) most commonly used standard forms of contract, it was found that all Malaysian forms are drafted on a standalone basis by different governmental or professional bodies.

The main findings in Chapter 4 show that:

1) Initial research conducted into the relationship between construction disputes and standard forms supports findings that Malaysian standard forms have, at this point in time despite some major revisions in the recent years, still fallen short of the 'ideal' concept as discussed in Section 2.5.

2) Moreover, the previous idea of replacing PWD forms with CIDB 2000 and/or up-dates, are unfeasible since CIDB 2000 usage remains low, largely given that promotion and the usage of traditionally available standard forms options, championed by the key respective professional bodies that have ownership of the forms, is deeply rooted in the Malaysian construction industry.
3) Not only are all standard forms found to be different in terms of their emphasis and drafting style, most importantly all forms are found to be having problems and issues on their own.
4) Some of those problems are more serious than the others but generally they indicate that Malaysian standard forms are all short of being 'ideal'.
5) Problems are most commonly seen in some of the important issues in contract administration such as payments, defects, claims, quality of workmanship and material, instructions and so forth.
6) Attributes seen as problematic are generally are incomprehensiveness, incompleteness, and risk distribution and role distribution issues.

All clauses with TES of less than 70 are classified as problematic clauses in this research work. These problematic clauses taken to the industry are subsequently verified (or otherwise), by key expert panels as part of the research method adopted by this research and discussed in Chapter 3. A total of 23 interviewee sessions were conducted with the five (5) standard forms being distributed equally among eighteen (18) key expert interviewees. All clauses were discussed with respect to the eight (8) attributes (identified in Chapter 4 above).

Findings show that the attributes that cause problems to the industry users are less than optimum levels of comprehensiveness, completeness, clear structured project management framework, fairness/role distribution and also risk distribution. On the other hand, clarity, consistency and flexibility are attributes *not* seen as causing major problems to the form users from the construction industry in Malaysia.

The points made above, argue strongly for the need to go towards *form-enhancement exercises* which can systematically upgrade the traditionally accepted standard forms, in a coordinated manner in order to fill the 'best-practice' gaps described in detail above that relate to *all* of the standard forms scrutinized, and yet retain the identity of each standard form.

This synchronized method of form-enhancement is certainly argued to be the way forward for (a highly conservative construction industry that refuses to stray from the norm) towards

existing forms that benefit from enhancement, and provide a suite of (enhanced) standard forms able to better serve the Malaysian construction industry.

Chapter 5 below describes form enhancement methods, and explains form of enhancement modules for respective Malaysian standard forms.

5. ENHANCEMENT MODULES

5.1 General Overview of Chapter

In the previous Section, the five (5) most frequently used Malaysian standard forms, namely: PWD 203 A; JKR Sarawak Form of Contract 2006; PAM 2006; IEM 89 CE; and, CIDB 2000 have been studied and examined in detail through utilising the designed and developed method of analysis in order to identify the problematic clauses in each of the respective standard forms. All clauses including the problematic clauses were evaluated in terms of pre-determined attributes and parameters presented in Section 3.4.2 and 3.4.3.

All problematic clauses have been categorized in terms of the eight (8) attributes of evaluation for the following purposes:

1) To be used for calculation of the problems areas and then, the determination of the TES for clauses;
2) Such categorisations to be then used for *clauses enhancement*, leading to respective standard forms enhancement purposes.

An example of categorisation, using the IEM 89 CE form, is presented in *Appendix B.*

This chapter, Chapter 5, now presents a set of enhancement suggestions in the form of enhancement modules, obtained via benchmarking procedures of the five (5) Malaysian standard forms against a standard form that is considered internationally (as discussed in previous sections) to be close to a best-practice pro-forma (closer to the concept of an ideal form).

Camp (1989) states that benchmarking is not only a measurement process that results in comparative performance measure, it also describes how exceptional performance is attained. APQC (1996) stated that the key philosophy of benchmarking is the ability to recognize one's shortcomings and acknowledge that someone is doing a better job, learn how is it being done and implement it in one's field of business.

Through extensive literature in Section 2.5 on the concept of an ideal form, New Engineering Contract Engineering and Construction Contract 3rd Edition (NEC3) is chosen to be the benchmarking target for form enhancement. Benchmarking procedures are described extensively in Section 3.6 and in the following sections of this chapter.

Table 5.1 provides the general overview of Chapter 5 and Figure 5.1 points to the stage of research in the logic flow of work towards the original contribution of knowledge.

Table 5.1: General Overview of Chapter 5

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 4	*As previous*		
Chapter 5	Enhancement Modules: 5.1 General Overview of Chapter 5.2 Summary of Problematic Clauses 5.3 Relevant Clauses in NEC3 and their interpretations 5.4 Enhancement Modules 5.5 Section Summary	Chapter 5 presents the form enhancements modules: • These are established via the benchmarking method with a chosen example deemed close to best-practice. • NEC3 is the chosen as a suitable benchmark. • The suggested set of enhancement modules is set up by benchmarking all the problematic clauses in Malaysian standard forms, reviewed against NEC3's positive traits in the relevant clauses.	**Enhancement modules can be used to:** **1) Achieve coordinated enhancement to respective Malaysian standard forms reviewed** **2) Provide suggestions for future form users to enhance the clauses that have been verified as in need of modification or improvement, in a coordinated structured systematic way, instead of via ad hoc amendment.** Chapter 7 subsequently presents a means to establish the correlations seen in Chapter 6. • A construction procurement selection framework is derived (a computer program is designed for the ease of using the framework) and; • When combined with the enhancement modules, it works towards a selection framework that select standard from a suite of Malaysian standard forms.

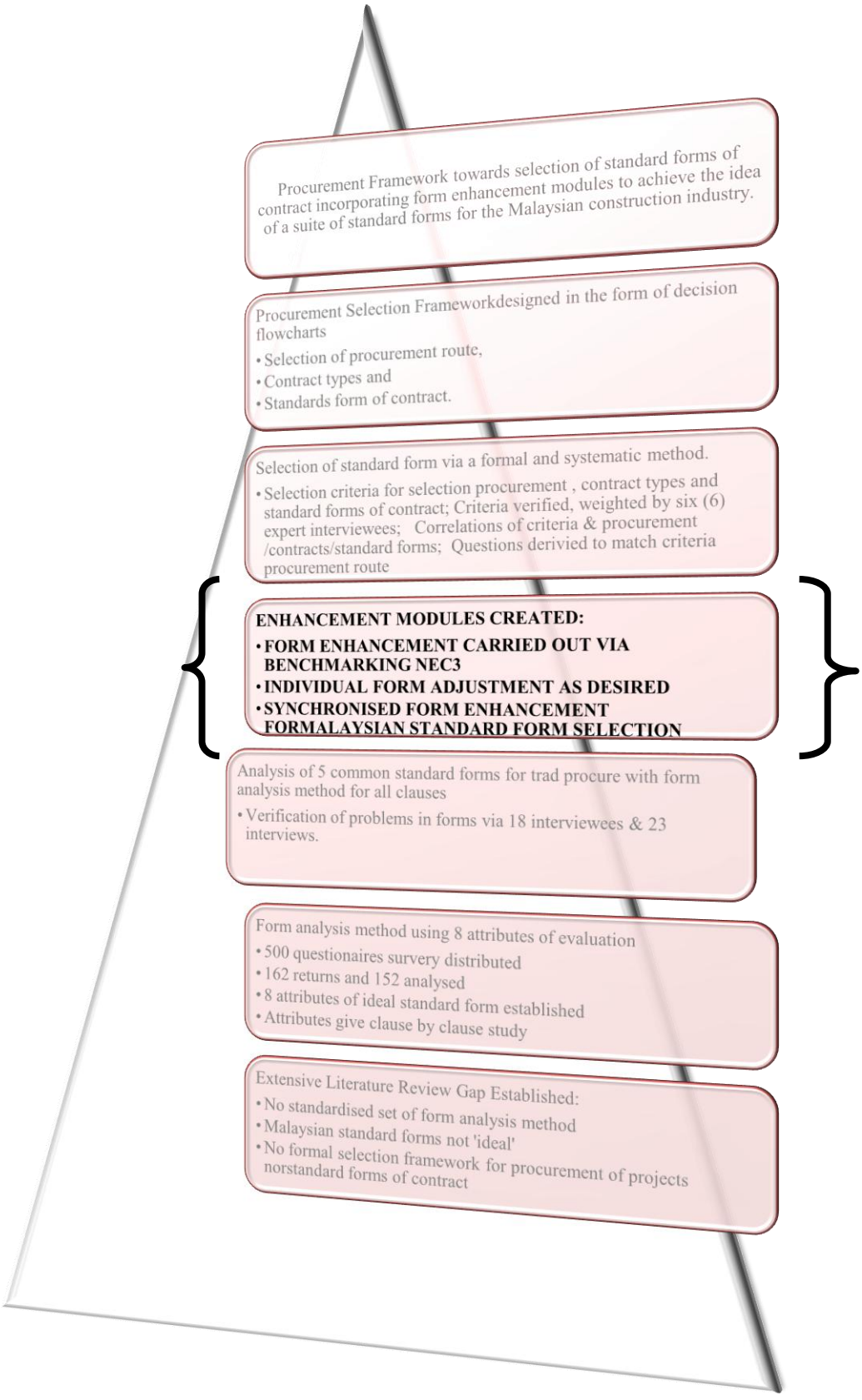


Figure 5.1 Stage of Work in the Logic Flow of Works towards the Original Contribution to Knowledge

5.2 Summary of Problematic Clauses

As explained in research methodology in Chapter 3 Section 3.7, the procedures for benchmarking are divided into three parts.

Step 1: "Problematic Malaysian Clauses" are assessed based on the eight (8) attributes and their respective parameters and then subsequently set aside for benchmarking.

Step 2: Similar/Relevant clauses identified in NEC3 will be studied and reviewed alongside respective commentaries of NEC3.

Step 3: Positive characteristics with respect to the eight (8) attributes found in NEC3 will be used to suggest improvement modules for the "Problematic Clauses" in the principal Malaysian standard forms.

Table 5.2 below summarises the benchmarking process described later in the intermediate section of this chapter.

The first phase involves discussing the deficiencies of the "Problematic Clauses" in five (5) standard forms determined and verified in Chapter 4. Problematic clauses in the five (5) Malaysian standard forms in Chapter 4 are summarised in the following Table 5.2 based on typical issues/matters covered in a standard form.

Respective Malaysian standard forms of contract problematic clauses have been grouped, in the following Table 5.2, relative to respective descriptions, alongside the benchmark which has been similarly aligned.

Table 5.2: Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
Definitions; documents that confirm scope	Clause 6.0 Scope of Contract Clause 8.0 Contract Documents			Clause 3.0 Scope of Work Clause 8.0 Sufficiency of contract Documents	Option A Bills of Quantities	**Benchmark generally to Enhancement-Module-Table 5.3, 5.4 and refer to NEC3 :** Clause 11.2 (16) Site Information Clause 11.2 (19) Works Information Clause 20.1 Obligation to provide the works Clause 61.1 Notifications by Project Manager Clause 61.2 Quotations for proposed instructions Clause 61.3 Notifications by Contractor Clause 62.2 Quotations for compensation events Clause 62.3 Submission of quotations Option B Priced contract with Bills of Quantities Option D Target Contract with Bills of Quantitative

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
Roles, Responsibilities, representatives	Clause 3.0 SO and SO's representative Clause 58.0 Site Agents and Assistants	Clause 6.0 General Obligations of Contractor Clause 11.0 Superintending Officer and Superintending Officers Representatives Clause 12.0 Contractor's Representatives	Clause 1.0 Contractor's Obligations Clause 2.0 Architect's Instructions Clause 8.0 Site Agent	Clause 2.0 Duties of Engineer and Engineer's Representatives Clause 4.0 Works to be to the satisfaction of Engineer Clause 5.0 Engineer's Instruction Clause 18.0 Contractor's Superintendence	Clause 7.0 General Obligation of Contractor Clause 34.0 General Responsibilities	**Benchmark generally to Enhancement-Module-Table 5.5, 5.6, 5.7 and refer to NEC3:** Clause 10.1Actions Clause 11.2(19) Works information. Clause 13.1 Communications Clause 13.3 Period for reply Clause 13.5 Extending Period of reply Clause 14 .3 Instructions Clause 20.1 Obligation to provide the works Clause 21.1 Contractor's design Clause 22.1 Using Contractor's Design Clause 23.1 Design of Equipment Clause 24.1 Key persons Clause 24.2 Removal of an employee Clause 25.1 Cooperation with Others Clause 26.1 Responsibility for

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
						subcontractors. Clause 27.1 Other Responsibilities Option X18 Limitation of liability Clause 60.1(1) Changes to the work information 62.2 Quotation for Compensation Event 62.3 Submission of quotation
Assignment of Work	Clause 42.0 Partial Occupation/Taking Over by Government Clause 47.0 Sub-contract and assignment Clause 60.0 Payment to Nominated Sub-Contractor or Supplier Clause 61.0 No Liability of Government to Nominated and/or Sub Contractor or Supplier	Clause 23.0 Assignment and Sub-Contracting/Sub-letting Clause 26.0 Nominated Sub-Contractor Clause 27.0 Nominated Suppliers Clause 36.0 Partial Occupation by Employer	Clause 16.0 Partial Possession by Employer	Clause 27.0 Sub-letting and Assignment Clause 28.0 Nominated Sub-contractor and/or nominated suppliers Clause 42.0 Partial Occupation by Employer	Clause 23.0 Partial Occupation by the Employer Clause 40.0 Assignment and Sub-contracting Option C Nominated Sub-contractors and/or nominated supplier	**Benchmark generally to Enhancement-Module-Table 5.8, 5.9 and refer to NEC3:** Clause 35.2 Take over and use of the works. Clause 60.1(15) Take over before completion Clause 80.1 Employer's risks Clause 81.1 The Contractor's risks Clause 84.1 Provision of insurances Clause 84.2 The insurance table X18 Limitation of liability Clause 20.3 Practical implications of design and

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
	Clause 62.0 Responsibilities of Contractor to Nominated and/or Sub-Contractors or Suppliers					subcontracting Clause 26 Subcontracting Clause 26.1 Responsibility for subcontractors 26.2 Acceptance of Sub-contractors 26.3 Conditions of sub-contract Clause 62 Quotations for compensation events Clause 92 Procedures on termination
Protection of site works; insurance, bonds	Clause 14.0 Indemnity In Respect Of Personal Injuries And Damage To Property Clause 15.0 Insurance against Personal Injuries and Damage to Property Clause 18.0 Insurance of Works	Clause 24 Indemnity for Injury to Persons and Property Damage		Clause 32.0 Indemnities to Employer with respect to Personal Injuries and Damage to Property	Option E Payment Bond Option F Performance Security Deposit	**Benchmark generally to Enhancement-Module-Table 5.10, 5.11, 5.12, 5.13 and refer to NEC3:** Clause 80.1 Employer's Risks Clause 81.1 Contractor's Risks Clause 83.1 Indemnity Clause 83.2 Contributory Deduction Option X14 – Advanced Payment to the Contractor Option X13 – Performance Bond

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
Site Conditions and set up; cleaning up	Clause 19 Setting out	Clause 3.0 Inspection of Site	Clause 5.0 Levels and Setting out of Works	Clause 14.0 Inspection of Site		**Benchmark generally to Enhancement-Module-Table 5.14, 5.15 and refer to NEC3:** Clause 11.2 (16) Site Information Clause 17.1 Ambiguities and inconsistencies Clause 60.1(12) Physical conditions. Clause 60.2 Judging physical conditions Clause 60.3 Inconsistency in site information

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
Programming sequences; site administration; working hours	Clause 23.0 Employment of Workmen	Clause 16.0 Removal of Workmen and other Personnel Clause 31.0 Independent Contractor	Clause 29.0 Works by Craftsmen, Tradesmen or Other Contractor Employed or Engaged by Employer	Clause 21.0 Removal of Workmen Clause 31.0 Artisans and Tradesmen	Clause 13.0 Site Administration Clause 16.0 Labour Clause 18.0 Other Contractor	**Benchmark generally to Enhancement-Module-Table 5.16, 5.17, 5.18 and refer to NEC3:** Clause 20.1 Obligation to provide the works Clause 24.1 Key persons Clause 24.2 Removal of an employee. Clause 25.1 Working with the Others Clause 27.2 Access to Work Clause 31.1 Submission of programmes Clause 31.2 Detail of programme Clause 31.3 Acceptance of programmes Clause 13.1 Communications Clause 13.3 Period for reply Clause 17.1 Ambiguities and inconsistencies. Clause 27.2 Access to work. Clause 42.2 Notification of defect. Clause 43.1 Obligation to correct Schedule of Cost Components

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	**Problematic Clauses in Five (5) Standard Form of Contract**					**Relevant NEC 3 Clauses**
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
Time and progress, delay and extensions	Clause 38.0 Possession of Site Clause 43.0 Delay and Extension of Time	Clause 13 Possession of Site and Commencement of Work Clause 34.0 Completion of Works	Clause 21.0 Date of Commencement, Postponement and Completion Date	Clause 38.0 Commencement Time and Delays Clause 39.0 Completion of Works Clause 43.0 Delay and Extension of Time	Clause 22.0 Sectional Completion Clause 24.0 Delay and Extension of Time	**Benchmark generally to Enhancement-Module-Table 5.19, 5.20, 5.21, 5.22, 5.23 and refer to NEC3:** Clause 30.1 Starting and completion Clause 30.2 Deciding and certifying completion Clause 32.1 Revised Programme Clause 33.1 Access to and use of the site Clause 31.1 Submission of programme Clause 60.1(2) Late access/use of the site Option X5 Sectional completion Clause 16.1 Early warning notices Clause 19 Prevention Clause 60.1 (19) Prevention as Compensation event 62.2 Quotation for Compensation Event 62.3 Submission of quotation Clause 13.6 Issue of certificates.

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
						Clause 42.2 Searching and notifying defects.
Material, goods, equipment and plant delivered and off site; quality issues	Clause 20.0 Unfixed Materials and Goods Clause 35.0 Material of Goods and Workmanship Clause 36.0 Inspection and Testing of Materials, Goods and Equipment	Clause 7.0 Quality of Material and Workmanship Clause 18.0 Unfixed Materials, Goods and Equipment	Clause 6.0 Materials and Workmanship to conform to Description, Testing and Inspection. Clause 14.0 Materials and Goods	Clause 9.0 Materials and Workmanship Clause 10.0 Unfixed Materials and Goods	Clause 33.0 Construction Plant, Temporary Works, Material and Goods Option B Unfixed Equipment Materials or Goods Stored off Site	**Benchmark generally to Enhancement-Module-Table 5.24, 5.25 and refer to NEC3:** Clause 40.1 Tests and Inspections Clause 40.2 Material, facilities and samples Clause 40.3 Notifications Clause 40.4 Repeat Tests and Inspections Clause 40.5 Supervisor's test and inspection Clause 40.6 Costs of Repeat Tests and Inspection Clause 41.1 Testing and inspection before delivery Clause 42.1 Instructions to search Clause 70.1 Employer's title to equipment, plant and Materials. Clause 70.2 Title outside working areas

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
						Clause 71.0 Marking equipment, plant and materials. Clause 72 Removing Equipment Clause 73.2 Title to materials. Clause 82.1 Repairs Clause 84.2 The insurance table Schedule of cost components
Site safety and health issues	Clause 74.0 Epidemics and Medical Assistance					**Benchmark generally to Enhancement-Module-Table 5.26 and refer to NEC3:** Clause 27.4 Health and Safety Requirements
Design by Contractor	Clause 22.0 Design	Clause 30 Contractor's Design Works				**Benchmark generally to Enhancement-Module-Table 5.27 and refer to NEC3:** Clause 21.2 Acceptance of the Contractor's design Clause 21.1 The Contractor's Design Option X18 Limitation of liability

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	**Problematic Clauses in Five (5) Standard Form of Contract**					**Relevant NEC 3 Clauses**
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
Defects Liability and rectification	Clause 48.0 Defects after Completion	Clause 37 Defects after Completion	Clause 15.0 Practical Completion and Defects Liability	Clause 45.0 Defects after Completion	Clause 27 Defect Liability after Completion	**Benchmark generally to Enhancement-Module-Table 5.29 and refer to NEC3 Cl:** Clause 11.2(5) Definition of defect. Clause 42.1 Instructions to search Clause 42.2 Notification of Defects Searching and notifying defects. Clause 43.1 Correcting defects. Clause 43.2 Defect Correction Period Clause 43.3 Issue of defects certificate Clause 43.4 Access for Correcting Defects 44.1 Proposals to Accept defects 44.2 Acceptance of defects 45.1 Uncorrected Defects 45.2 Acceptance of uncorrected defects Clause 52.1 Defined cost Clause 60.1 (10) Searches for defects Option X16 Retention

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
Variations to original scope of works, valuation and measurement of variations;	Clause 24.0 Variations Clause 25.0 Valuation of Variations	Clause 32 Valuation of Variations	Clause 11.0 Variations, Provisional and Prime Cost Sum	Clause 23.0 Variations Clause 24.0 Measurement and Valuation of Works Including Variation Clause 26.0 Measurement	Clause 28 Variation	**Benchmark generally to Enhancement-Module-Table 5.30, 5.31 and refer to NEC3:** Clause 14.3 Instructions. Clause 16.1 – Early warning notices Clause 20.1 Obligation to provide the works Clause 27.3 Contractor to obey instruction. Clause 60.1(1) Changes to the work information Clause 60.1(8) Changing a decision 61.1 Notifying compensation event 61.2 Quotation for proposed instructions 63.1 Assessing Compensation Event 63.4 Rights of employer and Contractor Clause 64.1 Project Manager's Assessment Clause 64.2 Assessed Program Clause 64.3 Notifications of Assessment Clause 64.4 Failure to Assess Clause 65.Implementing Compensation Events

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	**Problematic Clauses in Five (5) Standard Form of Contract**					**Relevant NEC 3 Clauses**
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
Payment for acceptable performance	Clause 28.0 Payment to Contractor and Interim Certificates Clause 31.0 Final Account and Payment Certificates	Clause 33 Interim Certificates and Payment to Contractor Clause 39 Final Certificate	Clause 30.0 Certificates and Payment	Clause 48.0 Final Account Certificates		**Benchmark generally to Enhancement-Module-Table 5.32 and refer to NEC Cl.:** Clause 50.1 Assessment procedure Clause 50.2 The amount due Clause 50.4 Assessing the amount due Clause 50.5 Correction of Assessments Clause 51.0 Payments. Clause 51.1 Certification. Clause 51.2 Time for payment and interest on late Payment. Clause 60.1(8) Changing a decision Clause 11.2(2) Definition of Completion. Clause 90.4 Certification of amount due on termination Clause 93.1 Payment on Termination Clause 93.2 the Other Amount due

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	**Problematic Clauses in Five (5) Standard Form of Contract**					**Relevant NEC 3 Clauses**
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
Termination if default occurs	Clause 51.0 Events and consequences of Default by the Contractor Clause 52.0 Termination on National Interest	Clause 44.0 Determination of Contractor's Employment		Clause 51.0 Termination of Contractor	Clause 44.0 Determination by Employer	**Benchmark generally to Enhancement-Module-Table 5.37 and refer to NEC3:** Clause 90.1 Notification of termination. Clause 90.2 The termination table. Clause 91.0 Reasons for termination. Clause 92.1 92.2Procedures on termination Clause 93.1 Payment on termination. Clause 93.2 Other amounts due. Clause 90.2 The termination table
Suspension	Clause 50.0 Suspension of Works				Clause 19.0 Suspension	**Benchmark generally to Enhancement-Module-Table 5.36 and refer to NEC:** Clause 34.1 Instructions to stop and restart work Clause 60.1 (5) Stopping/Suspension of work Clause 62.1 Instruction for Alternative quotations Clause 61.1 Notifying

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
						compensation event 61.2 Quotation for proposed instructions 63.1 Assessing Compensation Event 63.4 Rights of employer and Contractor Clause 64.1 Project Manager's Assessment Clause 64.2 Assessed Program Clause 64.3 Notifications of Assessment Clause 64.4 Failure to Assess Clause 65.1 Implementing Compensation Events
Dispute and dispute resolution	Clause 65.0 Arbitration	Clause 43 Claims Disputes and Dispute Resolution				**Benchmark generally to Enhancement-Module-Table 5.38 and refer to NEC3:** Clause W1 Dispute Resolution Clause W2 Dispute Resolution
Claims; Loss and expenses	Clause 32.0: Effect of SO's certificates			Clause 44.0 Loss and Delays caused by Delays	Clause 32 Procedures for Claims	**Benchmark generally to Enhancement-Module-Table 5.33, 5.34, 5.35 and refer to NEC3:** Clause 13.6 Issues of certificates

Table 5.2 (cont): Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be Benchmark with Relevant Clauses in NEC3

Description of Matters	**Problematic Clauses in Five (5) Standard Form of Contract**					**Relevant NEC 3 Clauses**
	PWD 203 A	**JKR Sarawak Form of Contract**	**PAM 2006**	**IEM 89 CE**	**CIDB 2000**	
	Clause 44.0 Claims for Loss and Expenses			Clause 49.0 Effect of Engineer's Certificates	Clause 43 Effect of Superintending Officer's certificate Clause 48 Recovery by the Employer	Clause 14.1 Acceptance of a communication Clause 51.1 Certification Clause 61.1 Instruction to submit quotation Clause 62.1 Instruction for alternative quotations Clause 62.2 Quotation for Compensation Event Clause 62.3 Submission of quotation Clause 63.3 Assessing Compensation Event Clause 64.1 Project Manager's Assessment Clause 64.2 Assessed Program Clause 64.3 Notifications of Assessment
Law and Regulations	Clause 69.0 Stamp Duty Clause 21.0 Compliance with the Law Clause 63.0 Intellectual Property Rights		Clause 4.0 Statutory Obligations, Notices, Fees and Charges	Clause 11.0 Statutory Obligations Clause 12.0 Patent Rights and Royalties		**Benchmark generally to Enhancement-Module-Table 5.39, 5.28 and refer to NEC:** Clause X2.1Changes in the Law Clause 12.2 Law of Contract Clause 12.3 Revision to the contract

The second phase emphasises identification of the benchmarks. Following the identification of problematic clauses in the five (5) standard forms, relevant clauses in NEC3 are identified, studied and interpreted and their positive traits are used as benchmarks for all the problematic clauses in five (5) standard forms.

Table 5.2 above then describes and summarises, at the outset, the respective aligned clauses (based on typical progression requirements) for each of the Malaysian standard forms of contract, alongside the benchmark standard form.

Work by Latham (1994), Broome and Hayes (1997), Eggleston (2006), Potts (2008) among many others in the Literature Review Section 2.5.1 suggests NEC3 as a ***valid and logical*** benchmark form. Detailed analysis of the benchmark of an NEC3 pro-forma, is based on the NEC3 Engineering and Construction Contract June 2005 standard form, Eggleston (2006) and other related commentaries offered by a broad range of researchers and authors and their respective work into NEC3 form analyses (discussed at length in the previous Section 2.5.1). The interpretations of all of the relevant clauses in NEC 3 (identified as aligned to the problematic Malaysia standard forms of contract) can be seen in *Appendix E* NEC3 Relevant Clauses and their Interpretations.

Finally, based on the positive traits in NEC3's relevant clauses identified/summarised in the *Appendix E*, problematic clauses in Malaysian forms can be benchmarked against these aligned relevant (best-practice) clauses. The recommendations are drawn from on the 'positivity' of the benchmark clauses (as per literature in Section 2.5.1) when contrasted against the 'negativity' in the specific attributes in the problematic clauses (as reviewed in Chapter 4) and are presented to address the *clusters* of typical issues/matters in a standard form in the following Section 5.3; it is noted that contract should be viewed as a whole and should not be amended in standalone clause/s.

5.3 Enhancement Modules

Benchmarking work is carried out for all of the problematic clauses of the five (5) standard forms previously analysed (as summarised and aligned in Table 5.2 above). Results from the benchmarking process of all five forms, against NEC3, have been compressed and summarised to produce one, easy-to-use set of recommendations (enhancement modules), which can be applied generally to enhance each of the (previously identified) problematic clauses of the five (5) respective alternative standard forms.

The recommendations are structured as modules based on the eight (8) attributes of evaluation. Depending on the problematic issues in a specific clause, the recommendation modules provide suggestion(s) for enhancement, based on an aligned benchmarked-drafted clause.

The following sections below refer to (and can be cross-referenced against) the summarised items in Table 5.2 above and present a stage-by-stage means to address a project's potential area-of-doubt that may result from application of the available (and Malaysian industry-preferred) less-than-ideal Malaysian standard forms' clauses.

5.3.1 Scope of Works/Contract

Key information detailed to provide an enhancement of (a stage-specific/clause-specific 'Enhancement Module') for potentially problematic clauses related to the *scope of work or scope of contract* is suggested in Table 5.3 immediately below; effectively, the stakeholder/user of a particular Malaysian standard form of contract is directed to recognise the potentially problematic issues related to issues *description of scope of works/contract* inherent in the related specific clauses at this particular stage of the project; and seek to align a best-practice enhancement for the action(s) pending, related to a(n enhancement) module that seeks to improve the various attributes.

Table 5.3: Enhancement Modules for clauses related to Scope of Works/Contract

Issue	Enhancement via NEC benchmark
Clarity :	Clarity can be improved by referring to NEC3 clause 11.2 (16) when it requests proper definition of scope of work/contract including the description of site and its surrounding and making specific references to data set in certain parts of the contract. NEC 3 in clause 11.2 (19) also include information given in accordance with the contract as part of the scope of work/contract. NEC3 is very specific about scope of work/contract, which can improve any ambiguities seen in local Malaysian standard forms' relevant problematic clauses.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC3 clause 11.2 (16) and (19) where the scope of work/contract in the form of site information and work information must be clearly and specifically provided for in the contract.
Completeness:	Completeness can be improved by referring to NEC3 clause 11.2 (16) and (19) as it states clearly the information to be expected that should describe the site and the works and any constraints on how the

Table 5.3 (cont): Enhancement Modules for clauses related to Scope of Works/Contract

Issue	Enhancement via NEC benchmark
	Contractor is to provide the works. It also includes instructions as part of the work information.
Consistency:	NEC3 in two sections (the Works information and Site information) seeks to provide a better consistency by specifically stating information that needs to be in where the documents state it should be in and which documents must be clearly stated in the contract.
Flexibility	NEC3 calls for specific information to be included in the contract data and documents in a specific section of the contract documents, which greatly varies with Malaysian standard forms where any uncertainties are generally left to the discretion of the Engineer/ Architect/ Superintending Officer. Flexibility is also provided when it states that instruction related to the contract is to be part of the work information.
Clear Structured Framework for Project Management	Contract administration can be enhanced in Malaysian forms with the NEC3 requires a detail description and statements of any works, site information and constraints clearly that forms part of the contract.
Fairness or Role Distribution	NEC3 requires the contract administrator describes/ states any works, site information and constraints clearly.
Risk Distribution	Risk better distributed when contract administrator prepares documents and statements that states the work information and site information and put forward clear and specific information. When clearness is achieved and ambiguities eliminated, contracting parties can better work towards completing the said scope of work/contract.

5.3.2 Contract Documents

Key information detailed via the enhancement module for clauses related to *contract documents,* is suggested in the following Table 5.4 to address the potentially problematic issues relating with *discrepancies within documents, sufficiency of contract document* in the related specific clauses and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved attributes.

Table 5.4: Enhancement Modules for clauses related to Contract Documents

Issue	Enhancement (via NEC benchmark)
Clarity :	Clarity can be achieved by referring to NEC3 clause 11.2 (19) when it states in a short and simple manner the contract must define and describe the works and any constraints that the Contractor may face in specific set of documents that must be clearly listed out.
Comprehensiveness:	With respect to discrepancies in documents and insufficiency of documents, comprehensiveness can be improved by referring to NEC 3 clause 61.1 should the documents and information provided be insufficient or discrepancies are detected as follows: 1. compensation event arise from Project Manager or Supervisor giving an instruction or changing an earlier decision, 2. Project Manager needs to notify the Contractor of the compensation event at the time of giving the instruction or changing the earlier decision 3. Project Manager instruct the Contractor to submit the quotations unless the event arises from the fault of Contractor or quotation have already been submitted ; clause 61.2 as Project Manager needs to instruct Contractor to submit quotation for a proposed instruction or a proposed changed decision but Contractor cannot put proposed instruction or proposed change into effect;
	clause 61.3 as 1. Contractor notifies the Project Manager on the happened event or event he expect to happen as a compensation event and the Project Manager has not notified the event to the Contractor 2. Contractor is not allowed to change the price, competition date or key date if the he does not notify the compensation event within 8 weeks unless is the responsibility of the Project Manager to notify; clause 62.2 as 1. Contractor is responsible to submit details of his assessment with each quotation, 2. the Contractor has to includes the alteration to the accepted program in his quotation if the program for remaining work is altered by the compensation event,; clause 62.3 as 1. the Contractor has to submit the quotation within 3 weeks of being instructed to do so by the Project Manager and Project Manager has to replies the submission within 2 weeks.

Table 5.4 (cont): Enhancement Modules for Clauses related to Contract Documents

Issue	Enhancement (via NEC benchmark)
Completeness:	Completeness can be improved by referring to NEC3 clause 11.2 (19) where specific documents that contain the project and contract data and constraints in the work must be provided for. Should there be any insufficiency of contract documents, Project Manager in NEC3can give an instruction or change an earlier decision, but s/he needs to notify the Contractor of the compensation event at the time of giving the instruction or changing the earlier decision. S/he should then instruct the Contractor to submit relevant quotations; the proposed instruction or a proposed changed decision. In clause 61.3 the Contractor can also notify the Project Manager of the happened event or event s/he expects to happen as a compensation event if the Contractor believes the event is a compensation event is expected. NEC3 and its relevant clauses deal with the issues of insufficiency in contract documents in a wholesome manner.
Consistency	NEC3 achieved a good consistency by being very specific about the type of documents that need to be provided for in the contract. Contract data and work information must be contained in these specific documents.
Flexibility	NEC 3 makes insufficient contract documents a part of compensation event where contracting parties can notifies one another should they detect any discrepancies in the documents or should there be certain information that is not provided in the contract documents.
Clear Structured Project Management Framework:	NEC 3 drafts out the roles and functions of each contracting parties in the event of discrepancies and insufficiency in contract documents is detected, thus creating an environment that deals with the issues professionally and matter -of-factly unlike Malaysian forms that on most occasion tries to prevent any claims in the effort to protect the Employer.
Role Distribution:	NEC 3 drafts out the role and function of each contracting parties in the event of discrepancies and insufficiency in contract documents is detected, creating a very balanced role distribution where claims for compensation is allowed if deemed reasonable.
Risk Distribution:	NEC 3 makes insufficient contract documents a part of compensation event where contracting parties can notifies one another should they detect any discrepancies in the documents or should there be certain information that is not provided.

5.3.3 Contractor's General Obligation

Key information detailed via the enhancement module for clauses related to *general obligations of Contractor,* is suggested in the following Table 5.5 to address the potentially problematic issues relating with *lack of clarity when stating the general obligations of Contractor* in the related specific clauses. It is noted that obligations of Employer and Superintending Officer are generally not included in the local forms. This information below seeks to align a best-practice enhancement for the action(s) pending; related to (an enhancement) module that seeks improved the various attributes.

Table 5.5: Enhancement Modules for Clauses related to Contractor's General Obligation

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically state that it is the Contractor's responsibility to provide for the works according to the work information provided.
Comprehensiveness :	Procedures for his main responsibility seen in Section 2 of NEC3 are listed separately under each clause as described below.
Completeness :	Contractor's main responsibility is stated in Section 2 of NEC3 main core clauses where clause 20 states that s/he must provide for works in accordance with the work information; clause 21 where he has to be responsible for his design of works stated to be his part in the work information and clause 22 state that this design can only be used in conjunction with the project; clause 23 where he has to submit particular of design of an item of equipment if Project Manager instructs him to so; clause 24 where he has to be responsible for his own staffs on site; clause 25 requires them to work well the Employer and others working on site; clause 26 requires him to work as if he has not sub-contracted and clause 27 where his other responsibility includes obeying instructions, meeting health and safety requirement.
Consistency :	Section 2 of NEC3 basically deals with the main responsibilities of the Contractor under the contract but is tied with his other responsibilities in other section of the contract.
Flexibility :	Procedures which include the roles and obligations of Employer, Project Manager and Supervisor are included.
Clear Structured Framework for Project Management :	NEC3 Section 2 covers the main obligations of the Contractor especially in managing the works, the site, his workers and her/his relationship with the Employer and others working on site.

Table 5.5 (Cont): Enhancement Modules for Clauses related to Contractor's General Obligation

Issue	Enhancement via NEC Benchmark
Role Distribution :	Even though NEC3 focuses specifically the main obligations of the Contractor, procedures which includes the roles and obligations of Employer, Project Manager and Supervisor are listed together in the same section.
Risk Distribution :	Risks are fairly distributed when NEC3 include specific procedures in Section 2 which also include the roles and duties of the other contracting parties.

5.3.4 Contractor's Representatives

Key information detailed via the enhancement module for clauses related to *Contractor's Representative* on site is suggested in the following Table 5.6 to address the potentially problematic issues dealing with *duties and responsibilities of contractor's representatives* in the related specific clauses and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.6: Enhancement Modules for Clauses related to Contractor's Representatives

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 reduces the ambiguities with issues related to the Contractor's Representatives when it provides for Project Manager to clearly state the reasons for termination and providing a specific time frame for removal. NEC3 does not use words such as 'to the discretion of Superintending Officer/ Engineer/ Architect' or 'Superintending Officer/ Engineer/ Architect to not unreasonably or vexatiously to do so' commonly seen in Malaysian forms on such matter.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 24.1 as it provides procedures for employment as follows : 1. The Contractor submits the name, relevant qualifications and experience of a proposed replacement person to the Project Manager. 2. The Project Manager is to determine acceptance upon submission.; and Clause 24.2 as it provides procedures for removal of employee as follows : 1. The Project Manager instructs the Contractor to remove an employee after having stated his reasons for the instruction. 2. The Contractor is then to remove the employee one day after the instruction of removal.

Table 5.6 (cont): Enhancement Modules for clauses related to Contractor's Representatives

Issue	Enhancement via NEC Benchmark
Completeness :	Completeness can be improved by referring to NEC3 Clause 24.2 as it states that the Project Manager can instruct the Contractor to remove an employee but only after having stated his reasons for the instruction to the satisfaction of the Contractor.
Consistency:	Consistency can be achieved by referring to relevant clauses in NEC3 where Project Manager must provide his approval for the Contractor's representative and any subsequent removal must be found on solid grounds unlike Malaysian forms that generally give the right to the Superintending Officer/Engineer/Architect to overturn any approvals made previously.
Flexibility	Roles of all the contracting parties are clearly and specifically stated in relevant NEC3 clauses on the matter or Contractor's representatives, providing all parties the necessary remedial in contract necessary for various circumstances.
Clear Structured Framework for Project Management :	Site management can be improved by referring to NEC3 Clause 24.2 as it states that unreasonable use of Project Manager's power would be a breach of contract under Clause 10.1 which should the stated removal is found to be unreasonable. It also stresses on all contracting parties to act as stated in the contract and in a spirit of mutual trust and cooperation.
Role Distribution :	NEC3 Clause 24.1 as it states Contractor shall submit the name, relevant qualifications and experience of a proposed replacement person to the Project Manager for acceptance; and Clause 24.2 as it states the Contractor is to respond to the instruction of stated removal from one day after the instruction. All roles and functions of the contracting are stated clearly.
Risk Distribution :	Risk distribution can be improved by referring to NEC3 Clause 24.2 as it states that the Project Manager can instruct the Contractor to remove an employee but only after having stated his reasons for the instruction; Clause 24.2 as it states that unreasonable use of Project Manager's power would be a breach of contract under Clause 10.1 which if the stated removal is found to be unreasonable.

5.3.5 Superintending Officer and Representative and their instructions

Key information detailed via the enhancement module for clauses related to the *Superintending Officer, his representatives and their instructions* is suggested in the following Table 5.7 to address the potentially problematic issues dealing *with duties and responsibilities of the Superintending Officer and her/his representatives on site and issues*

related to the instructions given in the related specific clauses in local Malaysian forms*;* and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.7: Enhancement Modules for Clauses related to Superintending Officer and Representative and Instructions

Issue	Enhancement via NEC Benchmark
Clarity :	Clarity is provided for in NEC3 when: 1) Clause 14.2 stresses the delegation of Project Manager and Supervisor's duties and any delegation is not restricted provided that advance notice is given to the Contractor. 2) Clause 14.3 stated Project Manager can give instruction to Contractor which changes the work information or a key date. NEC3 is specific and clear on the matter discussed using precise language and avoiding any ambiguities.
Comprehensiveness :	Unlike Malaysian forms, NEC3 states precisely that duties of Project Manager and Supervisor if delegated must be conveyed to the Contractor in advance. NEC3 also puts forward provision to specify the duties of the Project Manager and Supervisor. Employer can replaced Project Manager and Supervisor but must inform the Contractor should s/he be replaced. On the matter of instructions, comprehensiveness in local forms can be improved by referring to NEC3 Clause 14.3 as it states the Project Manager and the Supervisor may give instructions to the Contractor which changes the works information; and Clause 13.3 and 13.4 which states the Project Manager, Contractor, and Supervisor to reply to communications within the period for reply; and Clause 13.4 as it provide procedures as follows : 1. The Project Manager replies to a communication submitted or resubmitted by the Contractor for acceptance. 2. If Project Manager does not accept, the Project Manager states his reasons for non-acceptance. 3. The Contractor resubmits the communication within the period for reply. And clause 13.5 states that Project Manager has to get agreement from Contractor to extend

Table 5.7 (cont): Enhancement Modules for Clauses related to Superintending Officer and Representative and Instructions

Issue	Enhancement via NEC Benchmark
Completeness :	On the matter of Superintending Officer, his representatives and their instructions are covered more thoroughly in NEC3 when coverage on the issues include specifying duties and roles of Project Manager and Supervisor; clause 14.2 which states that delegation of duties of the Project Manager and Supervisor can be done but with advance notice to the Contractor; Clause 14.3 which states the Project Manager and the Supervisor may give instructions to the Contractor which changes the works information taken as providing for variations; Clause 60.1(1) which states that an instruction given by the Project Manager changing the works information is a compensation event, Clause 13.1 which specifies all communications should be communicated in a form which can be read, copied and recorded; Clause 13.5 which states the Project Manager must get the agreement of the Contract should he need an extension of periof of reply and Clause 14.4 when the Employer can replace the Project Manager or the Supervisor.
Consistency :	Consistency can be improved by referring to NEC3 Clause 13.1 as it states that all instructions are to be communicated in a form that can be read and copied and recorded which makes all actions of the contracting accountable for. Inconsistency will also be minimised the duties and roles contracting parties are very specific stated in the contract.
Flexibility	Flexibility is seen in NEC3 when it states that all instructions are to be communicated in a form which can be read and copied and recorded and must be replied within the period of reply. It does not imposed unnecessary time frame but a reply must be given based on the time frame communicated among the contracting parties respective to the issues. Clause 13.3 places specifically an obligation on the Project Manager, Contractor, and Supervisor to reply to communications within the period for. Any instructions that are provided by the Project Manager that give rise to claims are treated as compensation event and to be dealt with according to the relevant clauses in NEC3.

Table 5.7 (cont): Enhancement Modules for Clauses related to Superintending Officer and Representative and Instructions

Issue	Enhancement via NEC Benchmark
Clear Structured Framework for Project Management :	NEC3 separates the function of contract administration and supervision. It does not go by delegation of power but specifying different roles for the Project Manager and Supervisor and empowering them to be independent from each other. This can be seen that the Supervisor is mainly concern with the quality of works and defects. Project Management work can be more can be more effective when role and function of each person is clear.
Role Distribution :	NEC3 set out a very balanced role distribution for contracting parties. Role distribution various matters are clear. Roles and duties of the Project Manager and Supervisor are set out clearly and any delegation must be conveyed to the Contractor in advance. Instructions must be read and copied and recorded and all contracting parties must reply with a period of reply which they come to consensus with. Should an extension is needed for the Project Manager to extend the period of reply, s/he must get agreement from the Contractor. It is also an obligation as stated in clause 16.1 for both the Contractor and the Project Manager to issue an early warning notice to the other as soon as possible in the event of discrepancies, claims and problems on site.
Risk Distribution :	NEC3 specifically treat instructions that change key dates and work information as compensation events and it encourages all contracting parties to report problems as early as possible. This will positively enhance the management of the site when risky events are dealt with the procedures set up in the form, which in turn adhere to the principle of equitable risk distribution in standard forms.

5.3.6 Sub-contracting and Assignment

Key information detailed via the enhancement module for clauses related to the *sub-contracting/assignment/sub-letting* is suggested in the following Table 5.8 to address the potentially problematic issues relating to *issues of partial or full sub-contracting/assignment/subletting and Employer's loss of control over the contract as a result* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.8: Enhancement Modules for Clauses related to Sub-contracting/Assignment/Sub-letting

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 has specifically stated that the Contractor's responsibility is to perform the contract as if s/he had not sub-contracted. It does not put forward direct agreement/disagreement to sub-contracting rather firmly treats the Contractor as the only point of reference in the contracting parties, which can actually minimise the impact of the full sub-contracting culture embedded in Malaysian construction industry.
Comprehensiveness:	NEC3 clearly provides the procedures in sub-contracting with clause 26.2 which states that: 1. the Contractor has to submit the name of each proposed subcontractor for acceptance and 2. he is not permitted to appoint a subcontractor until the Project Manager has accepted him; clause 26.3 stating: 1. the Contractor is required to submit the proposed condition of Contractor for each subcontract to the Project Manager for acceptance unless an NEC contract is proposed or the Project Manager has agreed that no submission is required. 2. Project Manager should not accept the condition when they will not allow the Contractor to provide the work or they do not include a statement that the parties to the subcontractor act in a spirit of mutual trust and co-operation.
Completeness:	Completeness in Malaysian form can be improved referring to NEC3 where strictly in clause 26.2 that states the reason for Project Manager to reject the application by Contractor is that such appointment will not allow the Contractor to provide the works; clause 26.3 impose the measure to control the conditions of subcontract. And Project Manager should not accept the condition that will not allow the Contractor to provide the work accordingly or impedes the parties to the subcontractor act in a spirit of mutual trust and co-operation with others; clause 91.2 as employer entitled to terminate the contract should the appointment of a subcontractor for substantial work before the Project Manager's acceptance.

Table 5.8 (cont): Enhancement Modules for Clauses related to Sub-contracting/Assignment/Sub-letting

Issue	Enhancement via NEC Benchmark
Consistency :	Consistency in contract can be achieved with the main contract takes a tight control over the conditions of sub-contract which will provide for better synchronisation and alignment.
Flexibility:	NEC3 in Clause 26.3 as it states the Contractor is required to submit the proposed conditions of contract for each subcontract to the Project Manager for acceptance unless a NEC3 contract is proposed or Project Manager has agreed that no submission required. This provides flexibility in terms of coverage of the main contract to the sub-contract and protection of the sub-contractor/s.
Clear Structured Project Management Framework :	Clause 26.1 specifies that if the contract subcontracts work, he is responsible for providing the works as if he had not subcontracted which minimised the impacts of full sub-contracting. Clause 26.3 requires the Contractor to submit the copy of the subcontract agreement for approval of Project Manager, reigning in their control of the contract. Project Manager cannot without reason disapprove the sub-contractor/s. Schedule of cost components also specifies the payment to people who are directly employed by the Contractor and whose normal place of working is within the working areas All of above provide better management of Employer over the work of teh subcontractor/s.
Role Distribution:	Role distribution can be improved by referring to NEC3 Clause 26.1 as it states the role of : Contractor, • if the contract subcontracts work, he is responsible for providing the works as if he had not subcontracted; and Schedule of cost components as it states the role of : Contractor, • Responsible for payment to people who are directly employed by the Contractor and whose normal place of working is within the working areas. Project Manager can only disapprove the application of sub-contracting should there be solid grounds to believe that Contractor cannot provide the works if the particular sub-contractor.

Table 5.8 (cont): Enhancement Modules for Clauses related to Sub-contracting/Assignment/Sub-letting

Issue	Enhancement via NEC Benchmark
Risk Distribution:	Risk among contracting parties can be reduced by referring to NEC3 clause 26.1, 26.2, 26.3 and 91.2 with appointment of a subcontractor for substantial works before acceptance by the Project Manager is expressly made ground for termination of the contract (clause 91.2) and the provisions of the main contract actually extend to control over the conditions of the subcontracts.

5.3.7 Partial Occupation/Take Over

Key information detailed via the enhancement module for clauses related to the *partial occupation/takeover* is suggested in the following Table 5.9 to address the potentially problematic issues, which gives *the Employer right to take over before full certification of works but without managing the related risks and consequences ensued* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.9: Enhancement Modules for Clauses related to Partial Occupation by Employer

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 clearly expresses that Employer is permitted to use any parts of the works before completion and follow on with specific management of the taking over issues.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 where clause 35.2 permits the employer to use any part of the works before completion has been certified but Clause 80.1 states that loss or damage to the part of the work after take-over is Employer's risk. Certification by the Project Manager of any part of the works before both completion of the works and the completion date is a compensation event.
Completeness :	NEC3's clause 35.2 permits the employer to use any part of the works before completion has been certified, but if he does so, it for a reason stated in the work information or to suit the Contractor's method of working. NEC3 specifically take into the account of the Contractor's method of working which local forms generally fail to incorporate. Clause 80.1 also provides the Employer's risks, whilst Clause 81.1 provides

Table 5.9 (cont): Enhancement Modules for Clauses related to Partial Occupation by Employer

Issue	Enhancement via NEC Benchmark
	the Contractor's risks. Option X18 as it provides various limitations of the Contractor's liabilities to the employer Very specifically NEC3 also includes in clause 84.2 that provides third party cover is to be for amount stated in the contract data for any one event with cross liability, which is very important for partial occupation with 3rd party moving about on a site which is yet to be completely handed over. NEC3 better covers the issues related to partial occupation/take over by Employer. Certification by the Project Manager of any part of the works before both completion of the works and the completion date is a compensation event.
Consistency :	NEC3 provides for consequential risks and potential problems with partial occupation/take over, which will provide a better consistency to the contract should such action be implemented.
Flexibility :	NEC3 takes into account of risks and problems resulted from partial occupation and states that it can only to be done for the reasons stated in the contract and work information and to be in accordance with the Contractor's work method. Clause 60.1 as it covers on the consequences risk of partial occupation. Flexibility can be improved by referring to NEC 3 It is only to be done
Clear Structured Framework for Project Management :	Project Management on site can be enhanced with partial occupation needs to take into account of the Contractor's work method and NEC3 also calls for 3rd party coverage as cross liability which minimized the risks from partial occupation.
Role Distribution :	Role distribution can be improved by referring to NEC 3 clause 35.2 as it stated out the responsibility for Project Manager to certify take-over and if he is to use any part of the work before certification, Employer is considered to be taking over and he is to so in accordance with the Contractor's work method.
Risk Distribution :	Risk distribution can be improved by referring to NEC 3 it takes into account of various risks and problems such as 3rd party claim, contractor's work method when executing partial occupation. Risks of partial occupation/take over are specifically divided into Contractor and Employer's risk. Clause 60.1(15) as it covers on the consequences risk of partial occupation.

5.3.8 Indemnity for Injury to Persons and Property Damage

Key information detailed via the enhancement module for clauses related to the *indemnity for injury to persons and property damage during works* is suggested in the following Table 5.10 to address the potentially problematic issues when the focus is on *Contractor to indemnify the Employer for all matters without stating the methods and sanctions* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.10: Enhancement Modules for Clauses related to Indemnity for Injury to Persons and Property Damage

Issue	Enhancement via NEC Benchmark
Clarity	NEC3 is specific about the issues related to indemnity, putting forward clear and concise explanations on the parties' responsibilities.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 83.1 and 83.2 which states the procedures for indemnity : 1. Each party is to indemnify the other against claims due to an event which is his risk; 2. The liability of each party for his own risk is reduced in proportion to the other party's contribution to the event responsible for the claims. 3. Each party's responsibilities under this contract is taken into account to reduce is in proportion to the extent that events which were at the other party's risk distributed
Completeness :	Completeness in Malaysian forms on this matter can be improved by referring to NEC3 Clause 83.1 and 83.2 which states how the each party is to indemnify the other against claims due to an event which is his risk; and the liability of each party for his own risk is reduced in proportion to the other party's contribution to the event responsible for the claims; Clause 80.1 and Clause 81.1 which states the Employer's risks and Contractor's risks which leads to the specific matters requiring a specific indemnification. Clause 84.1 and 84.2 call for provision of insurances by both parties; the insurances to be provided for by both parties and clause 86.1 sanctions if the Contractor does not insure.

Table 5.10 (cont): Enhancement Modules for Clauses related to Indemnity for Injury to Persons and Property Damage

Issue	Enhancement via NEC Benchmark
Consistency :	Consistency is achieved in NEC3 where each party is clearly liable for their own risks, which will be reduced in portion in proportion to the other party's contribution to the event responsible for the claims. NEC3 also calls for insurances as part of the method for indemnification.
Flexibility :	NEC3 calls for parties to indemnify each other against claim, which differs from local forms where Contractor is to indemnify Employer at all times against all claims. In NEC3, portion of indemnification is also reduced according to the other parties contribution to the event.
Clear Structured Framework for Project Management :	NEC3 clearly provides the method of indemnification with specific insurances such as clause 84.1 and 84.2. Sanctions are provided if the Contractor does not insure provide for better effectiveness to the contract Contracting parties are also told to be liable for their own risks, which would create a better awareness for potential risks and the management of those risks and expedite greater efficiency in teamwork as parties are not generally placed in adversarial positions which Malaysian forms create when one party solely takes up all potential risks in the contract.
Role Distribution :	On both the matter of insurance and indemnification, both parties are to take up specific roles in protecting on themselves and another.
Risk Distribution :	Risk is significant reduced and balanced out when both parties are to take up specific risks as stated in the contract data whether it is to take on insurances or provision indemnification. Contracting parties are also told to be liable for their own risks.

5.3.9 Insurances

Key information detailed via the enhancement module for clauses related to the *insurances* is suggested in the following Table 5.11 to address the potentially problematic issues stating that *Contractor is to provide for insurances to cover for work in progress but without putting forward specific items to be insured and the necessary sanctions* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.11: Enhancement Modules for Clauses related to Insurances

Issue	Enhancement via NEC Benchmark
Clarity:	Clarity is seen when NEC3 list out specifically the insurances to be provided for in the insurance table and sanction if the Contractor does not insure.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC3 where Clause 84.1 states that the Contractor is to provide the insurances stated in the insurance table; Clause 84.2 as it provides for procedures to take up for insurance of the works, plant and material is to be for replacement cost; insurance of the Contractor's equipment is to be for replacement cost and Clause 86.1 where The Employer may insure a risk which the contract requires the Contractor to insure if the Contractor does not submit the required certificate and the cost of this insurance is paid by the Contractor.
Completeness :	Completeness can be improved by referring to NEC3 Clause 80.1 as it states clearly the risks the Contractor carry; Clause 84.1 as it states the roles of Contractor provides the insurances stated in the insurance table; Clause 84.2 as it provides for insurance specific items and Clause 86.1 where The Employer may insure a risk which the contract requires the Contractor to insure if the Contractor does not submit the required certificate and the cost of this insurance is paid by the Contractor.
Consistency:	Clause consistency is provided for Clause 84.1, which states the role of Contractor to provide the exact insurances stated in the insurance table, which does not leave any room for ambiguities and inconsistency.
Flexibility:	It is suggested by NEC3 that Contractor is to provide the exact insurances stated in the insurance table in NEC3 which is unlike Malaysia forms where there's a need to provide for one 'insurance of works' for all purpose of construction.
Clear Structured Framework for Project Management :	Contractor can better managed his risks and duties when clause 80.1 provide for the exact the risks the Contractor has to carry and Clause 84.1 as it states the roles of Contractor provides the insurances stated in the insurance table, which includes insurance of the works, plant and material is to be for replacement cost; insurance of the Contractor's equipment is to be for replacement cost and so forth.

Table 5.11 (cont): Enhancement Modules for Clauses related to Insurances

Issue	Enhancement via NEC Benchmark
Role Distribution :	NEC3 Clause 84.1 states clearly the roles of Contractor provides the insurances stated in the insurance table and Clause 86.1 where The Employer may insure a risk which the contract requires the Contractor to insure if the Contractor does not submit the required certificate and the cost of this insurance is paid by the Contractor.
Risk Distribution :	Risk of the contract can be better managed by Contractor who is clearly given his risks as part of the contract data and the exact insurance/s required, which s/he must provide for. Sanctions are provided is if he fails to do so.

5.3.10 Payment Bond

Key information detailed via the enhancement module for clauses related to the *payment bond* is suggested in the following Table 5.12 to address the potentially problematic issues when it is *generally not included* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.12: Enhancement Modules for Clauses related to Payment Bond

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically sets payment bond in the form of advanced payment from Employer to Contractor in the event of non-payment as part of the condition of contract.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 option X14 as it provides the procedure for advanced payment to the Contractor. The procedure is as follows: 1. Employer to pay the amount of advanced payment stated in the contract data 2. Advanced payment to be repaid in installments as stated in the contract data 3. Advanced payment to be made either within four weeks of the contract date or within four weeks of the receipt by the Employer of any advanced payment bond 4. The bond is to be for the amount of the advanced payment by a bank or insurer accepted by the Project Manager

Table 5.12 (cont): Enhancement Modules for Clauses related to Payment Bond

Issue	Enhancement via NEC Benchmark
Completeness:	NEC 3 with its option X14 provides for payment bond to Contractor which is not commonly seen in local Malaysian forms. It is done via the mode of advanced payment via a bank or insurer which the Project Manager has to approve. The reason to reject the bank or insurer is that its commercial position is not strong enough to carry the advanced payment bond. It also states the condition for the execution of such option.
Consistency:	The option make references to banker or insurer who would uptake the task of providing advanced payment and its credibility so to be in line with the requirements of the contract.
Flexibility:	Flexibility is created with the advanced payment option in NEC3 where not only the Contractor need to ensure his performance but the Client need to ensure his main contractual obligation ,that is, to pay the Contractor. The payment can be paid back via installments over the period of contract.
Clear Structured Framework for Project Management:	Advanced payment would provide the security of good payment from Employer to Contractor and thus reducing the Contractor's risk of non-payment, which is commonly one of the causes for incomplete projects in Malaysia.
Role Distribution:	Payment bond is commitment from Employer to Contractor on payment. NEC3 with such option clause certainly better brings forward the Employer's role to pay the Contractor, which Malaysian forms can adopt.
Risk Distribution:	Clause as payment bond would greatly reduced risk of non-payment or delay of payments seen in local Malaysian contracts. It certainly enhances equitable risk distribution in standard forms.

5.3.11 Performance Security Bond

Key information detailed via the enhancement module for clauses related to the *performance security bond* is suggested in the following Table 5.13 to address the potentially problematic issues when the *mode of providing for performance bond varies* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.13: Enhancement Modules for Clauses related Performance Security Bond

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 put forward a specific method for performance security bond, which can be used for similar clauses standardizations of Malaysian forms.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 Option X13 as it provides the procedure for performance bond. Procedure is as follows: 1. The Contractor gives the Employer a performance bond for the amount stated in the contract data and in the form set out in the works information 2. The bond has to be provided by a bank or insurer which the Project Manager has accepted 3. If the bond was not given by the contract date, it is given to the Employer within four weeks of the contract date.
Completeness:	NEC 3 with its option X13 states that performance security bond is to be provided for by the Contractor. It is done via the mode of bond via a bank or insurer which the Project Manager has to approve. The reason to reject the bank or insurer is that its commercial position is not strong enough to carry out the bond. It also states the condition for the execution of such option and it must be given within a certain frame stated.
Consistency:	The option make references to banker or insurer who would uptake the task of providing performance security and its credibility so to be in line with the requirements of the contract.
Flexibility:	NEC3 only states the method of providing performance security bond through banks as the only option. Standardization of such provision is advantageous for Malaysian forms, which currently differs across the various forms.
Clear Structured Framework for Project Management:	Performance security bond is an important element of any contract to safeguard the Employer in the event of any lacks in performance of the Contractor.
Role Distribution:	Performance security bond is a commitment from Contractor to the Employer for his performance in the contract. Such role of the Contractor is put forward relatively clearly in this Option X13.
Risk Distribution:	Clause as performance security bon would greatly reduced risk of non-performance of Contractor. Its execution will enhances equitable risk distribution in standard forms.

5.3.12 Setting Out

Key information detailed via the enhancement module for clauses related to the setting out of works is suggested in the following Table 5.14 to address the potentially problematic issues which put forward the *duties of accurate setting out by the Contractor but fail to relate the roles of the others in such matters* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.14: Enhancement Modules for Clauses related Setting Out

Issue	Enhancement via NEC Benchmark
Clarity:	NEC 3 puts forward very specific the roles and procedures on the matter discussed that reduced the ambiguities in such clauses.
Comprehensiveness:	Procedures are clearly provided for in NEC3 where Clause 11.2 (16) and (19) provide that site and work information must be clearly provided for in order for the Contractor to execute the his work. And Contractor is to follow the information provided strictly. However, should there be a change in work information, procedures for compensation is provided for in Clause 60.1 (1).
Completeness:	NEC3 Clause 11.2(16) calls for the contract to provide site information which describes the site and its surroundings; Clause 11.2 (19) states that work information must be provided for; Clause 20.1 specifies that the Contractor is to provide the works in accordance with the work information; Clause 60.1(1) which states that the Project Manager changing the works information is a compensation event unless it is a change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer. This means that setting out is part of Contractor's obligation but if there is a change in information, s/he is entitled to claim.
Consistency:	Consistency can be better achieved when contracting parties are more rigorous in providing for clear and accurate site and works information which NEC3 calls for.

Table 5.14 (cont): Enhancement Modules for Clauses related Setting Out

Issue	Enhancement via NEC Benchmark
Flexibility:	Clause 60.1 (1) states clearly any changes in information except if the changes change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer can be a compensation event. This varies from Malaysian forms which do not allow for such claims.
Clear Structured Framework for Project Management :	Site management can be enhanced when contract must provide for accurate and complete information of the works and site for the Contractor to provide the Works. Such practice can minimise disputes and errors. Any changes in information except if the changes change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer can be a compensation event.
Role Distribution :	Clear role distribution can be put forward where: • Contractor is to provide for accurate work • Employer and Project Manager are to provide for clear and precise sit and work information including description of sites and the potential constraints to the Contractor. • Should there be changes; Contractor is allowed to claim as a compensation event.
Risk Distribution :	Risk distribution in NEC3 is put forward in a form of compensation event with Clause 60.1(1) stating that the Project Manager changing the works information is a compensation event unless it is a change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer. This varies greatly with Malaysian forms that put the responsibility of setting out with the Contractor and even with checking by Superintending Officer, s/he is in no way holding responsibility for the checks.

5.3.13 Inspection of Site

Key information detailed via the enhancement module for clauses related to the *inspection of site* is suggested in the following Table 5.15 to address the potentially problematic issues related with the *Contractor to inspect the site and actions for inconsistency in the information provided* in the related specific clauses in local Malaysian forms,; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.15: Enhancement Modules for Clauses related Inspection of Site

Issue	Enhancement via NEC Benchmark
Clarity :	It is seen in majority local forms that sentences are lengthy in this aspect and Contractor is to be responsible to understand the site before he provides for the Works. NEC3 specifically mentioned in Clause 11.2 (16) that site description and surroundings must be clearly provided for in the contract.
Comprehensiveness:	The site and surroundings description is to be provided in Contract, Contractor is entitled to rely on it but clause 60.2 reinstate his obligation where the Contractor is to take up the responsibility when inspecting the site including s/he taking consideration site information provided including publicly available information referred to in the site information, information obtainable from visual inspection of the site, and others information which an experienced Contractor could reasonably be expected to obtain; and that in clause 60.3, Contractor has to take into consideration of physical condition more favorable to doing the work if there is an ambiguity or inconsistency within the site information. However, conditions for compensation is stated if Contractor encounter physical condition which are within the site, not weather conditions, condition which an experienced Contractor would have judged at the contract date to have such small chance of occurring that it would have been unreasonable to have allowed for them.
Completeness:	NEC3 specifically states that information on site and its surrounding must be provided for in the contract data. And Contractor is to check those data with further inspections and fact finding and make the necessary judgment of the conditions. Any inconsistency in the information must be dealt with by the necessary consideration of the physical conditions in the pre-tender stage. However, 60.1 (12) also considered ambiguities in site information as

Table 5.15 (cont): Enhancement Modules for Clauses related Inspection of Site

Issue	Enhancement via NEC Benchmark
	compensation event.
Consistency:	NEC3 specifically calls for the Contractor to check for the information provided to her/him to avoid any ambiguities and inconsistency. It also listed out the various type of fact finding method for the reference of the Contractor.
Flexibility:	NEC3 clause 60.3 states that should there is an ambiguity within the site information; Contractor is expected to take into consideration of physical condition more favorable to doing the work. But s/he is allowed to claim based on certain conditions as stated in clause 60.1 (12).
Clear Structured Project Management Framework :	Contracting parties are expected to carry out their duties in providing for accurate information and checking by certain means of information provided. Any ambiguities in information will be dealt with via a compensation event clause based on conditions stated. This provide for better management of the works and team on site.
Role Distribution:	Contract is to provide full description of site and its surrounding while Contractor is to check the information to his utmost best. And event that cannot be predicted can be allowed as a compensation event. Roles of contracting parties are clearly stated on this matter.
Risk Distribution:	Risk can be greatly reduced should both parties carry out their responsibility with due diligence, with one to provide for accurate information while the other one check for its relevancy. Based on certain condition stated, ambiguities can be a compensation event.

5.3.14 Employment and Removal of Workmen

Key information detailed via the enhancement module for clauses related to the *employment and removal of workmen for the works* is suggested in the following Table 5.16 to address the potentially problematic issues related the *Superintending Officer's right to disapprove workmen or request for removal without specific reasons* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.16: Enhancement Modules for Clauses related to Employment and Removal of Workmen

Issue	Enhancement via NEC Benchmark
Clarity:	Ambiguities such as 'to the discretion of Superintending Officer' on the matter of disapproval of employment and removal of employee seen in local forms are reduced by referring to NEC3 which specifically state that such actions must be attached with formal stated reasons.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 24.1 which states that Contractor must submit names for his key workmen for approval of the Project Manager and disapproval cannot be done without stated reasons and; Clause 24.2 as it provides the procedure for removal of an employee as follows : 1. Project Manager has to state his reason then instructs the Contractor to remove an employee. 2. After one day, the employee has no further connection with the work included in this contract.
Completeness :	Completeness in local Malaysian form can be improved by referring to NEC3 Clause 24.1 where Contractor has to submit names and details of the employees' qualification; disapproval cannot be done without stating the reasons and Clause 24.2 as it provides the Project Manager the power to instruct the Contractor to remove an employee but only after having stated his reasons for the instruction.
Consistency	For consistency, Project Manager must state his reasons for disapproval of employment and removal.
Flexibility:	Contractor has specifically one day to respond such that from one day after the instruction of removal, the employee is to have no further connection with the work included in the contract.
Clear Structured Framework for Project Management :	By providing reasons for disapproval of employment and removal of employee/s, Project Manager is make accountable for his actions

Table 5.16 (cont): Enhancement Modules for Clauses related to Employment and Removal of Workmen

Issue	Enhancement via NEC Benchmark
Role Distribution :	Role distribution is seen where: Clause 24.1 states: • Contractor's role to employ each key person named to the job stated in the Contract Data • Contractor's role to employ a replacement person who has been accepted by the Project Manager. • Contractor's role to submit the name, relevant qualifications and experience of a proposed replacement person to the Project Manager. • Project Manager's role to determine acceptance/non-acceptance for employment with stated reason for non-acceptance; and Clause 24.2 states : • Project Manager role's to instruct the Contractor to remove an employee • Contractor's role to respond to the instruction from one day after the instruction.
Risk Distribution :	By stating the reason for non-acceptance and removal and that any unreasonable use of Project Manager's power would be a breach of contract as Clause 10.1 states that all parties must act in accordance with the contract.

5.3.15 Other Workmen/Labour related issues

Key information detailed via the enhancement module for clauses related to *other related labour issues* is suggested in the following Table 5.17 to address the potentially problematic issues related with *various site administration related issues for labour on the job* in the related specific clauses in local Malaysian forms, including timely payment to labour; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.17: Enhancement Modules for Clauses related to Other Labour related Issues

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 is specific on responsibilities of Contractor over his labour including paying them on time and provisions for certain work related entitlement.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 schedule of cost components as it provides the different types of payments needed for Contractor to pay to the people who are directly employed by him.
Completeness:	Completeness can be improved by referring to NEC 3 schedule of cost components as it provides the detail payment list needed for Contractor to pay to the people who are directly employed by him. The payment includes medical examinations, passports and visas, travel insurance, protective clothing, death benefit, pensions and life assurance, occupational accident benefits, medical aid, safety training, and the others.
Consistency:	Clause is NEC3 is drafted with reference to its local law of providing adequate entitlement to its workers.
Flexibility:	NEC 3 schedule of cost components provides a standard payment list for Contractor to pay to its labour.
Clear Structured Framework for Project Management:	Site management can be enhanced with the detail payment lists that help to reduce ambiguity and give rise to good people and site management.
Role Distribution :	Role of Contractor to pay and look after his labour is clearly stated in NEC3.
Risk Distribution :	Payment to labour is essential in securing the progress of work on site. By emphasizing the on the items to be paid and Contractor is to pay his labour, related issues and risk can be reduced.

5.3.16 Other Independent Contractors

Key information detailed via the enhancement module for clauses related to *other independent contractors working on the same site* is suggested in the following Table 5.18 to address the potentially problematic issues related with *the Contractor's cooperation with different independent contractors and works by them* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.18: Enhancement Modules for Clauses related to Other Independent Contractor

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 stresses on mutual cooperation among those working on site.
Comprehensiveness :	NEC3 Clause 27.2 provides for procedures for access to work the Project Manager is to notify the Contractor on providing access to work including for the others. Clause 25.1 states the procedures as: 1. contractor is responsible to co-operate with others in obtaining and 2. providing information which they need in connection with the works. 3. S/he co-operates with others and shares the working area with them as stated in the work information.
Completeness :	NEC3 covers the issues of access of work to be given by Contractor; both the Supervisor and Contractor have to notify each other as soon as either finds any defects including work by others and to work and cooperate with others in obtaining and providing information related to works and sharing of working area as stated in the work information.
Clear Structured Framework for Project Management :	NEC3 stresses on mutual cooperation between the Contractor and others working site with Project Manager and Supervisor to provide assistance and information along the way.
Role Distribution :	Contractor is responsible to co-operate with others in obtaining and providing information which they need in connection with the works. He co-operates with others and shares the working area with them as stated in the work information. It is also the Contractor's role to provide access to the others to the works carried. Both Contractor and Supervisor must inform each other as early as possible should defects related to work by others be detected.
Risk Distribution :	Based on NEC3, mutual cooperation among others is important especially when different parties are working on site and sharing some working areas. Related risks can be significant reduced when defects are reported and worked on according.

5.3.17 Commencement of Works

Key information detailed via the enhancement module for clauses related to *commencement of site work the same site* is suggested in the following Table 5.19 to address the potentially problematic issues, which is seen relating to *key dates of commencement and obligations of contracting parties prior to commencement* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.19: Enhancement Modules for Clauses related to Commencement of Works

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 is specific when it states that the Contractor cannot start their work on site until the first access date whilst local forms have issues with not providing specific conditions for commencement of works, where they simply state that written approval of the Superintending Officer is needed before commencement work.
Comprehensiveness:	NEC3 states in clause 33.1 that in order to commence works, the Employer needs to allow the contractor access to and use of each part of the site necessary for the works included in the contract on or before access date stated in contract data or date for access as shown in programme. Clause 31.1 to 31.3 refers to working programme to be submitted by Contractor and the acceptance of such programmes and if not accepted, the Project Manager has to state his reasons. NEC 3 option X13 also requires Contractor to submit performance bond by contract date or submit the performance bond to the employer within four weeks of the contract. NEC3 is detailed with the procedures dealing with key dates on commencement and after commencement of work.
Completeness:	Coverage on the matter in NEC3 includes access dates and working program related to the key dates of commencement of work to be submitted for approval; and submission of performance bond. And Contractor is not to start work before the first access date stated in the contract data.
Consistency:	Unlike local forms, NEC3 is specific that commencement date is as per stated in contract data or working program submitted and accepted.
Flexibility:	Contractor should not start their work on the site until the first access date and does the work so that completion is on or before the completion date.
Clear Structured Framework for Project Management :	NEC3 systematically states the conditions prior to commencement of work which basically depends of first access date as per contract data or date stated in the working program, access provided by Employer and submission of performance bond by Contractor.

Table 5.19 (cont): Enhancement Modules for Clauses related to Commencement of Works

Issue	Enhancement via NEC Benchmark
Role Distribution:	Employer must give access to the site for the contractor to commence work. Contractor is to submit his performance bond and working programme and Project Manager is to provide acceptance/non acceptance of the programme.
Risk Distribution:	With clear statements related to commencement of works, NEC3 reduces the ambiguities related to commence date and conditions for commencement and hence the associated risks.

5.3.18 Possession of Site

Key information detailed via the enhancement module for clauses related to *possession of site* is suggested in the following Table 5.20 to address the potentially problematic issues typically related to *provision for site for Contractor's possession and delay of such possession* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.20: Enhancement Modules for Clauses related to Possession of Site

Issue	Enhancement via NEC Benchmark
Clarity:	Issues of possession of site are dealt with separately from other key dates which promote better clarity on the matter.
Comprehensiveness :	Clause 31.1 and Clause 32 provides procedures for submission of working programme as follows : 1. If a programme is not identified in the Contract Data, the Contractor submits a first programme to the Project Manager. 2. The Project Manager then determine for acceptance/non-acceptance with in the period stated in the Contract Data. NEC3 takes working programme as an important tool in managing various key dates in the contract. Access to site must be provided for work to commence and hence, possession of site is made a condition precedent to commencement of work. And delay in access will qualify as compensation event.

Table 5.20 (cont): Enhancement Modules for Clauses related to Possession of Site

Issue	Enhancement via NEC Benchmark
Completeness :	Clause 33.1 provides the dates for Contractor's access to and use of each part of the site on the access date (specified in the contract data) or the date for access shown on the accepted programme. NEC3 Clause 60.1(2) states that it is compensation event if the employer does not allow access to and use of the site, by the later of its access date, and the date shown on the accepted programme of which compensation event clauses will be followed.
Consistent:	Access date stated in contract data or working programme and access to site is consistent conditions for commencement of work.
Flexibility :	Clause 33.1 provides the dates for Contractor's access to and use of each part of the site on the access date (specified in the contract data) or the date for access shown on the accepted programme.
Clear Structured Framework for Project Management :	NEC3 enhances project time management when it focuses on working programme as the key tools in managing various key dates on the works including possession of site. It puts weighted emphasis on working programmes yet time management is simplified with just the one set of procedures.
Role Distribution :	Role distribution can be improved by referring to NEC3 Clause 60.1(2) as it states : • Employer's responsible for compensation event if he does not allow access to and use of the site, by the later of its access date, and the date shown on the accepted programme; and Clause 30.1 as it states : • Contractor's role to do the work so that completion is on or before the completion date.
Risk Distribution :	Risk distribution can be improved by referring to NEC3 Clause 60.1(2) as it states compensation event if the employer does not allow access to and use of the site.

5.3.19 Completion of Works

Key information detailed via the enhancement module for clauses related to *completion of works* is suggested in the following Table 5.21 to address the potentially problematic issues typically related to *key dates for completion date and administration prior to certification of completion* in the related specific clauses in local Malaysian forms, and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.21: Enhancement Modules for Clauses related to Completion of Works

Issue	Enhancement via NEC Benchmark
Clarity:	Issues on completion date is dealt with separately as differing from local forms, which tends to combined various key dates in one clause.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 clause 30.2 as 1. the Project Manager decides the date of completion; and 2. certifies completion within one week of completion. NEC3 Clause 40.3 as it provides procedures on notifications of intentions to test and inspect as follows : 1. The Contractor and the supervisor each notify the other of each of his test and inspections before it starts. 2. Then the Contractor and the supervisor notifies the other of the test and inspections results.
Completeness:	Coverage on the completion of works includes testing and inspection of works, deciding on completion date and the certification of completion within one of week completion.
Consistency:	Consistency is provided for when Project Manager's decision on completion date has to be based on the various changes make in the working program submitted by the Contractor and approved by her/him.
Flexibility:	Time frame to provide for certification of completion is clearly stated as one week
Clear Structured Framework for Project Management :	Project management can be improved by referring to NEC 3 clause 30.1 as this clause limits Project Manager to issue Certificate of Partial Completion within one week of completion
Role Distribution:	Contractor is work to complete the works before or on completion date. Project Manager has to decide on completion date, which will take into account of various changes make to the working programme which he has approved. Tests and inspections need to be carried out prior to completion can be notified by both the Supervisor and Contractor to each other. And he is to issue of Partial Completion within one week of completion.
Risk Distribution:	Even though decision of completion date is made by Project Manager, it will be done based on the revised working programme previously submitted by the Contractor and approved by her/him will reduced risks for disputes and disagreements. Tests and inspections need to be carried out prior to completion can be notified by both the Supervisor and Contractor to each other.

5.3.20 Sectional Completion

Key information detailed via the enhancement module for clauses related to *sectional completion* is suggested in the following Table 5.22 to address the potentially problematic issues, which generally puts *sectional completion as one of the main clause and treats various issues related to the matter on a separate basis* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.22: Enhancement Modules for Clauses related to Sectional Completion

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically deals with section completion in X5.1as option to be activated.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 option X5.1 as it provides the effects of sectional completion. It states that each reference and clause relevant to the works, to completion, and to the completion date applies, as the case may be , to either the whole of the works or to any section
Completeness:	X5.1 in NEC3 deals with effects of section completion as though it is the whole of the works.
Consistency:	Sectional completion is consistent with the entire conditions of contract in NEC3. No additional or deduction clause is applied.
Flexibility:	Sectional completion of works is allowed for in NEC3 as optional clause and its effects are stated clearly.
Clear Structured Framework for Project Management:	Treatment and effects of sectional completion is as though it is a whole part of the works will simplify contract management. Sectional completion is an option in NEC3 which differs from local contract that makes it a part of the form and manage it by taking or adding out certain conditions.
Role Distribution:	Sectional completion is to be treated like the whole part of the work and hence, the same roles and responsibilities will be applicable.
Risk Distribution:	Sectional completion does not possess additional risk to the contract as it is to be treated like the whole part of the work and hence, the contract will apply as per se.

5.3.21 Delay and Extension of Time

Key information detailed via the enhancement module for clauses related to *extension of time and delays* is suggested in the following Table 5.23 to address the potentially problematic issues, which typically do not completely put forward *issues related to delays and conditions and requirements and procedures for application and approval of extension of time* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.23: Enhancement Modules for Clauses related to Delay and Extension of Time

Issue	Enhancement via NEC Benchmark
Clarity :	NEC3 is specific on the procedures dealing with delay and extension of time providing clear and easy to read instructions to deal with the matter.
Comprehensiveness:	NEC3 Clause 32.1 states that Contractor also needs to show on each revised programme the progress achieved and its effect on rest of the work, effects on compensation events and notified on early warning matters and plans for dealing with any delays and other proposing changes to the accepted programme. And Clause 16.1 where both Contractor and Project Manager have to give warning notice to each other as soon as either becomes aware of any matter which would increase the total of the price, delay completion, delay meeting a key date or impair the performance of the works in use; Clause 62.2 as 1. quotation for compensation events comprise proposed changes to the price and any delay to the completion date and key dates assessed by the Contractor. 2. the Contractor has to include the alteration to the accepted program in his quotation if the program for remaining work is altered by the compensation event; clause 62.3as 1. Contractor has to submit the quotation within three weeks of being instructed to do so by the Project Manager and 2. The Project Manager has to replies the submission within two weeks 3. His reply includes an instruction to submit a revised quotation, an acceptable of quotation, a notification that a proposed instruction will not be given or a proposed changed decision will not be made or a notification that he will be making his own assessment;

Table 5.23 (cont): Enhancement Modules for Clauses related to Delay and Extension of Time

Issue	Enhancement via NEC Benchmark
	clause 63.3 as 1. Any delay to the completion date is assessed as the length of time that, due to the compensation event, planned completion is later than planned completion shown on the accepted program. 2. A delay to a key date is assessed as the length of time the planned date for meeting a key date is later than the date shown on the accepted program due to a compensation event.
Completeness:	Coverage on the matter in NEC3 is extensive where clause 16.1 calls for contracting parties to notify one another should there be a risk of delay; clause 32.1 provides the items in working programme to be revised by the Contractor and must be subsequently accepted or not accepted by the Project Manager; clause 62.2 as it provides the condition to submit quotation for compensation event; 62.3 as Contractor submit his quotation within 3 weeks and engineer to submit and approve the extension of time within 2 weeks and Project Manager has to include instruction to submit a revised quotation, an acceptable of quotation, a notification that a proposed instruction will not be given or a proposed changed decision will not be made or a notification that he will be making his own assessment in his reply.
Consistency:	Consistency is achieved in NEC3 when procedures for assessing extension are provided for in the clauses to assess and deal with all types of potential delays situation rather than different treatment for different items as seen in local forms.
Flexibility:	NEC 3 clause 62.3 as it limits the Contractor to submit his quotation within 3 weeks and Project Manager to submit and approve the extension of time within 2 weeks. Unlike local forms, NEC3 does not list all the potential delay events, but put in clear and strong procedures to assess any delay events.
Clear Structured Framework for Project Management:	Clear procedures for treatment of delay events on a standalone basis is a good way forward to manage the event/s. Working program is a key too in providing the basis for claims and assessment of extension of time.

Table 5.23 (cont): Enhancement Modules for Clauses related to Delay and Extension of Time

Issue	Enhancement via NEC Benchmark
Role Distribution:	Various roles of contracting parties when dealing with delay and extension of time are clearly describes in NEC3. These specific roles are especially important when NEC3 does not list down events that warrant for extension but to treat each event on its own.m
Risk Distribution:	Risk can be better managed by referring to NEC3 clause 16.1 where it requests both Contractor and Project Manager give early warning notice to each other on potential impairment to the work progress.

5.3.22 Unfixed Materials and Goods

Key information detailed via the enhancement module for clauses related to *unfixed material and goods delivered to work site* is suggested in the following Table 5.24 to address the potentially problematic issues, which generally do not comprehensively deal with *issues on ownership and possession and the Contractor's liability of such items* in the related specific clauses in local Malaysian forms, which; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.24: Enhancement Modules for Clauses related to Unfixed Materials and Goods

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically deals with title of material unlike local forms which simply states the ownership of such item. Instead of simply keeping the Employer indemnify against all losses in material and goods as seen in local forms, NEC3 calls for specific methods.
Comprehensiveness :	NEC3 Clause 71.1 as it provides procedures for marking material outside working area as follows : 1. The Contract identifies the equipment, plant and materials for payment. 2. The Contractor prepares the equipment, plant and materials for marking as the works information requires. 3. The Supervisor marks such equipment, plant and materials. Clause 70.1 and 70.2 requires the title to be passed to the Employer upon such marking. NEC3 Clause 82.1 as it states that the Contractor has to replace loss of and repairs damage to the works, plant and materials until the Defect Certificates has been issued.

Table 5.24 (cont): Enhancement Modules for Clauses related to Unfixed Materials and Goods

Issue	Enhancement via NEC Benchmark
Completeness :	Completeness can be improved by referring to NEC3 Clause 70.1 as it states whatever titles the Contractor has to plant and materials which is outside the working areas passes to the Employer if the Supervisor has marked it for the contract; Clause 70.2 as it states whatever title the Contractor has to plant and materials passes to the Employer if it has been brought within the working areas; and Clause 84.2 where Contractor is to take up specific the insurance for the works, plant and materials and to covered for replacement cost.
Consistency:	NEC3 is consistent when stating that titles for all material and plant to belong to the Employer or must be passed to the Employer should it be outside or inside working area as long as it is marked by the Supervisor.
Flexibility:	Titles for material outside and inside working already are treated separately. All material and plant belong to the employer if within the working area, the title is to be passed to the Employer, and pass back to the Contractor upon the material and plant being removed from the site with the permission of Project Manager. If material is outside the working area, title need to be passed to Employer upon marking for payment is done.
Clear Structured Framework for Project Management :	NEC3 deals with titles of material instead of ownership which will be more effective in managing the material and goods unfixed. It also reminds the Contractor of her/his risks on such items and to take up insurances for them. NEC3 stimulates good management principles as seen here.
Role Distribution :	Roles of all contracting parties are specified on this matter. Title of material marked for payment must be handed over to Employer while Contractor is specifically told to take up insurances in order to account for any replacement costs later.
Risk Distribution :	Risks are better distributed when Employer is to hold the title of material and equipment on and off site and Contractor is called to provide insurances and be responsible for replacement costs.

5.3.23 Testing and Inspection of Material, Goods and Equipment

Key information detailed via the enhancement module for clauses related to *testing of material, goods and equipment* is suggested in the following Table 5.25 to address the potentially problematic issues related to *tests, opening up, inspections and related costs* in the related specific clauses in local Malaysian forms; and seek to align a best-practice

enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.25: Enhancement Modules for Clauses related Testing and Inspection of Material, Goods and Equipment

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 relates the matter of testing and inspection with clear procedures and requirements on contracting parties. Local forms usage of 'as reasonably requested by Superintending Officer' can be ambiguous.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 40.1 to 40.3 set out the procedures to deal with testing and inspections on site: 1. Contractor and Employer to provide materials, facilities and samples for tests and inspections as stated in the work information 2. Both Contractor and Employer to notify each other of intentions to test and inspect and notification of results. 3. Test and inspection that shows defects is to be corrected and test and inspection is to repeat. 4. Costs are to borne by Contractor if tests is due to defects in Contractor work, which a retest or re-inspection is called for.
Completeness :	Completeness on the issue is seen NEC3 Clause 40.1 which states that tests and inspections is to comply with work information and applicable law; clause 40.2 which states the obligations of the Contractor and the employer to provide materials, facilities ad samples for tests and inspections as stated in the work information; clause 40.3 describes the notification of tests and inspections and the results after and Contractor to prepare the site for the tests and inspections and clause 40.4 states the Contractor is to correct the defects found and repeat tests or inspection. It also covers in clause 41.1 that Contractor cannot bring to working area plant and materials that are to be tested or inspected before such testing and inspections have been carried out and passed.
Consistency :	NEC3 Clause 40.1 put forward that tests and inspections should be part of the requirement stated in the work information or the applicable law to improve the consistency of the matter discussed.
Flexibility :	It is stated in NEC3 that tests and inspection must be done without causing delay to works or payment especially if payment is dependent on the Supervisor's test or inspection being successful. The Contractor cannot bring to working area plant and materials that are to be tested or inspected before such testing and inspections have been carried out and passed.

Table 5.25 (cont): Enhancement Modules for Clauses related Testing and Inspection of Material, Goods and Equipment

Issue	Enhancement via NEC Benchmark
Clear Structured Framework for Project Management :	NEC3 on this matter of testing and inspections clearly refers to Contractor and Supervisor notifying each other on the pending tests or inspection and the results after to avoid unnecessary disputes at later stage.
Role Distribution :	NEC3 puts forward the roles of the parties on this matter clearly. Contractor's role to correct the defects if the tests and inspection shown so and prepare for work, which may obstruct the test or inspection. S/He is to inform the Supervisor on time on the upcoming tests or inspection. The Supervisor may choose to watch any tests. Both the Contractor and Supervisor must notify one another on tests and inspections before start and the results after that. Besides, Contractor cannot bring to working area plant and materials that are to be tested or inspected before such testing and inspections have been carried out and passed
Risk Distribution :	NEC3 states specifically that tests and inspection must be done without causing delay to works or payment especially if payment is dependent on the Supervisor's test or inspection being successful. Project manager is also to assess the cost incurred by Employer in repeating test or inspection and the Contractor is to pay for the amount if defect is found.

5.3.24 Safety and Health

Key information detailed via the enhancement module for clauses related to *safety and health issues* is suggested in the following Table 5.26 to address the potentially problematic issues related to the *lacks coverage* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.26: Enhancement Modules for Clauses related Safety and Health

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 clearly requires Contractor to deal with safety and health requirement in the works information and the sanctions should he defaulted.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC3 clause 27.4 where the Contractor is to act in accordance with the health and safety requirements stated in Works Information and Clause 91.3 when it states that the Employer may terminate if the Project Manager has notified that the Contractor has defaulted and has not stop defaulting

Table 5.26: Enhancement Modules for Clauses related Safety and Health

Issue	Enhancement via NEC Benchmark
	within four weeks of the notification by substantially broken a health and safety requirement.
Completeness:	Completeness in local forms can be improved by referring to NEC3 where the Contractor is to act in accordance with the health and safety requirements stated in Works Information and sanctions are provided where Employer may terminate if the Project Manager has notified that the Contractor has defaulted and has not stop defaulting within four weeks of the notification by substantially broken a health and safety requirement.
Consistency:	NEC3 states that health and safety requirement must form part of the work information so that the Contractor can execute it accordingly. And Contractor is to make provision for it in the working program. No additional documents are required to provide for the matter.
Flexibility:	Contractor is to make provision for health and safety requirements in his submitted working program.
Clear Structured Project Management Framework :	Site safety and health management can be improved by referring to NEC3 clause 27.4 where the Contractor is to act in accordance with the health and safety requirements stated in Works Information and Clause 31.2 as it states that Contractor must make provision for health and safety requirements in the work program he submitted and Clause 91.3 provides sanctions should the Contractor fails to do his obligations.
Role Distribution :	Health and safety provisions are provided for in NEC3 where such information is provided for in work information and provisions for it must be provided for by the Contractor in working program of which the Project Manager has to approve. NEC3 not only provide for roles and duties of each contracting parties on this matter, sanctions are provided where Employer may terminate if the Project Manager has notified that the Contractor has defaulted and has not stop defaulting within four (4) weeks of the notification by substantially broken a health and safety requirement.
Risk Distribution :	Sanctions are provided where Employer may terminate if the Project Manager has notified that the Contractor has defaulted and has not stop defaulting within four (4) weeks of the notification by substantially broken a health and safety requirement.

5.3.25 Design by Contractor

Key information detailed via the enhancement module for clauses related to *design of works* is suggested in the following Table 5.27 to address the potentially problematic issues related to the *Contractor to design certain portion of the works and her/his liabilities for such design* submitted in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.27: Enhancement Modules for Clauses related Design by Contractor

Issue	Enhancement via NEC Benchmark
Clarity:	Clarity in NEC3 is seen with definition of design where it states that Contractor to design the parts of the works which the work information states he has to design.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 11.2(19) as it includes the extent of the Contractor's design; Clause 21.2 and 22.1 as the procedures of acceptance of Contractor's design by the Project Manager as follows : 1. The Contractor submits the particulars of his design to the Project Manager for acceptance. 2. Project Manager states reason for not accepting the Contractor's design. 3. Contractor does not proceed with work until design is accepted. 4. Employer may use and copy the Contractor's design for any purpose related to construction of the works unless otherwise stated in the work information.
Completeness :	Completeness can be improved by referring to NEC3 Clause 21.1 as it states the Contractor is to design for the works as specified in the works information, clause 21.2 states that Contractor is to submit his design particulars for approval of Project Manager (as stated in 27.1) who cannot disapprove without reasons; . Employer may use and copy the Contractor's design for any purpose related to construction of the works unless otherwise stated in the work information as stated in clause 22.1; and Option X18.3 also specifies the Contractor's liability to the Employer for defects due to his design, which are not listed in the defects certificate is limited to the amount stated in the contract data.
Consistency:	Project manager is to check for Contractor's design and whether it is consistent with the law or work information. He can only base non-acceptance on such matter.

Table 5.27 (cont): Enhancement Modules for Clauses related Design by Contractor

Issue	Enhancement via NEC Benchmark
Flexibility :	Flexibility can be improved by referring to NEC3 Clause 21.3 as it states the works/designs to be provided by the Contractor can be in parts. And reasons for no accepting a design is it does not comply with works information or with the law.
Clear Structured Framework for Project Management :	Project manager is to check for Contractor's design and whether it is consistent with the law or work information. This is essential in design management.
Role Distribution :	Roles of Contractor who is to design a particular works in the work information must be carried out accordingly to the work information stated. And Project Manager is to check and assess the design submit and make his acceptance or non acceptance decision. Employer may use and copy the Contractor's design for any purpose related to construction of the works unless otherwise stated in the work information as stated in clause 22.1. This put forward the roles of the parties clearly when executing matter related to design.
Risk Distribution :	Option X18.3 as it specifies the Contractor's liability to the employer for defects due to his design, which not listed in the defects certificate is limited to the amount stated in the contract data.

5.3.26 Intellectual Property

Key information detailed via the enhancement module for clauses related to intellectual property is suggested in the following Table 5.28 to address the potentially problematic issues related to the *Contractor to indemnify the Employer against any breach in intellectual property law* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.28: Enhancement Modules for Clauses related Intellectual Property

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 does not have a specific clauses on intellectual property but deals with it based on the governing law and regulations
Comprehensiveness:	NEC3 clause X2.1 states that if there is any changes in law: 1. the Project Manager has to notify the Contractor of a compensation event and 2. instruct the Contractor to submit the quotations; Clause 18.1 where the clause states the Contractor is to notify the

Table 5.28 (cont): Enhancement Modules for Clauses related Intellectual Property

Issue	Enhancement via NEC Benchmark
	Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible. If the Project Manager agrees, s/he is to give an instruction to change the Works Information appropriately.
Completeness:	NEC3 covers changes in law and the Contractor to adhere strictly to the governing law. NEC3 Clause 12.2 states that the contract is governed by the law of the contract; Clause 12.3 where it also states that there will be no change to this contract, unless provided for by the conditions of contract, and has effect unless it has been agreed and confirmed in writing and sign by the parties. Project Manager will have to make relevant changes to works information to avoid any potential breach of the law
Consistency:	NEC3 correlate the contract law and governing law of the country which will provide consistency to law related issue in the contract
Flexibility:	NEC3 Clause X2.1 where change in law is covered as compensation event; Clause 18.1 where the clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible
Clear Structured Framework for Project Management :	NEC3 refers to the governing law in general and conditions of contract cannot be changed unless it has been agreed and confirmed in writing and signed by contracting parties. This provides explicitly that contracting parties are to refer to any external law for law related issues in the contract.
Role Distribution:	Clause X2.1as Project Manager is responsible to instruct Contractor to submit the quotation when there is a change of law whilst Clause 18.1 where the clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible.
Risk Distribution:	Risk is significantly reduced when NEC3 allows change in law as compensation event and both Contractor and Project Manager are to be more rigorous in making sure that the contract adhere strictly to the governing law and more attention are provided for potential illegal activities.

5.3.27 Defects after Completion

Key information detailed via the enhancement module for clauses related to *defects after completion* is suggested in the following Table 5.29 to address the potentially problematic issues related to the lack *definition of defects, and procedures for rectify defects during defect liability and certification of making good defects*; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.29: Enhancement Modules for Clauses related Defects after Completion

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically define the definition of defects which local forms does not provide. Defects are generally based on the opinion of the Superintending Officer/Engineer/Architect in local forms.
Comprehensiveness :	Comprehensiveness in local forms can be improved by referring to NEC 3 Clause 42.1 and 42.2 as it provides procedures for searching and notifying defects as follows : 1. Supervisor instructs the Contractor to search for defect. 2. Supervisor is to provide reasons for the search with his instruction. 3. Both Supervisor and the Contractor to notify each other as soon as either finds any defects; Clause 43.1- 43.4 states that Contractor must correct defects and Supervisor is to issue defect certification at the end defect correction period. Contractor is entitled to access and use of a part of the works which he has take over for correcting a defect. Thus, the defect correction period begins when the necessary access and use have been provided. Clause 45.1 states that: 1. the contractor is given access in order to correct a notifies defects 2. the project manager assesses the cost to the employer of having the defect corrected by other people and the contractor pays this amount if the contractor has not corrected it within its defects correcting period, 3. the work information is treated as having been changed to accept the defect;

Table 5.29 (cont): Enhancement Modules for Clauses related Defects after Completion

Issue	Enhancement via NEC Benchmark
Comprehensiveness :	Clause 45.2 states that when there is no access given in order to correct a notified defect before the defects date, 1. the project manager assesses the cost to the contractor of correcting the defect and 2. the contractor pays this amount . 3. The work information is treated as having been changed to accept the defect; Clause X16.2 covers actions after receiving defects certification as it provides the procedures for return of retention as follows : 1. Half the retention is released upon completion of works; and 2. The remainder of retention is released on the issue of the defects certificate.
Completeness:	Clause 11.2(5) as it defines the types of defects as stated in works information. Clause 42.1 and 42.2 include instructions to search and notify defects including the various methods to search that the Contractor is liable for. Clause 43.1 to 43.4 covers issues on correcting defects to issuance of defect certificate and providing access to correct defects whilst clause 44.1 and 44.2 deals with proposing to accept defects and acceptance of defects and clause 45.1 to 45.2 deals with uncorrected defects. Sanctions are given in clause 45.1 if the Contractor does not correct the defect even after access is provided.
Consistency:	Consistency in local forms can be improved by referring to NEC3 Clause 43.2 that states the relevant defect correction periods as: • For defects notified before completion, and • For defects notified after completion
Flexibility:	The Contractor and Project Manager may each proposed to one another certain work information to be changed so that a defect need not have to rectified together with quotation for compensation event.
Clear Structured Framework for Project Management :	Project Management can be improved by referring to NEC3 Clause 42.1 and 42.2 as it deals with the notification of defects which requires both the Supervisor and the Contractor to notify each other as soon as either finds any defects and clause provide the method to search for defect which is the contractor to be liable of; clause 45.1 and 45.2 as it provides procedures for the Employer when contractor fail to carry out the rectification works for the defects.

Table 5.29 (cont): Enhancement Modules for Clauses related Defects after Completion

Issue	Enhancement via NEC Benchmark
Role Distribution:	Clauses in NEC3 describe the responsibilities of the Project Manager and Supervisor and Contractor in detail from searching for defects to accepting defects and uncorrected defects. Contractor's role is to rectify and Supervisor is to assess the rectification works and issue the Contractor with defects certification at the end of the last defect correction period. Project Manager must arrange access for Contractor to come to site to rectify defects.
Risk Distribution:	Risk can be reduced by referring to NEC 3 clause 42.1 as it provide method of searching defects; clause 45.1 and 45.2 as the clause give remedies for the Employer when contractor fail to carry out the rectification works for the defects; clause 43.4 as it provides statement of default or the consent of the contractor is needed when Employer employs someone else to do correct the defects.

5.3.28 Variations

Key information detailed via the enhancement module for clauses related to *variations to works including addition or deduction to the scope of work* is suggested in the following Table 5.30 to address the potentially problematic issues relating to *the definition of variations and the procedures to deal with variations* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.30: Enhancement Modules for Clauses related Variations

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 is specific about the conditions that constitute a variation, which is provided for under clauses under 60.1 related compensation event.

Table 5.30 (cont): Enhancement Modules for Clauses related Variations

Issue	Enhancement via NEC Benchmark
Comprehensiveness:	Comprehensiveness on the valuation of variation matter can be improved by referring to NEC3 Clause 14.3 and Clause 27.3 as they constitute the procedures for variation : 1. The Project Manager changes the works information. 2. The Project Manager give instructions to the Contractor 3. The Contractor is obligated to provide the works in accordance to the work information and obey instructions NEC 3 clause 16.1 also provides the procedure for early warning notice on events that will change the date, price and performance of the contract. The procedure is as follows: 1. Discover the matter which could increase the total of the prices, delay completion, delay meeting a key date or impair the performance of the works in use. 2. Contractor or Project Manager give an early warning 3. Notify the other as soon as either becomes aware of the matter Procedures for notifying compensation events are stated in Clause 61.1 to 61.7 where Clause 61.1 states: 1. project manager or supervisor giving an instruction or changing an earlier decision, 2. project manager needs to notify the contractor of the compensation event at the time of giving the instruction or changing the earlier decision 3. project manager has to instruct the contractor to submit the quotations unless the event arises from the fault of contractor or quotation have already been submitted. 4. The contractor puts the instruction or changed decision into effect; clause 61.3 which states: 1. the contractor notifies the project manager on the happened event or event he expect to happen as a compensation event if the contractor believes the event is a compensation event and 2. if the project manager has not notified the event to the contractor. 3. Contractor is not allowed to change the price, competition date or key date if he does not notify the compensation event within 8 weeks unless is the responsibility of the project manager to notify;

Table 5.30 (cont): Enhancement Modules for Clauses related Variations

Issue	Enhancement via NEC Benchmark
	Clause 61.2 as project manager needs to instruct contractor to submit quotation for a proposed instruction or a proposed changed decision but contractor cannot put proposed instruction or proposed changed into effect.
Completeness:	Completeness in local forms on this matter by specifying in clause 60.1the conditions for compensation event via clause 61.3 as the contractor notifies the project manager on the happened event or event he expect to happen as a compensation event if the contractor believes the event is a compensation event should the Project Manager has not done so; clause 60.1(8) as compensation event occurs when project manager or supervisor changes a decision which he has previously communicate to the contractor; and clause 14.3 when the Project Manager gives instructions that change the work information.
Consistency:	NEC3 put forward that compensation events are called for when there is a change in work due unexpected events and Project Manager or Supervisor gives instruction and/or changes a decision previously made. By stating the conditions specifically, consistency can be achieved for when claiming for compensation events.
Flexibility:	NEC3 allows Project Manager to change work information and it constitutes a compensation event. An instruction given by the Project Manager changing the works information is a compensation event unless it is a change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer. If the Contractor notice a potential events that will change the work information, the Contractor is given a time frame to notify on the event and upcoming compensation. He is also allowed to offer a proposal for change in price.
Clear Structured Framework for Project Management:	It is the obligation for both the Contractor and the Project Manager to give an early warning notice to the other as soon as either becomes aware it could help to reduce the occurrence of variation and delay completion and it gives good rise on project site management.

Table 5.30 (cont): Enhancement Modules for Clauses related Variations

Issue	Enhancement via NEC Benchmark
Role Distribution:	In NEC3, instruction by Project Manager and changed decisions causing changes to work information will be dealt with as a compensation event. Employer and Contractor have the right to change the prices, completion date and key dates in respect of a compensation event. The follow on roles and duties of the contracting parties in dealing with compensation events is systematic and comprehensive in this standard form.
Risk Distribution:	NEC3 allows both parties to notify one another on potential events causing change in work information. Contractor can also notify the project manager on the happened event or event he expect to happen as a compensation event if the contractor believes the event is a compensation event and the project manager has not done so. This allows for better management of risk.

5.3.29 Valuation of Variation

Key information detailed via the enhancement module for clauses related to *valuation of variations for the works* is suggested in the following Table 5.31 to address the potentially problematic issues which typically relate to the lacks *methods and procedures for measurement and valuation of variation* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.31: Enhancement Modules for Clauses related Valuation of Variation

Issue	Enhancement via NEC Benchmark
Clarity :	Clarity in local forms can be improved by referring to NEC3 Clause 60.1 (1) specifically states that variation or changing the works information is a compensation event and requires Contractor to submit his quotation.
Comprehensiveness:	Comprehensiveness in procedures of claim in local forms can be improved be referring to clause 63.1which states: 1. changes to the price are assessed as the effect of the compensation event on actual defines cost and/ or forecast defined cost 2. plus the fee and the date when the project manager instructed or should have instructed the contractor to submit quotations 3. divides actual defined cost from forecast cost.

Table 5.31(cont): Enhancement Modules for Clauses related Valuation of Variation

Issue	Enhancement via NEC Benchmark
	Clause 63.2 requires the Contractor to submit a quotation within three (3) weeks of being instructed to do so by the Project manager. And his reply should include an instruction to submit a revised quotation, an acceptable quotation and that he has make his own assessment. Project Manager is allowed to make his own assessment if the Contractor does not submit his quotation on time or if his programme is not in order. If the project does not accept a quotation but fail to make his own assessment within a stipulated time, the quotation is treated as having been accepted.
Completeness:	To ascertain the value of the compensation event, NEC3 clause 61.2 requests the Contractor to submit a quotation for proposed instructions or changed decisions and clause 62.1 to 62.3 the responsibilities of the Project Manager and Contractor with regards to such submission and clause 62.1 allows alternative quotations and 62.3 allows Contractor to submit a revised quotation. Clauses under 63 and 64 deals with the assessment of compensation events and finally the Contractor is to implement the compensation events
Consistency:	Upon confirmation of compensation event, NEC3 follows up with procedures for quotations and assessment for quotation. This enhances the link between the matter of variation and valuation of such variation.
Flexibility:	Contractor is allowed to make his reasonable valuation first and submit to the Project Manager for assessment and notified the Contractor when quotation is accepted and revised submission is allowed. Project Manager is encouraged to discuss with the Contractor on alternative quotations.
Clear Structured Project Management Framework :	Valuation of variation is done via the working programme and quotation for the change, which NEC3 implement to assess compensation events. This simplifies change management principle on site. Project Manager is encouraged to discuss with the Contractor on alternative quotations, which will stimulate teamwork on site.

Table 5.31(cont): Enhancement Modules for Clauses related Valuation of Variation

Issue	Enhancement via NEC Benchmark
Role Distribution:	Role distribution is more balanced with NEC3 states that it is the right of both the Employer and the Contractor to change the prices, completion date and key dates with respect to a compensation event.
Risk Distribution:	In NEC3, all parties are involved in assessment of the quotations for compensation event. With conditions for compensation event clear from previous section and procedures for submission and assessment of quotation clear, risk associated with variations and valuation can be greatly reduced.

5.3.30 Payment

Key information detailed via the enhancement module for clauses related to *payment for acceptable performance* is suggested in the following Table 5.32 to address the potentially problematic issues, which generally relate to the *lack procedures and time frame for payment* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.32: Enhancement Modules for Clauses related Payments

Issue	Enhancement via NEC Benchmark
Clarity:	Clarity in NEC3 is achieved with the specific procedures and time frame given to various issues dealing with payments to Contractor, reducing any ambiguities and dependencies on the 'opinion and discretion of Superintending Officers' typically seen in local forms.
Comprehensiveness:	Comprehensiveness can be improved by referring to NEC 3 clause 50.1 as 1. Project Manager assesses the amount due at each assessment date and 2. Project Manager decides the first assessment date so that it will suits the procedures of the Parties and is earlier than the assessment interval after the starting date. 3. Later assessment dates occur at the end of each assessment interval until four weeks after the Supervisor issue Defects Certificates and at completion of the whole of the works;

Table 5.32(cont): Enhancement Modules for Clauses related Payments

Issue	Enhancement via NEC Benchmark
	clause 50.4 which states: 1. Project Manager is responsible to consider any application for payment the Contractor has submitted on or before the assessment date and 2. Project Manager gives Contractor details on how the amount due has been assessed; clause 50.5 as Project Manager is responsible to correct any wrongly assessed amount due in later payment certificates; clause 90.4 which states: 1. Project Manager is required to certify a final payment from Contractor within 13 weeks of termination. 2. Contractor makes the payment within 3 weeks of the Project Manager's certificates.
Completeness:	Coverage on payment in NEC3 is seen in clause 50.1- 50.5 includes application of payment by Contractor and Project Manager's duties to set the assessment date, which other assessment will follow suit and provide for the definition of amount due and remedies for wrong assessments; specifically in clause 50.3 provides the consequences on failure to submit the programme for the assessment of claims and clause 93 also includes the coverage regarding to the payment on termination. Clause 51.1 states that Project Manager has to assess within certain date and Employer has to pay with 3 weeks of Project Manager's certification and 51.2 t provides for interest on late payment which the interest is to be calculated for the period between the due payment date and the actual payment date.
Consistency :	Payment claim and assessment must be made in conjunction with the working programme submitted and approved. This will enhance consistency in procedures and project documentations.
Flexibility:	Flexibility in local forms can be improved by referring to NEC 3 clause 50.5 as Project Manager is responsible to correct any wrongly assessed amount due in later payment certificates. Project manager will also set the first assessment date depending on the project so the rest of the assessments will follow suit.

Table 5.32(cont): Enhancement Modules for Clauses related Payments

Issue	Enhancement via NEC Benchmark
Clear Structured Project Management Framework :	NEC3 is very procedural in the matter of payment from assessment to actual payment including also issues for late payment and payment upon termination which enhance the project and contract administration.
Role Distribution :	Duties and roles of the parties in NEC3 are clear and precise with procedures and time frame given for parties to execute their responsibilities in the matter of payments. Late [payment and payment on termination are also included in the relevant clauses.
Risk Distribution :	Risk of late payment and wrong assessment in local forms can be improved by referring to NEC3 where clauses provide for interest on late payment which the interest is to be calculated for the period between the due payment date and the actual payment date and the Contractor to submit working programme together with the claims and consequences for non submission are also clearly stated.

5.3.31 Certificates

Key information detailed via the enhancement module for clauses related to *certificates issued by Superintending officer for the works* is suggested in the following Table 5.33 to address the potentially problematic issues relating with *finality and conclusiveness of all certificates issued* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.33: Enhancement Modules for Clauses related to Certificates

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 states specifically the flow of communication with respects to issuance of all certificates, reducing the ambiguities on this matter.
Comprehensiveness:	Comprehensiveness in Malaysian forms can be improved by referring to NEC 3 clause 13.6 where the Project Manager is to issue his certificate to the Employer and Contractor while the Supervisor is to issue his certificate to the Project Manager and the Contractor but not the Employer. The reason for the Supervisor's certificates going to the Project Manager but not Employer is the need for the Project Manager to have those certificates to fulfill his wider role in administering the contract.

Table 5.33 (cont): Enhancement Modules for Clauses related to Certificates

Issue	Enhancement via NEC Benchmark
Completeness:	NEC3 does not limit the conclusiveness of the certificates issued; instead provide the flow of communication for the issuance of certificates.
Consistency	Consistency is achieved when Project Manager is made the point of reference for all issuance of certificates.
Flexibility	Flexibility in Malaysian forms can be improved by referring to NEC3 Clause 13.6 which states the role and responsibilities of the Project Manager and Supervisor but not limiting the conclusiveness of the certificates issued.
Clear Structured Framework for Project Management:	NEC3 will stimulate good project management when it states clearly the flow of communication with respect to issuance of all certificates. Site management is enhanced with Project Manager is made a single point of reference for all certificates.
Role Distribution:	Role distribution is clearly describes in NEC 3 clause 13.6 as it states the responsibilities of Project Manager and Supervisor to issue their certificate to the other parties.
Risk Distribution:	Risk is reduced when there is a clarification made for the Project Manager as single point of reference for all certificates, clearly stating not only her/his duties as a contract administrator but also the conclusiveness of such certificates.

5.3.32 Claims Procedures

Key information detailed via the enhancement module for clauses related to *claims* is suggested in the following Table 5.34 to address the potentially problematic issues relating with *the items and procedures for claim* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.34: Enhancement Modules for Clauses related to Claim Procedures

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically provides for list of items that can considered as a compensation event as seen in section 5.4.34 and extensive detail procedures for claims as described below:

Table 5.34 (cont): Enhancement Modules for Clauses related to Claim Procedures

Issue	Enhancement via NEC Benchmark
Comprehensiveness:	Claim procedures in local forms can be improved by referring to NEC 3 clause 62.1 where it provides the procedure for the quotation of compensation events. They are as follows: 1. Discussion of the Project Manager and Contractor in different ways of dealing with the compensation event which the practicable 2. Project Manager may instruct the Contractor to submit alternative quotations 3. Contractor submits such quotation as required 4. Contractor may submit for other methods which he considers practicable Clause 62.2 states: 1. Quotation for compensation events comprise proposed changes to the price and any delay to the completion date and key dates assessed by the Contractor. 2. Contractor is responsible to submit details of his assessment with each quotation. 3. the Contractor has to include the alteration to the accepted program in his quotation if the program for remaining work is altered by the compensation event; clause 62.3 states 1. the Contractor has to submit his quotation within 3 weeks and 2. Project Manager is to submit and approve the extension of time within 2 weeks; and clause 63.3 as 1. any delay to the completion date is assessed as the length of time that, due to the compensation event, planned completion is later than planned completion shown on the accepted program. A delay to a key date is assessed as the length of time the planned date for meeting a key date is later than the date shown on the accepted program due to a compensation event. Clause 65.1 as it covers the issues of implementation for the compensation events. They are as follows: 1. The Project Manager notifies acceptance of the Contractor's quotation 2. The Project Manager notifies the Contractor of his own assessment 3. The Contractor's quotation is treated as having been accepted 4. Any wrong assessment will not be revised.

Table 5.34 (cont): Enhancement Modules for Clauses related to Claim Procedures

Issue	Enhancement via NEC Benchmark
Completeness:	Details procedures for claims are provided for in NEC3 under clause 61, 62, 63, 64 and 65.
Consistency:	Compensations events and procedures for claiming compensation events are put forward in NEC3 creating consistency among the clauses.
Flexibility	Project Manager is encouraged to discuss with the Contractor on alternative quotations. However, according to clause 65.2, assessment of a compensation event will not be revised if a forecast upon which it is based on later shown information has been wrong.
Clear Structured Framework for Project Management:	Compensation events are managed in an orderly fashion in NEC3. A long list of items is allowed and procedures procedure of application are seen clauses under 62 and provides guidelines on how Project Manager is to assess the applications are provided for in clauses from 63 and 64. This will enhance management of claims on site. Assessment of compensation events is done via the working programme and quotation for the change by Contractor. This simplifies claim management principle on site.
Role Distribution:	Roles of contracting parties in claiming for compensation events are clearly described in NEC3. Contractor is responsible to submit his quotation within 3 weeks and engineer to submit and approve the extension of time within 2 weeks. All parties are to do their parts in notifying compensation events in clauses under 61, quotations for compensation events in clauses under 62 and assessment of compensation events in clauses under 63 and 64 and finally implementing compensation events in clauses 65. Assessment of a compensation event will not be revised if a forecast upon which it is based on later shown information has been wrong. This is to ensure that all parties take their assessment of compensation events seriously.
Risk Distribution:	NEC3 allows both parties to notify one another on potential events causing change in work information. Contractor can also notify the project manager on the happened event or event he expect to happen as a compensation event if the contractor believes the event is a compensation event and the project manager has not done so. This allows for better management of risk.

5.3.33 Losses and Expenses

Key information detailed via the enhancement module for clauses related to *loss and expenses* is suggested in the following Table 5.35 to address the potentially problematic issues relating with *events that allows for claim for loss and expenses* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.35: Enhancement Modules for Clauses related to Losses and Expenses

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically provides for list of items that can consider as a compensation event.
Comprehensiveness:	Claims procedures for compensation event follows the items that are allowed for claims and are described in the above section 5.4.33.
Completeness:	NEC3 extensively in Clause 60.1 – 60.3 list out a total of twenty one (21) major items that can be considered for compensation including change in work information, assessment of physical conditions on site, ambiguities and inconsistency in site information. Clause 65.1 and 65.2 also including the implementation of compensation events upon approval
Consistency:	Compensations events and procedures for claiming compensation events are put forward in NEC3 creating consistency among the clauses. Items allowed for claims are also described in more details in their respective sections with respect to conditions and procedures for claim.
Flexibility:	Contractor is also allowed to offer a proposal for changes that includes change in price unlike local forms, which usually does not allow proposal from Contractor. According to clause 65.2, assessment of a compensation event will not be revised if a forecast upon which it is based on later shown information has been wrong. This is to ensure that all parties take their assessment of compensation events seriously.
Clear Structured Framework for Project Management:	Compensation events are managed in an orderly fashion in NEC3. A long list of items is allowed and with extensive procedures in place as seen in section 5.4.33 management of claims on site can be enhanced.

Table 5.35 (cont): Enhancement Modules for Clauses related to Losses and Expenses

Issue	Enhancement via NEC Benchmark
Role Distribution:	Roles of contracting parties in claiming for various compensation events are clearly described.
Risk Distribution:	With clear and precise items describe for compensation in place, risk and problems of claims typically seen in Malaysian forms can be reduced.

5.3.34 Suspension of Works

Key information detailed via the enhancement module for clauses related to *suspension of works* is suggested in the following Table 5.36 to address the potentially problematic issues relating with *reasons for suspension, procedures for suspension and restart work* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.36: Enhancement Modules for Clauses related to Suspension of Works

Issue	Enhancement via NEC Benchmark
Clarity:	Suspension of works is dealt with as compensation events in NEC3 specifically if it will change a key date.
Comprehensiveness:	Suspension of works as one of the compensation will be dealt with as follows should it be the instructions of the Project Manager to call for stop work or not to start work. Clause 62.1 where it provides the procedure for the quotation of compensation events. They are as follows: 1. Project Manager and Contractor to discuss in different ways of dealing with the suspension work which the practicable 2. Project Manager may instruct the Contractor to submit alternative quotations 3. Contractor submits such quotation as required 4. Contractor may submit for other methods which he considers practicable

Table 5.36 (cont): Enhancement Modules for Clauses related to Suspension of Works

Issue	Enhancement via NEC Benchmark
	Clause 62.2 states: 1. Quotation for stopping work no to start work comprise of proposed changes to the price and any delay to the completion date and key dates assessed by the Contractor. 2. Contractor is responsible to submit details of his assessment with each quotation. 3. the Contractor has to include the alteration to the accepted program in his quotation if the program for remaining work is altered by the suspension; clause 62.3 states 1. the Contractor has to submit his quotation within 3 weeks and 2. Project Manager is to submit and approve the extension of time within 2 weeks; and clause 63.3 as 1. Any delay to the completion date is assessed as the length of time that, due to the suspension, planned completion is later than planned completion shown on the accepted program. 2. A delay to a key date is assessed as the length of time the planned date for meeting a key date is later than the date shown on the accepted program due to a suspension event. Clause 65.1 as it covers the issues of implementation for the compensation events. They are as follows: 1. The Project Manager notifies acceptance of the Contractor's quotation 2. The Project Manager notifies the Contractor of his own assessment 3. The Contractor's quotation is treated as having been accepted 4. Any wrong assessment will not be revised.
Completeness:	In clause 34.1, Project Manager can call for stop or not to start work but under this clause 60.1, it is a compensation event if the Project Manager gives an instruction to stop or not start any work would change a key date.
Consistency:	Procedures for starting work after suspension is tied with procedures for assessing a compensation event.

Table 5.36 (cont): Enhancement Modules for Clauses related to Suspension of Works

Issue	Enhancement via NEC Benchmark
Flexibility:	Suspension of works or not to start work is considered as a compensation event in NEC3 unlike local forms and the Project is allowed to discuss with the Contractor different ways, which the practicable of dealing with the suspension and restarting work, and the Project Manager may instruct the Contractor to submit alternative quotations. The Contractor may submit for other methods which he considers practicable
Clear Structured Framework for Project Management:	The Project Manager may instruct the Contractor to stop or not to start any work and may later instruct him to restart or start it; clause 60.1 (4) provided it as a compensation event if such instructions change a key date.
Role Distribution:	Roles and responsibilities of the contracting parties in NEC3 with respect to a suspension event are tied in with their roles and responsibilities for a compensation event.
Risk Distribution:	When Project Manager gives instruction to stop or not start any work or to change a key date, it is a compensation event.

5.3.35 Termination

Key information detailed via the enhancement module for clauses related to *termination of contract* is suggested in the following Table 5.37 to address the potentially problematic issues relating with *conditions for terminations and procedures after termination* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.37: Enhancement Modules for Clauses related to Termination

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically list out twenty one (21) reasons for termination and four different procedures for termination which greatly improve the clarity on the matter.

Table 5.37 (cont): Enhancement Modules for Clauses related to Termination

Issue	Enhancement via NEC Benchmark
Comprehensiveness:	Procedures for termination can be improved by referring to NEC3 clause 90.4 which states that: 1. Project Manager is required to certify a final payment to Contractor within 13 weeks of termination. 2. Payment is within 3 weeks of the Project Manager's certificate; Clause 92 as it provides various procedures to deal with different reasons of termination. There are four different procedures (P1-P4) to deal with twenty one reasons of termination (R1-R21). Clause 92.1 states employer may complete the works and use any plant and material which he has titles to; Clause 92.2 as 1. The employer may instruct the Contractor to leave the site, remove any equipment, plant and material from the site and assign the benefit of any subcontractor or other contract related to performance of this contract to the employer. 2. The employer may use any equipment to which the Contractor has title to complete the works. The Contractor promptly removes the equipment from the site when the project management notifies him that the employer no longer requires it to complete the works. 3. the Contractor leaves the working areas and removes the equipment.
Completeness:	Clause 92 as it provides various procedures to deal with different reasons of termination. There are four different procedures (P1-P4) to deal with twenty one reasons of termination (R1-R21). Clause 92.2 provides the estimation of what belongs to the employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site; whilst clause 93.1 and 93.2 as it provides method to obtain amount due upon termination.
Consistency:	NEC3 ties in reasons and procedures for termination closely to create a better consistency among clauses.
Flexibility:	Project Manager is required to certify a final payment from Contractor within 13 weeks of termination. The payment is made within 3 weeks of the Project Manager's certificates.

Table 5.37 (cont): Enhancement Modules for Clauses related to Termination

Issue	Enhancement via NEC Benchmark
Clear Structured Project Management Framework :	Site management can be improved by referring to clause 90.4 as it requires Project Manager to certify a final payment from Contractor within 13 weeks of termination. The payment is made within 3 weeks of the Project Manager's certificates; clause 92.2 as it provides the procedures with respect to withdrawal from the site; and clause 93.1 and 93.2 as it provides method to obtain amount due on termination. All these provide a orderly procedures to manage termination.
Role Distribution:	Role distribution can be improved by referring to NEC 3 clause 91 as all parties share equal responsibility to terminate the other party if the one has done one of the reasons of termination by Employer and Contractor.
Risk Distribution:	Risk distribution can be improved by referring to NEC 3 clause 92 as risk is reduced by provides different procedures to deal with different reasons of termination by Employer and Contractor

5.3.36 Disputes and Dispute Resolution

Key information detailed via the enhancement module for clauses related to *dispute and dispute resolution* is suggested in the following Table 5.38 to address the potentially problematic issues relating *with management of disputes, method and procedures for dispute resolutions* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.38: Enhancement Modules for Clauses related to Disputes and Dispute Resolution

Issue	Enhancement via NEC Benchmark
Clarity :	NEC3 specifically include adjudication as one of the choice for dispute resolution method. It also allows for dispute resolution during the execution of project unlike local forms which only start dispute resolution procedures at the end of the project.

Table 5.38 (cont): Enhancement Modules for Clauses related to Disputes and Dispute Resolution

Issue	Enhancement via NEC Benchmark
Comprehensiveness :	Comprehensiveness on this matter can be improved by referring to NEC3 Option W1 Clause W1.4(1) to W1.4(6) and Option W2 Clause 2.4(1) to W2.4(5) as they provide the procedures for dispute resolution as follows : 1. A Party does not refer any dispute under or in connection with this contract to the tribunal unless it has first been referred to the Adjudicator. 2. If, after the Adjudicator notifies his decision a Party is dissatisfied, he may notify the other Party that he intends to refer it to the tribunal. 3. If the Adjudicator does not notify his decision within the time provided in this contract, a Party may notify the other Party that he intends to refer the dispute to the tribunal. 4. The tribunal settles the dispute referred to it. 5. If the tribunal is arbitration, the arbitration procedure, the place of arbitration and the method of choosing the arbitrator are as stated in the contract data.
Completeness :	Completeness can be improved by referring to NEC3 Clause W1.1 as it requires that a dispute arising under or in connection with the contract is referred to and is decided by the adjudicator; Clause W1.4(1) as it states a Party does not refer any dispute under or in connection with this contract to the tribunal unless it has first been referred to the Adjudicator; and Clause W1.3(1) as it sets out which party may submit disputes to arbitration and the timescale for doing so.
Consistency:	Arbitration and adjudication are written to complement each other in the dispute resolution procedures and not as alternative to one another for disputes on works. Clauses also make references to external governing law on dispute resolution.
Flexibility :	Flexibility can be improved by referring to NEC3 Clause W1.3(1) as it sets out which party may submit disputes to arbitration and the timescale for doing so and it allows for dispute resolution during the course of project. Clause W1.4(1) as it states a Party does not refer any dispute under or in connection with this contract to the tribunal unless it has first been referred to the Adjudicator.

Table 5.38 (cont): Enhancement Modules for Clauses related to Disputes and Dispute Resolution

Issue	Enhancement via NEC Benchmark
Clear Structured Framework for Project Management :	Project management can be improved by referring to NEC3 Clause W1.3(1) as it sets out either party may submit disputes to arbitration and the timescale for doing so. And Adjudication is to come first before arbitration which can significant reduce time and cost in managing disputes on site.
Role Distribution :	Roles distribution can be improved by referring to NEC3 Clause W1.3(1) as it states : • Contractor's role to provide notice to the Employer and Project Manager not more than four weeks after he becomes aware of the dispute • Contractor's role of referring the dispute to the Adjudicator between two and four weeks after notifying the Employer and the Project Manager
Risk Distribution :	Risk distribution can be improved by referring to NEC3 Clause W1.3(1) as it sets out which party may submit disputes to arbitration and the timescale for doing so.

5.3.37 Compliance with Law/Regulations

Key information detailed via the enhancement module for clauses related to *compliance with law/regulation* is suggested in the following Table 5.39 to address the potentially problematic issues relating with *change in law and consistency between contract law and governing law* in the related specific clauses in local Malaysian forms; and seek to align a best-practice enhancement for the action(s) pending, related to (an enhancement) module that seeks improved the various attributes.

Table 5.39: Enhancement Modules for Clauses related to Compliance with Law/Regulations

Issue	Enhancement via NEC Benchmark
Clarity:	NEC3 specifically calls for the contract to comply with contract law and applicable law of the contract.
Comprehensiveness:	Clause 12.3 where it also states that there will be no change to this contract, unless provided for by the conditions of contract, and has effect unless it has been agreed and confirmed in writing and signed by the parties.

Table 5.39 (cont): Enhancement Modules for Clauses related to Compliance with Law/Regulations

Issue	Enhancement via NEC Benchmark
	Clause 18.1 where the clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible. If the Project Manager agrees, s/he is to give an instruction to change the Works Information appropriately. NEC3 clause X2.1 states that if there is any changes in law: 1. the Project Manager has to notify the Contractor of a compensation event and 2. instruct the Contractor to submit the quotations
Completeness:	NEC3 covers changes in law and the Contractor to adhere strictly to the governing law. NEC3 Clause 12.2 states that the contract is governed by the law of the contract; Clause 12.3 where it also states that there will be no change to this contract, unless provided for by the conditions of contract, and has effect unless it has been agreed and confirmed in writing and sign by the parties. Project Manager will have to make relevant changes to works information to avoid any potential breach of the law
Consistency:	NEC3 correlate the contract law and governing law of the country which will provide consistency to law related issue in the contract
Flexibility:	NEC3 Clause X2.1 where change in law is covered as compensation event; Clause 18.1 where the clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible
Clear Structured Framework for Project Management :	NEC3 refers to the governing law in general and conditions of contract cannot be changed unless it has been agreed and confirmed in writing and signed by contracting parties. This provides certainty to the contract administration where contracting parties are to refer to any external law
Role Distribution:	Clause X2.1as Project Manager is responsible to instruct Contractor to submit the quotation when there is a change of law whilst Clause 18.1 where the clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible.

Table 5.39 (cont): Enhancement Modules for Clauses related to Compliance with Law/Regulations

Issue	Enhancement via NEC Benchmark
Risk Distribution:	Risk is significantly reduced when NEC3 allows change in law as compensation event and both Contractor and Project Manager are to be more rigorous in making sure that the contract adheres strictly to the governing law and more attention provided for potential illegal activities.

5.4 Section Summary

As mentioned in literature review in Section 2.4.1 to 2.4.6, form improvements are usually carried out in an ad-hoc manner by the professionals and the professional bodies who effectively own the standards, who often make bespoke amendments to the clauses based on their own experiences and projects, resulting in increasingly amended documents that are apt to become a confused maze of clauses, that are often in conflict and can often have an unintended (domino-effect) result, which the parties may never have contemplated and where the full contractual implications were not considered.

The enhancement-modules described and detailed above, are based on the eight (8) attributes of evaluation, which have been established in Chapter 4 via a structured questionnaires survey to five hundred (500) contract administrators and personnel, to analyse Malaysian standard forms, in order to achieve a systematic method of form analysis and enhancement. Problems detected (and described previously in preceding sections) in the available key Malaysian standard forms can be argued to have been addressed by the enhancement modules above.

Main findings of this chapter can be summarised as follows:

1) Malaysian standard forms, whilst evaluated as less than ideal in Chapter 4, remain the main stay of a conservative industry that has been shown to be completely averse to the uptake of new/newly developed alternatives. Thus, existing forms do indeed need to be enhanced, indicating that the systematic form enhancement exercise adopted here, is very important in order to achieve a coordinated form enhancement across the existing options as they strive to reduce conflict, confusion and a less than efficient project realisation process.
2) Form enhancement need to revolve around one core ‘best-practice/ideal’ form. As seen in various comments and reviews by authors such as Latham (1994), Broome and Hayes (1997), Eggleston (2006), Potts (2008) among many others in the Literature Review in

Section 2.5.1, the suggested benchmark of NEC3, forward by this work when aligned with respective local items, does allow every (explicitly certified problematic) existing Malaysian standard clause to be refined and enhanced with explicit reference to a uniformly developed improvement mechanism.

3) Enhancement modules are developed and refined in the form of clusters of typical issues/matters to address all the problematic clauses under the same aspects, i.e, clauses explicitly to issues of "payment", "delays", "safety and health", "extension of time" and "claim for compensation" among others.
4) Form enhancement modules derived and applied in the above sections of Chapter 5, can be argued:
    a) To provide the form users with a uniform guideline that, when applied to a said form allows enhancement such that form enhancement modules provide best-practice tallied amendment;
    b) To achieve a synchronized form-enhancement for all Malaysian forms, so that previously identified problems can be addressed by the same uniform guideline. Such coordinated enhancements lead to the creation of a suite of applied, best-practice Malaysian standard forms where existing forms achieve 'quality' compliance expectations.

Form analyses discussions in Chapter 4 above, alongside the enhancement modules explained in-detail here in Chapter 5, are argued to have began to address 'quality' inadequacies noted to exist in the Malaysian standard forms' clauses.

Chapter 6 below will now look in more detail at addressing problems related to 'quantity' inadequacies that exist in the initial *selection* of an appropriate standard form for a specific project.

6. PROCUREMENT STRATEGIES SELECTION

6.1 General Overview of Chapter

The gap(s) in research knowledge in the field of Malaysian procurement and standard forms of contract analyses identified previously can be restated as follows:

a. Methods towards Malaysian Contract-Form Research is unstructured;
b. Standard Forms commonly used to deliver projects currently are short of 'ideal';
c. A formal, logically set-out procurement framework, to select the most appropriate contract-form, is not available in Malaysia.

Chapters 4 and 5 can be argued to have addressed the knowledge-gaps of the initial core component of this work, summarized in (a) and (b) above. However, as detailed in Section 2.6 above, effective contract administration does not only, nor wholly, rely on the existence of a best-practice standard form(s), but also requires a suitable procurement system to be in place, which itself can be argued to stem from guidance related to suitable selection mechanisms for a 'best' procurement route that might then guide appropriate standard form 'choice' and subsequent 'utilisation'.

Chapter 6 presented here seeks to address a core component of this work, i.e. Part (c) of the existing gap in research knowledge, that establishes a procurement framework. Chapter 6 is structured based on the selection procurement strategy that assist in the **selection of a procurement method**, followed by **selection of a suitable contract type** and finally the **selection of a appropriate standard form** from a range of existing alternatives.

Results here in Chapter 6 for all three (3) components (procurement method, contract type and standard form selection) are structured in the following manner to address specific issues in the establishing the said procurement framework in later in Chapter 7, namely:

1. Typical methods/forms used ~ towards understanding the typical method normally selected by the industry.
2. Need for Guidelines ~ towards addressing the need in establishing such a framework.
3. Relevancy and ranking of Selection criteria ~ towards establishing the actual relevancy of such selected selection criteria, and to use the ranking results for development of decision flowcharts.

4. Correlation between selection criteria and the methods/forms ~ towards correlation of the selection criteria with the choice of method/forms available and, together with the ranking results, forms the backbone of the decision flowcharts, such that the procurement framework established.

Selection criteria for each component of the developed procurement strategy has been established and verified with extensive consultation with key expert stakeholders; the qualitative research approach employed to this end, was the Phenomenological research method (as detailed in Section 2.8.2.3 above) towards collection of appropriate data related to procurement strategies guidance.

This section provides below, a descriptive analysis of the results and data collected from six (6) semi-structured interviews conducted as part of the overall research project's methodology (where the data collection and analysis method are discussed at length in Section 3.8.1 and Section 3.8.2 above).

The semi-structured interviews have been conducted with expert local leaders in procurement and contracting within the Malaysian construction industry. Interview participants were identified using purposeful sampling based on the criteria set-out and explained in Section 3.8.1, but essentially they have been identified as specialists in the field. Semi-structured interviews were conducted face-to-face. Two of the six interviews were recorded for later transcription and coding, while other participants chose to have discussions scripted rather than recorded.

Table 6.1 below provides a general overview of the main points of discussion addressed here; following which, Figure 6.1 reiterates the current stage in the overall logic flow of work towards this project's original contribution of knowledge.

Table 6.1: General Overview of Chapter 6

Chapters	**Issues Addressed**	**Point Established/Gap of Research**	Way Forward
Chapter 5	*As previous*		
Chapter 6	Procurement Selection Strategies 6.1 General Overview of Chapter 6.2 Procurement Strategies and Selection Criteria 6.3 Background of Key Expert Interviewees 6.4 Procurement Method 6.5 Types of Contract 6.6 Standard Forms of Contract 6.7 Section Summary	Chapter 6 puts forward the results for: • Selection of criteria identified for the developed local procurement framework • Verification and weighing of Selection Criteria via requisite interviews with key expert local stakeholders • Establishment of the correlation between selection criteria and procurement methods, contract types and standard forms with reference to verification by interview panel.	Chapter 7 presents questions derived to establish the correlations seen in Chapter 6. • A construction procurement selection framework is derived (a computer program is designed for the ease of using the framework) and; • When combined with the enhancement modules, the programme works towards a selection framework that guides choice from a suite of Malaysian standard forms

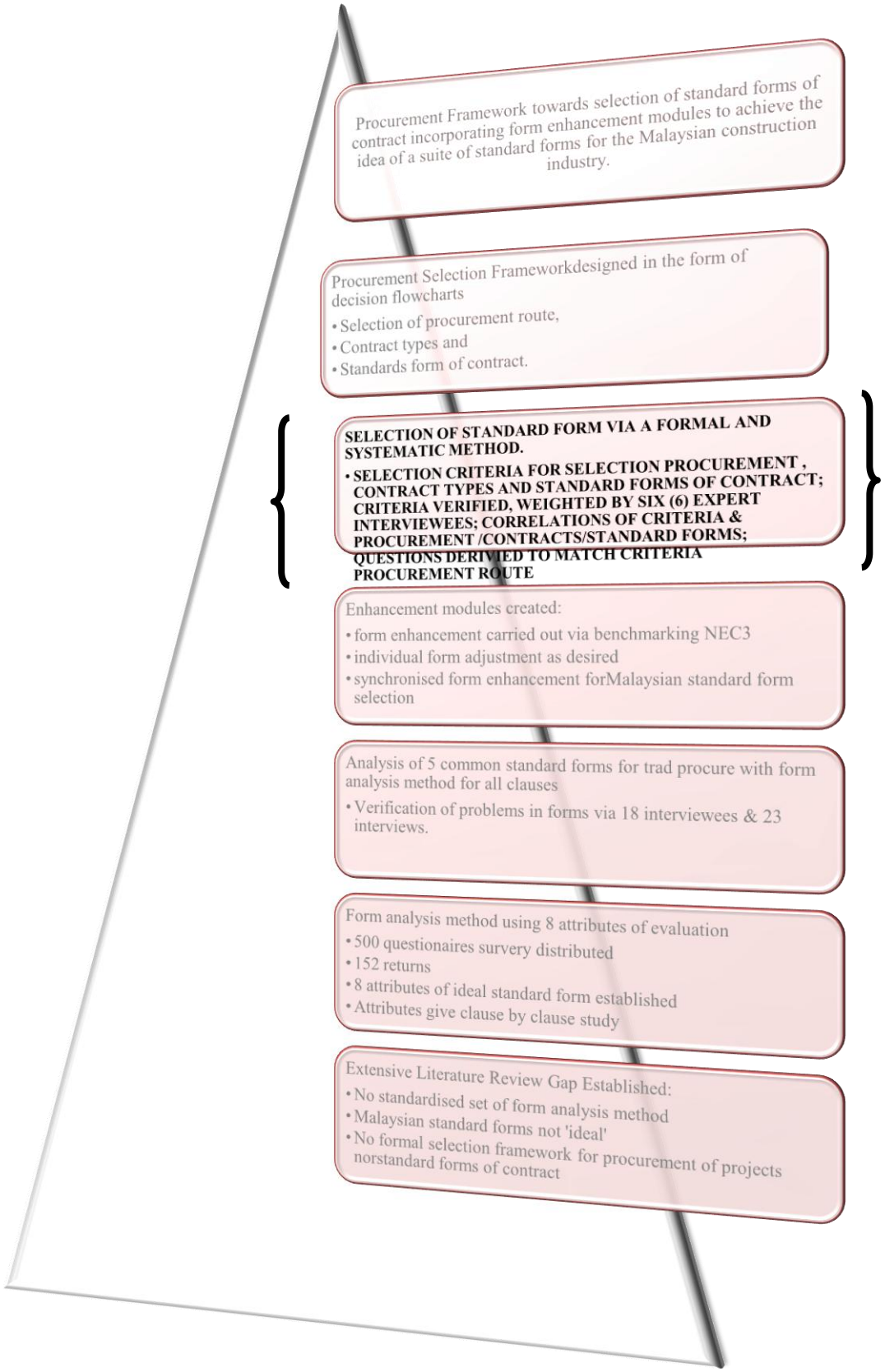


Figure 6.1 Stage of Work in the Logic Flow of Research towards an Original Contribution to Knowledge

6.2 Procurement Strategies and Selection Criteria

Given discussion above as part of the literature review presented in Section 2.7, it can be established that procurement strategies towards the selection of standard forms require strategies for procurement method selection, contract type selection and standard forms selection; with a number of studies examining selection criteria for each component of such a procurement strategy.

Procurement components and the respective criteria/variables selected for this work established via the Literature Review in Section 2.7 are summarized in Figure 6.2 below, and show graphically, factors related to:

- Procurement Method in terms of: Speed, Complexity, Quality, Flexibility, Certainty, Competition, Responsibility, Risk
- Contract type in terms of : Nature & Scope of work, Responsibility, Certainty of final cost, Time against scope of work, Variation of work, Risk allocation
- Standard Forms of Contract in terms of: Procurement strategy, Contract type, Nature of Work, Sector, Clarity, Completeness, Comprehensiveness, Flexibility, Clear framework, Risk and Role Distribution.

Generally this chapter applies a Qualitative Research Method using the Phenomenological research approach (as described in Section 2.8.2) to:

- Verify relevancy of these components and their respective applicability as selection criteria for Malaysian construction industry procurement; and
- Establish a selection strategy using the identified components and their constituents towards location-specific selection of appropriate standard forms in the Malaysian construction industry.

Data collection is carried out using semi-structured interviews (as described in Section 3.8.1) with key experts; the gathered data and results are analyzed via line to line coding methods described in Section 3.8.2. Phenomenological research methods call for a minimum of five (5) interviewees; a total of six (6) key expert interviewees were selected here; sample appropriateness is described below in Section 6.3.

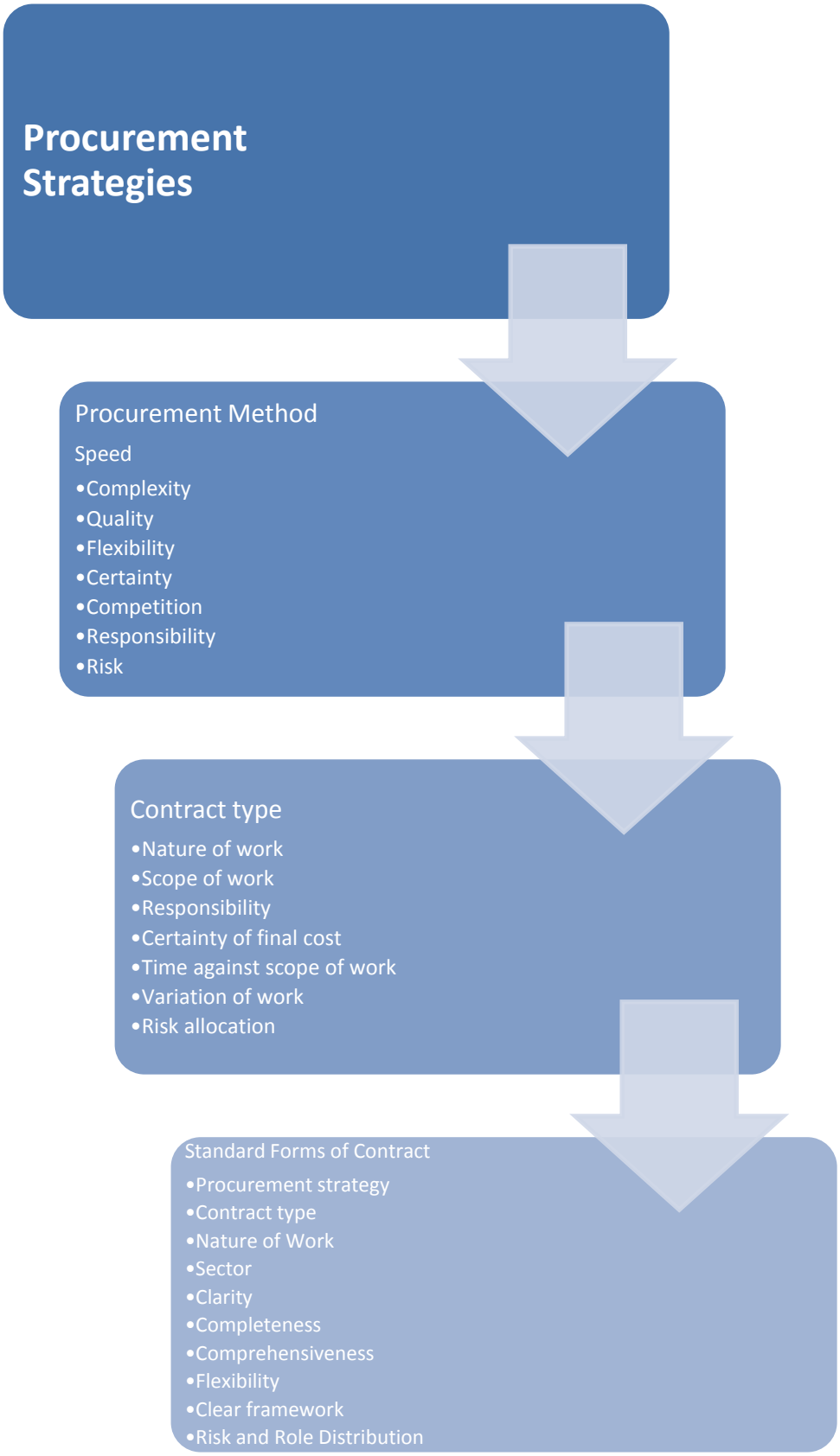


Figure 6.2: Procurement Strategies' Components and Selection Criteria

6.3 Interviewees' Background

This section describes sample selection; namely, the appropriateness of the key expert sample panel, where interviewees' backgrounds must comply with the criteria set for purposeful sampling in order to be accepted as a specialist respondent. Importantly, the experts identified are key leaders and decision-makers in some of the more prominent construction companies in Malaysia, in senior and very senior positions with the ability to influence the main decision(s) on procurement strategies for their respective range of previous, current and future projects.

The respondents' position in the company, years of working experience, the company's type of organization(s), and the company's sector are summarized in Table 6.2

Table 6.2: Interviewees' Backgrounds

	Interviewee 1	**Interviewee 2**	**Interviewee 3**
Position in the company	Managing Director	Principal	Contract Director
Years of working experience	28 years	13 years	24 years
Type of organization	Contractor/Developer	Quantity Surveyor	Contractor/ Developer
Sector	Private	Private	Private

	Interviewee 4	**Interviewee 5**	**Interviewee 6**
Position in the company	Director	Acting Managing Director	Project Manager
Years of working experience	23 years	16 years	12 years
Type of organization	Quantity Surveyor	Consultant/ Contractor/ Developer	Government Agency
Sector	Private	Private	Government

From the above table, it is observed that the specialist practitioner interviewees are qualified experts with experience in both the private and public sector, whose roles in their companies are at senior management level and above. Their experience and expertise are unarguably important in the execution of various construction projects in Malaysia, especially with respect to procurement and contracting.

The following sections presents the results from the interviews carried out with these key expert interviewees based on the three (3) components of procurement strategies established namely:

- procurement method;
- contract type; and
- standard forms of contract

6.4 Procurement Method

This section covers the different procurement method/s that the interviewees use/have used; the current practice of the company in selecting the most appropriate procurement method; the opinions of the interviewees on procurement method selection guideline; the relevancies and the importance of identified selection criteria in selecting the most appropriate procurement method; ranking of the identified criteria based on the importance scoring; and the correlation of the selection criteria and the selection of various procurement methods.

6.4.1 Procurement Methods Used

In a Malaysian context the current and typical procurement methods used by industry are: Traditional Procurement Method, Design and Build Procurement method and Management Procurement Method. All interviewees have used both Traditional Procurement and Design & Build Procurement method, which are the two most popular and principal procurement methods in the industry.

By way of background, often the procurement method adopted in Malaysia is influenced somewhat by the various five-yearly economic-plans put in place by the Government of the time. Whilst previous 5-year plan funding models have favoured the push for large-scale endeavours in quick succession to assist in the desire for Malaysia to maintain its transformation from newly-developing-nation to fully-developed-nation, much more latterly however, recent five-year economic-plans implicitly reflect the wish to return to a more stabilised, structured, slow and steady development/re-development; effectively then perhaps political decision-making has influenced the fluctuations back and forth between design-&-build methods, or traditional approaches, with management contracting somewhat able to accommodate either public sector funding model. This political dimension provides a very interesting aspect for consideration, and might be suggested to fall within the risk aspect of a procurement strategy; largely however this political dimension remains implicit since, as with

builders and engineers across the world seek to remain politically non-aligned, interviews made no explicit mention of this factor.

Generally then, given that the interviewees have many years experience in industry (across the introduction and implementation of several 5-year economic plans), it might be expected that they have indeed had opportunity to use both the traditional approach and the design-&-build approach. This is found to be the case, as shown below in table 6.3, with the third way Management Procurement method, having had low usage by the interviewees. One (1) of the interviewees commented that although he has used the management method, it is a seldom case scenario, implicitly perhaps as a result of the political dimension discussed above.

Table 6.3: Procurement Method Used by Interviewees

Interviewee	1	2	3	4	5	6
Traditional Procurement	✓	✓	✓	✓	✓	✓
Design and Build Procurement	✓	✓	✓	✓	✓	✓
Management Procurement				✓	✓	

6.4.2 Current Practice in Selection of Procurement Methods

The interviewees mentioned that on a general basis, a Traditional Procurement method would be used for most of the projects, especially when there is ample time to plan for the project. As mentioned by them, Traditional Procurement method would be preferable because it leads to an overall controllable and lower price project. If the project is big and complex, Design and Build Procurement method may be used. They also state that selection will be based on experience and weight-age on criteria, versus acceptable risk. The current practice in procurement method selection is summarized in Table 6.4.

Table 6.4: Current Practice in Procurement Method Selection

	Current Practice
Interviewee 1	Based on the nature of the project. If the project is very complex and fast track, Design & Build is the way to go. If the developer has more time to plan for the project, Traditional Procurement will be preferable as it will lead to an overall controllable and lower price through tendering process. Design & Build would have lesser bidders.
Interviewee 2	Based on the nature of project, the speed, flexibility, certainty, competition, responsibility and risk of the project.
Interviewee 3	If the project is a fast track job and is complex, we would use Design & Build. If not, generally uses Traditional Procurement.
Interviewee 4	Choice is based on experience and dependant on who is the client, what are their needs, requirement and constraints. Then based on what the client has stated, we decide on the best way to realize the project.
Interviewee 5	We usually use Traditional Procurement for our projects. Design and Build and Management are only on special-technology bigger projects.
Interviewee 6	The selection of procurement method is based mainly on the nature of the project.

6.4.3 The Need of Procurement Method Selection Guideline

The interviewees agreed at the outset that there is currently no local Malaysian-specific procurement method selection guideline.

Three (3) of the interviewees agreed that it would be good to have a procurement method selection guideline. They state that choosing the appropriate procurement method would avoid unnecessary problems in the later stage. They also added that different procurement method allocates risk differently and choosing the most suitable method helps in managing risk properly. On the other hand, less believed that having a procurement method selection guideline is unnecessary and state that, of the usual two types of procurement methods used (Traditional Procurement method and Design & Build Procurement method), a client/developer, on the general basis would choose Traditional Procurement method for higher competitive pricing during the tendering stage. It is suggested that Design & Build Procurement method is only to be used when the job is highly demanding, complex or fast-track. The opinions of the interviewees on procurement method selection guideline are summarized in Table 6.5.

Table 6.5: The Need for Procurement Method Selection Guideline as Perceived by Interviewees

	The Need for Procurement Method Selection Guildeline
Interviewee 1	Usually the procurement strategy is specified by the owner or client of the project. If it is the developer, generally chooses Traditional Procurement for more competition in tendering (competitive prices).
Interviewee 2	Yes. Different procurement method allocates risk in different ways. Our job it to manage this risk properly and to minimize their possible impact. Choosing the wrong procurement strategy would result to unnecessary risk taken into consideration.
Interviewee 3	Not really. Since there is only two type of procurement strategy that we use, we usually use Traditional Procurement for our project, unless the project is a fast track job which has a complex nature, we would use Design & Build procurement.
Interviewee 4	Yes. We can decide on the best way to realize the project. Using the wrong method will lead to a lot of problem in the later stage. With proper guideline, we can identify the client's needs and finally fulfil them.
Interviewee 5	It depends. Sometime you would meet client who have decided on which procurement method that they want to use. But it would be good to have some selection criteria to select a procurement method to select the most appropriate one to avoid any possible problems.
Interviewee 6	Not really. The procurement method used is usually based on the expectation and the requirement of the client and set by the top management team. Procurement method is only the process to obtain the project.

6.4.4 Procurement Method Selection Criteria

The identified (international) selection criteria for procurement method selection established from Section 2.7.1 from authors such as Love et al (1997), Clamp (2007), NSWG (2008) and Ashworth (1998) are summarized as follow:

- The speed of the project
- The complexity of the project
- The quality required
- The flexibility for variation
- The certainty of time and cost
- The competition for the project
- Responsibility and role distribution
- Risk allocation of the project.

The scoring of each criterion for the local Malaysian market, by the interviewees, is shown in Table 6.6 and Figure 6.3. The scoring is from the scale of 1 to 5; 1 being the least important and 5 being the most important in the selection of procurement strategy. "X" denotes "Not Relevant" by the interviewee and no scoring was given to that criteria.

Table 6.6: Scores for Procurement Method Selection Criteria

(1 = Least Important, 5 = Most Important, X = Not Relevant)

Criteria	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6
Speed	4	4	4	4	5	4
Complexity	5	3	5	5	5	3
Quality	5	3	4	3	3	4
Flexibility	3	4	2	3	4	3
Certainty	X	4	4	4	4	5
Competition	4	4	4	4	4	3
Responsibility	4	4	3	5	X	4
Risk	5	5	5	5	5	2

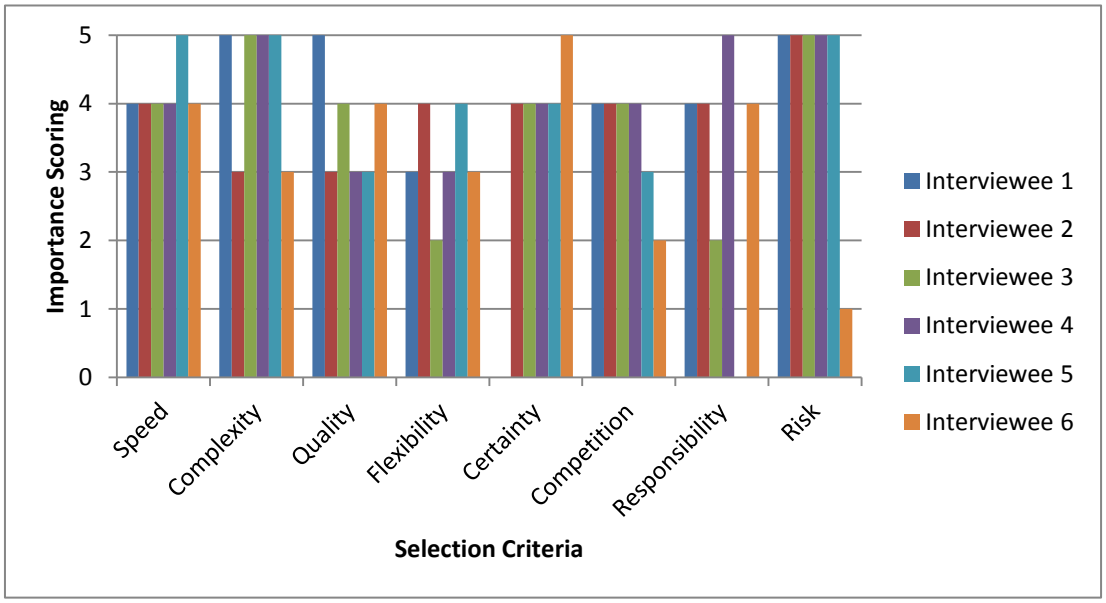


Figure 6.3: Procurement Method Selection Criteria Scores

From the scoring of each criterion, the total score is cumulated to obtain the percentage of weighting for each criteria and the overall ranking of the criteria. The calculation is summarized into Table 6.7.

Table 6.7: Ranking of Procurement Method Selection Criteria

Criteria	Points (Out of 183)	Calculation	Weight (%)	Ranking
Speed	25	$\frac{25}{183}\ x\ 100\%$	13.6	3
Complexity	26	$\frac{25}{183}\ x\ 100\%$	14.2	2
Quality	22	$\frac{25}{183}\ x\ 100\%$	12.0	5
Flexibility	19	$\frac{25}{183}\ x\ 100\%$	10.4	8
Certainty	21	$\frac{25}{183}\ x\ 100\%$	11.5	6
Competition	23	$\frac{25}{183}\ x\ 100\%$	12.6	4
Responsibility	20	$\frac{25}{183}\ x\ 100\%$	10.9	7
Risk	27	$\frac{25}{183}\ x\ 100\%$	14.8	1

From Table 6.7, the ranking of the identified selection criteria are as follow:

1) Risk allocation of the project.
2) The complexity of the project
3) The speed of the project
4) The competition for the project
5) The quality required
6) The certainty of time and cost
7) Responsibility and role distribution
8) The flexibility for variation

This ranking result will be used to establish the position of the criteria in the selection of procurement method decision flowcharts in later Chapter 7.

6.4.5 Correlation between Identified Selection Criteria and Procurement Methods

All the interviewees stated that risk is a very important criterion in the selection of procurement method. Traditional Procurement method would have lower risk distribution to

the contractor while for Design & Build Procurement method; the contractor would hold all the risk in construction and in design.

For complexity of the project, four (4) of the interviewees mentioned that it is a very important criteria in selection of procurement method. For a complex project, Design & Build Procurement method is good, having the design team and construction team working under the same management. Traditional Procurement method is also acceptable for a complex project. A small number of interviewees however stated that complexity of a project does not influence the selection of procurement method.

All interviewees described speed as important in procurement method selection, while one (1) states that it is a very important factor in selection. They all agreed that in term of speed or for a fast track project, Design & Build Procurement is a better procurement method. Traditional Procurement method brings the project in stages and is very time consuming.

Competition for a project plays an important role in procurement selection. The interviewees state that Traditional Procurement method would give more competition during tendering process. Design & Build Procurement method would give minimal competition, where most of the time it is dealt on a one-to-one basis between the client and management team. All interviewees agreed that competition is an important factor in procurement strategy selection. The interviewees also added that with competition, the costing could be kept at a controlled level.

According to one (1) of the interviewee, Design & Build Procurement method would give a better quality control over a project. All, however, disagreed that quality is influenced by the selection of procurement method. They added that quality of a project is not controlled by the procurement method chosen but by the capability of the management team in controlling the quality variables.

All but one (1) deemed the criteria of time and cost as important. Traditional Procurement method will provide a better certainty in time and cost, especially with a well drafted bill of quantities for estimation while Design & Build Procurement method is rigid and would have more approximations.

Another identified criterion is responsibility. A majority of the interviewees agreed that responsibility is important in procurement of a project, however, does not influence the selection of procurement method. A Traditional Procurement method would distribute the responsibility of design to the consultant and the construction to the contractor while in a

Design & Build Procurement method; the contractor would be responsible for both design and construction. Hence the contractor needs to have the ability to design in order to use Design & Build Procurement method. According to one (1) of the interviewees, generally the client would choose Traditional Procurement unless the project is a highly complex and highly fast track job.

A majority consented that flexibility is an important criteria in selection of procurement method while a minority believed that flexibility does not influence selection. Traditional Procurement which goes in stages is more flexible and has room for variation in the planning stage, while Design & Build Procurement method is more flexible during the construction stage.

Other than the identified criteria, some stated nature of work as an important criterion in procurement selection. The nature of the project whether it is civil work project, building work project or marine work project, which leads to the level of complexity of the project can determine a suitable procurement method.

All comments gathered from the interviewees are summarized in Table 6.8 in order to be coded towards correlation between the identified selection criteria and the selection of the appropriate procurement method. Such correlation results recorded together with the ranking of the selection criteria, present a way forward to derive a strategy for the selection of procurement method for the local Malaysian construction industry in Chapter 7, which although has been seen to be presented internationally by various authors as seen in Section 2.7.4., has not yet been explored for the Malaysian construction industry.

Table 6.8: Correlation of Identified Criteria and Procurement Methods

Criteria	Interviewee 1	Interviewee 2	Interviewee 3
Speed	Design & Build if the speed of the project is crucial.	Speed – Design and Build	If it is a fast track job, design and build is preferable. On the normal basis, traditional procurement would be chosen.
Complexity	Design & Build if the project is complex. Traditional Procurement will/ is favored if the project is not complex.	Do not really influence in the selection of procurement.	Design & Build is suitable for complex project. When the project is complex, you would want the builder and designer to be from the same company or side.
Quality	Traditional Procurement leads to more tendering, more completion and a better quality.	Not much effect in the selection of procurement.	For better quality control, I would say Design & Build would be able to control the quality of the project better.
Flexibility	Traditional Procurement is more flexible than Design & Build Procurement.	Traditional Procurement is more flexible. Design and Build is rigid, suitable for fast track project.	Flexibility is important in a project, but not much in influencing selection of a procurement type.
Certainty of time and cost	Not relevant.	If certain, Traditional Procurement Design and Build is more to estimation because it is done in fast track.	If time and cost is certain, traditional procurement.
Competition	Traditional Procurement, as there is higher bidder for tendering.	Traditional Procurement more competition. Design and Build usually one to one basis.	In traditional procurement, there would be more tenderers, compared to Design & Build which is usually a one to one case.
Responsibility	Generally client will choose Traditional Procurement unless speed and complexity is concerned.	Design and Build responsibility to the contractor. Traditional Procurement, design to consultant and construction to contractor.	No comment.
Risk	Traditional Procurement lower risk while Design & Build higher risk.	Risk higher for Design and Build.	Traditional Procurement has lower risk. Design & Build has higher risk.
Others	Nature of work is an important criterion. Whether it is civil works, building works marine works which leads to its complexity.	No comment.	No comment.

Table 6.8 (cont): Correlation of Identified Criteria and Procurement Methods

Criteria	Interviewee 4	Interviewee 5	Interviewee 6
Speed	Fast Track Project – Design and Build	Speed in the sense of fast track job, Design and Build is suitable for fast track job. Traditional Procurement goes in stages and time consuming.	Speed influences the selection on procurement method, mainly on the supply of materials and urgency of the project.
Complexity	Traditional Procurement and Design and Build Procurement are both okay for complex project.	If the project is complex, Design and Build is better procurement method. Traditional Procurement is also acceptable.	The nature of certain project requires application of different procurement strategy.
Quality	Quality of a project is important in procurement of a project but does not influence in the selection of procurement method.	Quality of a project is not controlled by procurement method but by the capability of the management people to control.	Different strategy gives different outcome of quality and end result. Design and Build gives higher end quality product.
Flexibility	Does not really influence in procurement selection as well.	Traditional Procurement is more flexible. It goes in stages, giving more time for changes during design phase and if the client decided to make sudden changes.	Different method gives different flexibility. Traditional Procurement gives high flexibility in planning stage, Design and Build gives high flexibility during construction.
Certainty of time and cost	Boost the confidence of the project if the funding and costing is sure. Time is to be control and not something that is certain.	Traditional Procurement would be more certain of time and cost. The party go in stages to come out with the design, bill of quantity would be more accurate.	Very important to justify project value and expectation of clients.
Competition	With competition, we could keep costing to a controlled level.	Traditional Procurement will give more competition during tendering process. Design and Build Procurement not really.	The criterion is only relevant to Traditional Procurement.
Responsibility	As a quantity surveyor, our responsibility is to evaluate and select the most appropriate procurement method for the client.	Do not influence selection.	Different type of responsibility for each strategy.
Risk	Everything has risk. How we decide to procure a project will bring different risk to the company.	Traditional Procurement will have lower risk compared to Design and Build Procurement.	All procurement strategy would have their own allocated risk.
Others	No comment.	No comment.	

6.5 Types of Contract

This section covers: the different type/s of contract that the interviewees have used; the current practice of companies in selecting the most appropriate type of contract; the opinion of the interviewees on a contract selection guideline; the relevancies and the importance of identified selection criteria in selecting the most appropriate type of contract; the ranking of the identified criteria based on the importance scoring; and, the correlation of these selection criteria with the selection of the contract types suitable for various procurement strategies

6.5.1 Types of Contract Used

From a Malaysian context, Lump Sum Contract, Measurement Contract (also known as Bills of Quantities contracts), and Turnkey Contract and Design & Build Contracts are the common contract types used latterly and currently in Malaysia. All interviewees have used Lump Sum Contract, Measurement Contract (BQ), Turnkey Contract and Design & Build Contract. A majority of the interviewees have used Cost Reimbursement Contract. One (1) of the interviewees mentioned that she knows about Cost Reimbursement Contract however the project that she was involved in until present has yet to involve the particular contract. A small number of the interviewees have used management type of contract which are Management Contract and Construction Management Contract. The rest of the interviewees have never been involved in Management Procurement and hence has never used management type of contracts. The types of contract used by the interviewees are summarized in Table 6.9.

Table 6.9: Types of Contract Used by Interviewees

Interviewee	1	2	3	4	5	6
Lump Sum Contract	✓	✓	✓	✓	✓	✓
Measurement Contract / Bill of Quantity	✓	✓	✓	✓	✓	✓
Cost Reimbursement Contract	✓		✓	✓	✓	
Turnkey Contract	✓	✓	✓	✓	✓	✓
Design and Build Contract	✓	✓	✓	✓	✓	✓
Management Contract				✓	✓	
Construction Management Contract				✓	✓	

6.5.2 Current Practice in Selection of Contract Types

Current practice in industry in the selection of contract type for a project is stated by the panel to be based on experience. All the interviewees stated that experience is the most important factor in the selection of a suitable contract type. From past-knowledge, they would identify the needs of the client and there-after select the most appropriate type of contract to correspond with the needs. Selection of contract types is also based on risk allocation of the project and the available information during contracting stage. The current practice in the local Malaysian construction industry in the selection of contract types is summarized in Table 6.10.

Table 6.10: Current Practice in Selection of Contract Types

	Current Practice
Interviewee 1	Normally go for tendering process. Tendering exercise be it Lump Sum or Measurement.
Interviewee 2	Based on criteria of the project. Similar to the criteria in your interview questions, through these criteria we would select the most appropriate contract type.
Interviewee 3	With proper evaluation and factoring of the known data as well as from experience, we would choose the most appropriate contract type to be used.
Interviewee 4	Experience based.
Interviewee 5	Based on experience, based on risk factor, based on the available information of the project.
Interviewee 6	Pre-decided before the initiating of the project by the management team.

6.5.3 The Need of Contract Types Selection Guideline

Whilst the Construction Industry Development Board (CIDB) of Malaysia have produced a pamphlet that discusses contract type selection, the interviewees agreed the CIDB document is somewhat overly general in its linkage of contract type with cost and risk, and that an objective, detailed, usable guideline for contract type selection is not currently available nor used by the local Malaysian building industry.

All interviewees agreed that having a proper selection guideline for the most appropriate contract type is important. By having a proper selection guideline for contract, the risk can be minimized and properly managed. One (1) of the interviewee commented that risk cannot be eliminated from a project but by selecting an appropriate contract, the risk will remain to be controlled properly. However, another interviewee said that although a proper selection guideline is good, it is still important for the personnel to have experience in contracting

before using the guideline, adding that any such guideline will be a good reference for people who are new to contracting in the Malaysian construction industry. The opinions of the interviewees on the selection guideline are summarized in Table 6.11.

Table 6.11: The Need for Contract Type Selection Guideline As Perceived by Interviewees

	The Need for Contract-Type Selection Guide
Interviewee 1	Yes. To minimize the risk and to lower the overall cost of the project.
Interviewee 2	Yes. Same to procurement strategy, from having a proper guideline to select a contract, we can control and manage the risk of a project properly. We cannot remove risk but we can control it.
Interviewee 3	Yes. For example lump sum contract. We cannot simply just use lump sum if we are not certain of the bill of quantities. But we also could not directly use measurement contract, which would put higher risk to our side. So a proper factor and evaluation is to be done before deciding which contract is to be use.
Interviewee 4	Yes. It would be good to document and form a guideline. But it would need to be used with personnel that already have experience in the field. It would be good reference for people who just starting to approach contracts.
Interviewee 5	Yes. It can balance the capability of the owner with the required risk to take. We can avoid unnecessary risk.
Interviewee 6	Yes. Having the appropriate contract type would help in solving future possible disputes.

6.5.4 Contract Type Selection Criteria

The identified selection criteria for contract type selection for international markets, established in Section 2.7.2 by authors such as Clamp et al (2007) and JCT (2006) are summarized as follow:

- The nature of work
- The scope of work
- The responsibility
- The certainty of time and final cost of the project
- Time against scope of work
- The variation of work
- The risk allocation of the project.

The scoring of each criterion by the interviewee is shown in Table 6.12 and Figure 6.4. The scoring is from the scale of 1 to 5; 1 being the least important and 5 being the most important in the selection of procurement strategy. "X" denotes "Not Relevant" by the interviewee and no scoring was given to that criteria.

Table 6.12: Scores for Types of Contracts Selection Criteria

(1 = Least Important, 5 = Most Important, X = Not Relevant)

Criteria	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6
Nature of Work	5	4	4	5	4	5
Scope of Work	5	4	4	5	4	2
Responsibility	4	4	3	4	X	3
Certainty	5	4	5	4	5	5
Time	4	4	2	4	4	4
Variation	4	4	4	4	4	X
Risk	5	5	5	5	5	4

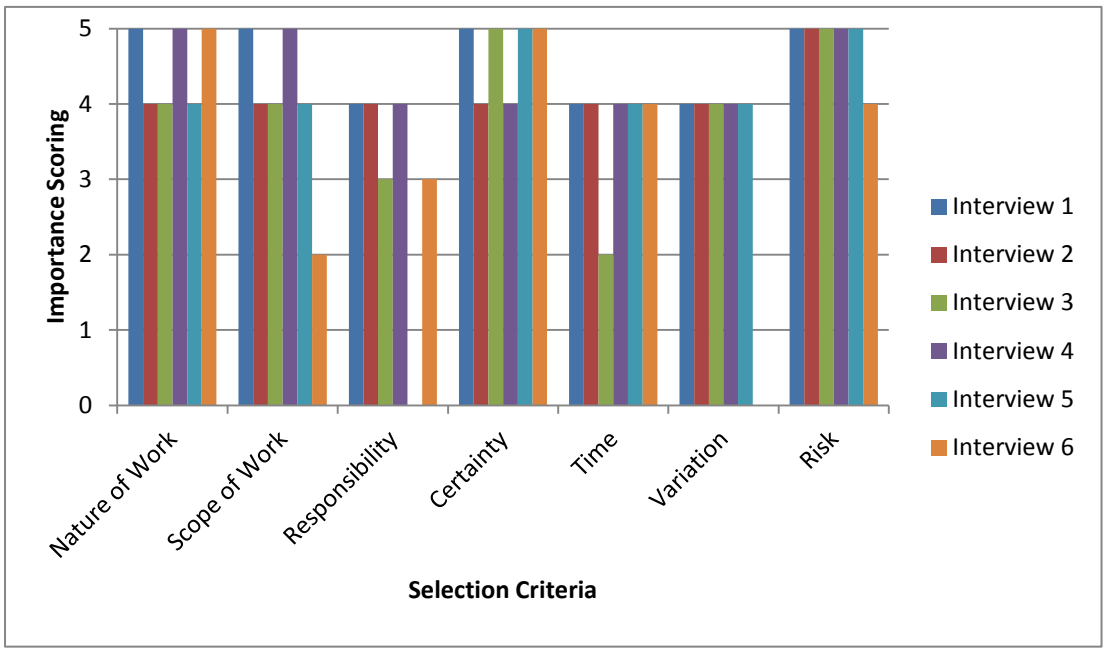


Figure 6.4: Type of Contract Selection Criteria Scores

From the scoring of each criterion, the total score is cumulated to obtain the percentage of weighting for each criteria and the overall ranking of the criteria. The calculation is summarized into Table 6.13.

Table 6.13: Ranking of Contract Type Selection Criteria

Criteria	Points (Out of 168)	Calculation	Weight (%)	Ranking
Nature of Work	27	$\frac{27}{168}\ x\ 100\%$	16.1	3
Scope of Work	24	$\frac{24}{168}\ x\ 100\%$	14.3	4
Responsibility	18	$\frac{18}{168}\ x\ 100\%$	10.7	7
Certainty	28	$\frac{28}{168}\ x\ 100\%$	16.6	2
Time	22	$\frac{22}{168}\ x\ 100\%$	13.1	5
Variation	20	$\frac{20}{168}\ x\ 100\%$	11.9	6
Risk	29	$\frac{29}{168}\ x\ 100\%$	17.3	1

From Table 6.13, the ranking of the identified criteria are as follow:

1) The risk allocation of the project
2) The certainty of time and final cost of the project
3) The nature of work
4) The scope of work
5) Time against scope of work
6) The variation of work
7) The responsibility

This ranking result will be used to establish the position of the criteria in the selection of contract type decision flowcharts in later Chapter 7.

6.5.5 Correlation between Identified Selection Criteria and Contract Types

All of the interviewees agreed that risk is an important criterion in selection of which contract type to use. In using a Lump Sum contract, the risk is lower for the developer as the price for construction is capped to a maximum price, placing more liability on the contractor if the cost for construction exceeds the maximum cap. In using Measurement and Cost Reimbursement contracts however, higher risk is placed with a developer as these contract types may lead to a higher price. Design & Build and Turnkey contracts are regarded as holding higher risk as the

main party is required to both design and construct the project, whereas in Malaysia Turnkey contracts are required to self-fund projects which results in even higher risk.

A majority stated that when the project time and final costing is certain, a lump sum contract would be applicable. When it is not certain, a Measurement Contract would be more suitable, however risk would be higher in using Measurement Contract because the price of the project is not capped to a maximum price. However, One (1) disagreed, stating that no one could be certain on the time and cost of a project, but that these criteria need to be managed and controlled properly, hence stating that all types of contract are acceptable for this criteria.

In selecting of contract types, all of the interviewees agreed that nature of work play an important role in the selection of contract types. When the project is big, complex and fast-track, Turnkey Contract or Design and Build Contract would be acceptable, stating that a Turnkey Contract requires self-funding until completion of the project. For other scenarios/ project natures, Lump Sum Contract, Measurement and Cost Reimbursement Contract are all acceptable.

All of the interviewees argue that the scope of work of a project influences the selection of contract types. One (1) of the interviewee stated that when the scope of work of a project is small, variation of work would be minimal and Lump Sum Contract would be ideal. This was added by another interviewee that if the scope of work is confirmed and known, a Lump Sum Contract would be the ideal contract to use. If the project scope of work is big and may vary, Measurement Contract or Cost Reimbursement Contract could be used instead.

All of the interviewees agreed that time as an important criterion in a project. When time is critical and it is insufficient to do full design calculation of the project, Cost Reimbursement Contract is suitable to be used. If there is ample time to fully prepare the design calculation, Lump Sum Contract is preferable compared to Cost Reimbursement Contract. Another interviewee stated that if time is of the essence and there is a lot of work involved, it is considered as a fast-track job, Design & Build Contract would be more suitable to be used.

All of the interviewees agreed that variation of work plays an important role in selection of contract type. A Lump Sum Contract is rigid and has minimum space for variation and should be avoided if the project may have many variation of work. Measurement and Cost Reimbursement contract however give a better space for variation of work and would be more suitable. Turnkey or Design & Build Contract are also deemed as suitable when the project may vary.

Another identified criterion is that of responsibility, which was said to play no role in the selection of contract types by the interviewees. Responsibility and role distribution do not influence the selection of the contract type, and any contract type is acceptable and could be used irrespective of your role in the project.

All comments from the expert interviewees are summarized in Table 6.14 towards coding and correlation between the identified selection criteria and the selection of the appropriate contract types. Such correlation results recorded together with the ranking of the selection criteria, present a way forward to derive a strategy for the selection of contract types for the local Malaysian construction industry in Chapter 7. Whilst such a guide is available internationally (Section 2.7.4), and in an overview publication by the Malaysian Construction Industry Development Board (CIDB) linking contract type with cost and risk in a very general fashion, there has been no attempt to provide detailed, objective, weighted-criteria guidance for the local industry.

Table 6.14: Correlation of Identified Criteria and Types of Contract

Criteria	Interviewee 1	Interviewee 2	Interviewee 3
Nature of work	Can be lump sum, measurement and cost reimbursement.	If the project is complex- Design and Build	When the nature of work is fast or complex, Design and Build Contract. The rest are suitable for other nature.
Scope of work	Can be lump sum, measurement	Similar to nature of work.	When the scope of work is big, I would say measurement contract.
Responsibility	Can be all	Not much effect in the selection of contract type.	Does not influence much, all are acceptable.
Certainty of time and final cost	If time and final cost is certain, lump sum contract. If not certain, measurement contract.	Bill of quantity – Certain in cost.	Lump sum contract is cost is certain. If not certain, measurement contract.
Time against scope of work	When time is critical and insufficient to do full design calculation, cost reimbursement. If have time to do full design, lump sum contract is preferable.	Design and Build from the same company, lead to smoother work coordination.	All are acceptable when time is concern. It does not influence the choice of contract to be used.
Variation of work	If work may vary, measurement and cost reimbursement contract.	Design and Build a lot of variation. Lump Sum give minimum space for variation.	Cost reimbursement contract when the work may vary.
Risk Allocation	Lump Sum risk is lower for developer with the price capped. Measurement and Cost Reimbursement contract may lead to higher price.	Design and Build has higher risk.	Risk is more to the developer when uses measurement contract and cost reimbursement contract, more to the contractor for lump sum contract.
Others	No Comment	No Comment.	No Comment.

Table 6.14(cont): Correlation of Identified Criteria and Types of Contract

Criteria	Interviewee 4	Interviewee 5	Interviewee 6
Nature of work	Simple Project – Lump Sum, Measurement. Complex – Design and Build. Fast Track – Turnkey, Design and Build	All contract type are acceptable when refer to nature of work of a project.	Nature of work normally decides on what kind of contract will be used for the project.
Scope of work	Big – Design and Build Small – Lump Sum. The smaller the project, the variation would be less. Lump Sum contract need to have minimal variation.	If the scope of work is confirm and known, lump sum contract. If it is unsure or may vary, measurement contract or cost reimbursement contract.	Less important in deciding which type of contract to be used for a project.
Responsibility	All types are acceptable. Responsibility and role play minimum role here.	Do not influence selection.	Different type of contract gives different kind of responsibility.
Certainty of time and final cost	All types are acceptable. No one can be certain on these criteria, but they are to be managed and controlled properly.	If certain, lump sum would be good. Schedule of rates if not certain, however the risk is higher.	The most important criteria in deciding which contract type of contract to use.
Time against scope of work	If time is short, work is a lot, it is considered fast track job. Turnkey or Design and Build would be good.	Fast track job you would go for design and build procurement and contract.	Some contract type can provide better time completion with similar scope of work.
Variation of work	Variation leads to extension of time (EOT) and involves extra cost. Lump Sum should be avoided.	If work may vary, cost reimbursement is more suitable. Measurement contract is also acceptable.	Not relevant.
Risk Allocation	Design and Build – Risk Higher. Turnkey – Full Fledged Design and Build and is self-funded, higher risk.	Lump sum has low risk on client, higher risk on the contractor.	Allocation of risk to the contractor, implementer or client.
Others	No Comment	No Comment	

Table 6.15 below presents the data gathered from the interviewees, which correlates suitable procurement methods with the various contract types available. This is important to establish the relationship between the components of the procurement strategy to be established.

Table 6.15: Correlating Procurement Method with Various Contract Types

	Procurement Strategy and Contract Types
Interviewee 1	Traditional Procurement – Lump Sum Contract, Measurement Contract, Cost Reimbursement Contract Design and Build Procurement – Turnkey Contract, Design and Build Contract, Measurement Contract, Cost Reimbursement Contract
Interviewee 2	Traditional Procurement – Lump Sum Contract, Measurement Contract. Design and Build Procurement – Turnkey Contract, Design and Build Contract, Measurement Contract.
Interviewee 3	Traditional Procurement – Lump Sum Contract, Measurement Contract. Design and Build Procurement – Turnkey Contract, Design and Build Contract.
Interviewee 4	Traditional Procurement – Lump Sum Contract, Measurement Contract. Design and Build Procurement – Turnkey Contract, Design and Build Contract Management Procurement – Management Contract, Construction Management Contract.
Interviewee 5	Traditional Procurement – Lump Sum Contract, Measurement Contract. Design and Build Procurement – Turnkey Contract, Design and Build Contract Management Procurement – Management Contract, Construction Management Contract.
Interviewee 6	Traditional Procurement – Lump Sum Contract, Management Contract Design and Build Procurement – Turnkey Contract, Design and Build Contract

6.6 Standard Forms of Contract

This section covers: the different standard form/s of contract that the interviewees have used; the current practice of the company in selecting the most appropriate form of contract; the opinion of the interviewees on standard form selection guideline; the relevancies and the importance of identified selection criteria when selecting the most appropriate standard forms; the ranking of the identified selection criteria based on the importance scoring; the correlation between the selection criteria when the selection of the appropriate forms including the advantages and disadvantages when using the forms.

6.6.1 Standard Forms of Contract Used

In Malaysia, as mentioned in previous chapters, the typical standards used by the local construction industry to execute the projects are: PWD 203 Form, JKR Sarawak Form of

Contract, PAM 2006 Form, IEM 89 CE and CIDB 2000. All interviewees have used JKR 2006 Form and PWD 203 Form. Five (5) of the six interviewees have used PAM 1998 Form and PAM 2006 Form. IEM 1989 and CIDB 2000 Forms show limited usage by the interviewees (argued as reflective of industry locally); interviewees state that IEM and CIDB Forms are not new and were rolled out to industry over a decade ago but to this day have not yet been picked up and remain unpopular. The standard forms of contract used by the interviewees are summarized in Table 6.16.

Table 6.16: Standard Forms of Contract Used by the Interviewees

Interviewee	1	2	3	4	5	6
JKR 2006 Form	✓	✓	✓	✓	✓	✓
PWD 203 Form	✓	✓	✓	✓	✓	✓
PAM 1998/2006 Form	✓	✓	✓	✓	✓	
IEM 1989 CE Form			✓		✓	
CIDB 2000 Form			✓		✓	

6.6.2 Current Practice in Selection of Standard Forms of Contract

The interviewees stated that in selecting which standard forms of contract to use, one of the most important criteria is familiarity with that specific standard form; adding that they would try to avoid unfamiliar standard forms.

Another factor in the current practice of selection of standard form is the nature of the project: PAM form preferable if a building project, while the IEM form preferred for civil works. All of the interviewees also agreed that if the project is a government project, there is no selection option and they are required to use JKR 2006 Form if the project is from the East Malaysian Sarawakian State Government and PWD 203 Form if it is a Federal Malaysian Government project.

Data gathered on the current practices in the selection of a Standard Form of Contracts are summarized in Table 6.17.

Table 6.17: Current Practice in Selection of Standard Forms of Contract

	Current Practice Influencing Standard Forms Selection
Interviewee 1	Depends on the nature of work. Building project use PAM form. Civil work uses either PAM or FIDIC if international. Government projects use PWD forms.
Interviewee 2	Based on the client requirement, how the client want the project to be manage, what is the selected procurement type, how long is the time allocated to prepare for the project.
Interviewee 3	When the project is from the government, we will definitely be using PWD form. If it's a private job, PAM is preferable. Engineering job we would choose between PAM form and IEM form. We don't use CIDB forms.
Interviewee 4	Depend on who the clients are, what are their requirement and needs, limitation and strength, customizing it to serve the best interest of the client.
Interviewee 5	Not much of selection, we use PAM form and PWD form. The practice is to use the same form and familiarize with the form. We need to be familiar with the forms to use the forms effectively.
Interviewee 6	Decided by source of funding. Funding by Sarawak government would require JKR 75, while funding by the federal government would require JKR 203.

6.6.3 The Need of Standard Form of Contract Selection Guideline

A majority agreed that having an objective selection guideline for the most appropriate standard form of contract would be beneficial. One (1) specified that different standard forms have different attributes and having a proper structured guideline to select the most appropriate form on different situations would be good, however must be used with personnel who are experienced as well. Another interviewee added that by having a proper selection guideline, risk could be better addressed, managed and minimized. A lesser number however, disagreed that having a selection guideline for the most appropriate standard form of contract would be beneficial. The interviewees opined that the choices of standard forms are not that many and the best way of selection would still be to select those that they are most familiar with, namely PWD Forms and PAM Forms.

The opinions of the interviewees on standard forms of contract selection guideline are summarized in Table 6.18.

Table 6.18: The Need for Standard Forms of Contract Selection Guideline as Perceived by Interviewees

	The Need for Standard Form Selection Guide
Interviewee 1	Not necessarily in Malaysia. For civil works, generally everyone uses PWD. For building works everyone uses PAM. For international projects use FIDIC. Private clients prefer PAM. For Government projects definitely use PWD forms.
Interviewee 2	Having a proper guideline to select the most appropriate form on a given situations would be good, as CIDB is a fairer contract but not used so needs justification, whilst PWD is more favorable towards private clients, and is also fairer.
Interviewee 3	Our choices locally are not extensive. When the project is from the government, we definitely use PWD form. If it's a private job, PAM is preferable. Engineering job we would choose between PAM form or IEM form. We don't use CIDB forms.
Interviewee 4	An objective contract selection guide would be useful to make sure that risk can be properly managed, and minimise the impact of risk.
Interviewee 5	Not needed in Malaysia. In Malaysia our standard forms are not that; if it is a government project, we are required to use PWD forms. Out of government projects, we would use the forms we are familiar with, mainly PAM form.
Interviewee 6	Yes useful; knowing the advantages and disadvantages of each form and the nature of contract & utilization of the standard form would be good.

6.6.4 Standard Form of Contract Selection Criteria

The identified selection criteria for standard forms selection described and established in Section 2.7.3, from authors such as Ramus et al (2006), Clamp et al (2007), Ashworth (1998), Macpherson (2011) and the local CIDB (2005) are summarized below as follow:

- The selected procurement method
- The selected contract type
- The nature of work
- The sector involved in the project
- The clarity of the form
- The completeness of the form
- The comprehensiveness of the form
- The flexibility of the form
- The form provision for a clear framework for project management
- The risk and role distribution of the project.

The scoring of each criterion by the interviewees is shown in Table 6.19 and Figure 6.5. The scoring is from the scale of 1 to 5; 1 being the least important and 5 being the most important in the selection of standard form of contract. "X" denotes "Not Relevant" by the interviewee and no scoring was given to that criteria.

Table 6.19: Scores for Standard Forms of Contract Selection Criteria

(1 = Least Important, 5 = Most Important, X = Not Relevant)

Criteria	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6
Procurement	5	5	5	5	5	1
Contract	5	4	5	5	5	3
Nature of Work	5	5	5	5	5	4
Sector	5	5	5	5	5	5
Clarity	5	4	4	4	4	3
Completeness	4	3	3	4	3	4
Comprehensiveness	4	4	4	4	3	4
Flexibility	4	3	3	4	3	3
Clear framework	4	4	3	4	4	3
Risk and Role	3	4	4	5	5	4

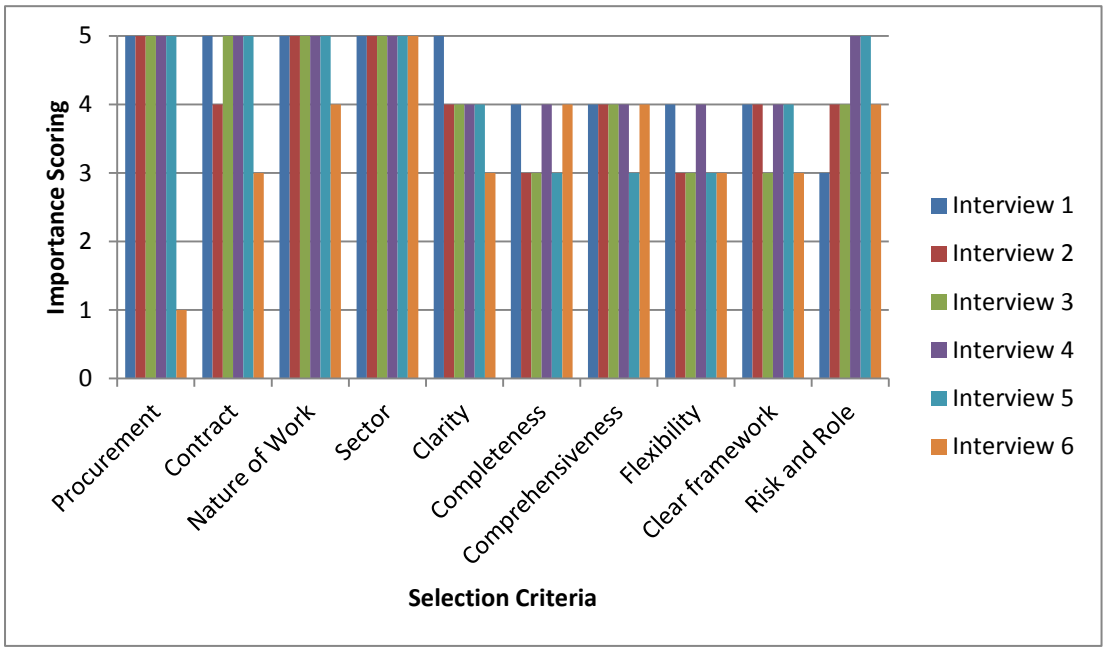


Figure 6.5: Standard Form of Contract Selection Criteria Scores

From the scoring of each criterion, the total score is cumulated to obtain the percentage of weighting for each, and then the overall ranking of the criteria. The calculation is summarized into Table 6.20.

Table 6.20: Ranking of Standard Form of Contract Selection Criteria

Criteria	Points (Out of 247)	Calculation	Weight (%)	Ranking
Procurement	26	$\frac{26}{247}\ x\ 100\%$	10.5	4
Contract	27	$\frac{27}{247}\ x\ 100\%$	10.9	3
Nature of work	29	$\frac{29}{247}\ x\ 100\%$	11.8	2
Sector	30	$\frac{30}{247}\ x\ 100\%$	12.2	1
Clarity	24	$\frac{24}{247}\ x\ 100\%$	9.7	6
Completeness	21	$\frac{21}{247}\ x\ 100\%$	8.5	9
Comprehensiveness	23	$\frac{23}{247}\ x\ 100\%$	9.3	7
Flexibility	20	$\frac{20}{247}\ x\ 100\%$	8.1	10
Clear Framework	22	$\frac{22}{247}\ x\ 100\%$	8.9	8
Risk and Role	25	$\frac{25}{247}\ x\ 100\%$	10.1	5

From Table 6.20 the ranking of the identified criteria are as follow:

1) The sector involved in the project
2) The nature of work
3) The selected contract type
4) The selected procurement method
5) The risk and role distribution of the project
6) The clarity of the form
7) The comprehensiveness of the form
8) The form provision for a clear framework for project management
9) The completeness of the form
10) The flexibility of the form

This ranking result will be used to establish the position of the criteria in the selection of standard form of contract decision flowcharts in later Chapter 7.

6.6.5 Correlation between Identified Selection Criteria and Standard Forms of Contract

Based on the criteria of *sector*, all of the interviewees agreed that if it is a government project, PWD Forms are to be used. In the east Malaysian State of Sarawak, if the project is funded by the federal government, PWD 203 form is to be used and if the project is funded by the state government, JKR 2006 form is to be used. If it is a private project, any other forms may be used and the selection will be based on all the rest of the criteria.

All of the interviewees stated that the *nature of work* is an important criteria in the selection of standard forms of contract. PAM Form would be preferred for building work project while IEM Form would be preferred for civil work project. For smaller sized project, CIDB Form may be acceptable. For fast track job, PAM Form is preferable. For international project, FIDIC Form would be used.

For *contract types*, PWD 203 A Forms, PAM Forms and CIDB 2000 are said to be suitable for Lump Sum contract. For Measurement Contract and Cost Reimbursement Contract, it is said that PAM Forms would be preferred. JKR Sarawak Form of Contract, IEM Forms would really be suitable for Lump Sum Contract and Measurement Contract. One (1) of the interviewees commented that in relation to contract types, all standard forms of contract are acceptable to varying degrees with some modifications, but stated that modifications must be done with care through legal advisors and experienced contract personnel.

All of the interviewees agreed that *procurement method* is an important criterion that influences the selection of standard form of contract. PWD Forms, PAM Forms and CIDB Forms are suitable for Traditional Procurement. PAM Forms, CIDB Forms and FIDIC Forms are suitable for Design & Build Procurement. For Management Procurement, FIDIC Forms is said to be suitable.

All of the interviewees stated that *risk* and *role* distribution is important. One (1) of the interviewee mentioned that JKR 2006 form gives more involvement for the (distant) client, while PWD 203 form gives most of the authority to the (on site) superintending officer. PWD forms are also said to be client friendly, playing more risk on the contractor. PAM form gives more authority to the architect. Another interviewee stated that CIDB forms distribute the risk fairer between the client, and contractor involved in the project.

All interviewees agreed that *clarity* influences the selection of standard forms of contract to use. One (1) of the interviewees mentioned that the PAM form is clear and uses language that

is easily understandable by the user, even when they are not contract personnel. Two (2) of the interviewees also stated that CIDB form also uses clear language and can be easily understood. Another interviewee stated that PWD 203 form has clearer language compared to JKR 2006 form. Implicitly, these comments were based upon the level of familiarity of the respective forms

All the interviewees pointed out that *comprehensiveness* is important in deciding which standard form of contract to use. CIDB form is stated to be the most comprehensive form available; however has nominal popularity. JKR 2006 form and PAM form are said to be the next in line as the most comprehensive (in-use) form available.

All interviewees mentioned that form provision for a *clear framework for project management* is important in helping to decide which standard form of contract to use. It was stated by those familiar with the CIDB form, that CIDB does provide a clear framework for project management. One (1) stated that PAM form also provides a clear framework for project management.

All interviewees agreed that the *completeness* of the form is important. The interviewees mentioned that PAM form and PWD 203 form provides good coverage for possible occurring issues on site. PWD 203 form would be suitable to use for government funded projects while PAM form would be suitable for private funded projects.

In term of *flexibility* of the form, all of the interviewees agreed that it plays a significant role in deciding which standard form of contract to use. Interviewees agreed that if the form can be used to resolve unexpected issues on site, then it is a flexible form. Four (4) of the interviewees mentioned that the JKR 2006 form provides them with their preferred level of flexibility as it gives them especially the Client's specific authority over the Superintending Officer and Contractor. A small few also mentioned that CIDB form and PAM form also provide high levels of flexibility but more in problem solving.

Information gathered from the interviewees on the correlation between the identified criteria and the selection of standard forms is summarized in Table 6.21. Such correlation results recorded together with the ranking of the selection criteria, present a way forward to derive a strategy for the selection of standard forms for the local Malaysian construction industry in Chapter 7

Table 6.21: Correlation of Identified Criteria and Standard Forms of Contract

Criteria	Interviewee 1	Interviewee 2	Interviewee 3
Procurement	Traditional Procurement – PWD and PAM Design and Build – PAM and FIDIC	PWD and PAM acceptable for traditional procurement. PAM if Design and Build procurement	Traditional Procurement – PWD and PAM Design and Build – PAM and FIDIC
Contract	Lump Sum – All Measurement – All Cost Reimbursable – PAM but others can be modified	Lump Sum – PWD and PAM preferred Measurement – PAM preferred Cost Reimbursable – PAM but others can be modified	Lump Sum – All Measurement – All Cost Reimbursable – PAM but others can be modified
Nature of work	Very Important. Building – PAM Civil – PWD of FIDIC International – FIDIC	Complex – Design and Build – PAM Government Projects – PWD	For building works– PAM Civil – PWD and IEM International – FIDIC
Sector	Private - PAM Government - PWD	Private - PAM Government - PWD	Private – PAM, IEM Government - PWD
Clarity	On the normal basis, if the project is not funded by the government, PAM form would be used.	PAM Form is easily understandable and you do not need contract experienced personnel to understand the form.	In term of clarity, PAM form would be preferable. Second to PAM form would be CIDB form
Completeness	PAM Form provides a better coverage on possible occurring issues on site.	PAM and PWD 203 form provide good coverage on possible occurring issues on site.	For government projects, PWD 203 gives a better covering of possible relevant issues. For non-government projects, PAM form would give better coverage.
Comprehensiveness	In term of comprehensiveness, all forms are acceptable.	JKR 2006 form and PAM form is a good comprehensive form.	CIDB would be preferable in term of comprehensiveness compared to the rest of the forms. It is a good form.
Flexibility	JKR 2006 and PAM forms are considered as the more flexible form. Superintending Officers are given a high level of power to decide.	Depending on the sector of the project, PAM Form and JKR 2006 form would be preferable in term of flexibility.	CIDB form provides high level of flexibility compared to other forms in terms of solving problems. It has option modules to choose from.
Clear Framework	In term of clear framework of the form, all forms are acceptable.	No comment.	CIDB provides a clear structure of framework for project management, followed by PAM form.
Risk and Role	PWD 203 and JKR 2006 forms are client favorable. PAM form gives more power to the architects.	PWD form and JKR form are client favored. It is not necessary good.	CIDB form distributes the risk fairer compared to PWD Forms which distribute more risk to contractor.

Table 6.21 (cont): Correlation of Identified Criteria and Standard Forms of Contract

Criteria	Interviewee 4	Interviewee 5	Interviewee 6
Procurement	Traditional Procurement – PWD and PAM Design and Build – PAM Management - FIDIC	Traditional Procurement – PWD, PAM, CIDB Design & Build – PAM, CIDB Management Procurement– PAM	Procurement method is just the process in acquiring a project.
Contract	Lump Sum – All Measurement – All Cost Reimbursable – PAM but others can be used generally. Some changes in other part of documents may be required.	Lump Sum Contract – PWD, PAM, CIDB preferred Generally all are acceptable in relation to contract types but need some modifications. But it is important not to make modifications that is not run though by lawyers first.	All standard forms are designed for these 3 contract types but cost reimbursable are lesser used and therefore not obvious.
Nature of work	Highly Specialized Work – Design and Build. - PAM Fast Track - PAM	Building works - PAM Civil Works - IEM Smaller Project – CIDB	Funding from Sarawak Government lead to using JKR 2006 while funding from federal government PWD 203.
Sector	Government – PWD Private all are okay	Government Projects - PWD Private – All are acceptable	JKR 2006 - Sarawak PWD 203 - Federal
Clarity	PAM Form and PWD 203 Form	PAM Form and CIDB Form is simple in the language used and could be easily understood.	PWD 203 form is better in clarity compared to JKR 2006 form.
Completeness	PWD 203 Form would be preferable in term of covering possible occurring issues on site; however the form is client favourable.	I would say PWD 203 provides a better coverage on possible occurring issues on site, followed by PAM form.	PWD 203 form is better in completeness compared to JKR 2006 form.
Comprehensiveness	All forms are supposed to be comprehensive and able to provide procedures to solve occurring issues on site. PAM form is definitely better than PWD form.	CIDB form is the most comprehensive form available; however it has not gained popularity in usage.	JKR 2006 form is more comprehensive than PWD 203 form.
Flexibility	If flexibility is required in the project, JKR 2006 form would be preferable because Superintending Officer can decide but clause let Client places control over the Superintending Officer, which other forms do not have.	CIDB form is highly flexible compared to other available forms in Malaysia because it really put forward a lot remedies for problem solving on site.	JKR 2006 form is more flexible compared to JKR 203 form because Superintending Officer can decide in many situations but clause let Client places control over the Superintending Officer, which other forms do not have.
Clear Framework	All forms are supposed to have clear framework for project management. He believed CIDB was designed for project management but he has not used it before	CIDB provides a clear framework for the management team to follow.	No comment.
Risk and Role	JKR 2006 form requires involvement from the client while JKR 203 gives most of the power to the Superintending Officer on site.	JKR 2006 would involve the client more.	No comment.

6.6.6 Known Advantages and Disadvantages of the Standard Forms

Despite the endorsements given above in section 6.6.5, the experts did identify a number of difficulties experienced in the use of the available forms.

According to one (1) of the interviewee, the JKR 2006 Form also known as JKR Sarawak Form, is client-favoured (respondents generally sought to avoid the term biased). Another interviewee stated that many clauses are drafted to give Superintending officers lots of room to make client-friendly decisions, which of course is good for the Client, and why even private clients in Sarawak opt for this form for their project.

For PWD 203 Form, one (1) of the interviewee stated that the all the certificates produced are neither final nor conclusive and may be subjected to changes, which will disadvantage the contractor. Another interviewee also stated that the PWD 203 Form now allows claims of 100% of materials on-site (which is not favoured by the client), and no option to claim off-site or prefabricated materials in prefabrication yards (which is not favoured by the Contractor). All of interviewees stated that PWD 203 Form is generally client-favoured(/biased) compared to other forms.

A disadvantage argued for PAM Form is the ambiguities (again) related to claims for both on-site and off-site materials; materials on site do not seem to belong to the client unless as part of completed work sections done, excluding contractor claims for materials made available on site. Another disadvantage of PAM Form is that application of Extension of Time (EOT) must be applied within a (relatively too short) range of time, and failure to apply within the required range of time results in both rejection of EOT, and any subsequent related claim for expenses.

The disadvantage of both IEM Forms used for Engineering and Civil work projects and CIDB Forms are that they are generally unavailable for selection without good reason, and that this is likely to continue. There is a perception also that CIDB is too contractor-friendly (particularly with its provision for a relatively longer period to seek (late) payment for work done) which is again argued to continue to restrict potential uptake.

Data gathered related to known advantages and disadvantages of the Standard Forms of Contract are summarized in Table 6.22.

Table 6.22: Summarised Known Advantages and Disadvantages of Standard Forms as Opined by the Key Practitioners Interviewed

	Known Advantages and Disadvantages
Interviewee 1	JKR 2006 form (JKR Sarawak) – Client favourable, Client has the ultimate say. PWD 203 form – Client favourable, Government friendly. PAM 1998/2006 form – 1998, client favorable, 2006 more balanced but there are still a fair bit of ambiguities especially in the earlier clauses. IEM 1989 form – No Comment CIDB 2000 form – Only used in smaller contracts, not popular.
Interviewee 2	JKR 2006 form (JKR Sarawak) – No comment. PWD 203 form – can claim 100% of material on site, cannot claim off site materials PAM 1998/2006 form – Can claim full material on site and off site IEM 1989 form – Outdated form CIDB 2000 form – No comment.
Interviewee 3	JKR 2006 form (JKR Sarawak) – It is more client favorable. PWD 203 form – It is more client favorable. PAM 1998/2006 form – It is fairer to the contractor. IEM 1989 form – Mainly used for engineering projects. CIDB 2000 form – No comment. It is rarely chosen.
Interviewee 4	JKR 2006 form (JKR Sarawak) – Final certificate is final and conclusive. PWD 203 form – Final certificate is not final and conclusive. PAM 1998/2006 form – Material practicality on site does not belong to the client unless it is work done although client has to pay. EOT need to be applied within certain range of time, failure to do so would cause the loss of right to claim. IEM 1989 form – No comment. CIDB 2000 form – Entitled for interest for later payment.
Interviewee 5	JKR 2006 form (JKR Sarawak) – Client favorable. PWD 203 form – Client favorable. PAM 1998/2006 form – A more balanced form compared to PWD forms. The contractor can claim the full amount of material on site as well as off site. IEM 1989 form –Outdated. Many clauses need revamping. CIDB 2000 form – Contractor favorable.
Interviewee 6	JKR 2006 and PWD form are government form and therefore contracting parties have to adhere to that.

6.7 Section Summary

As seen in previous studies in the Literature Review on selection of procurement type or, selection of contract type or, selection of standard form of contract are somewhat available for international markets, but thus far there has been no attempt to derive an all-encompassing set of procurement guidelines for the Malaysian construction industry.

Main findings from the results presented in this chapter can be summarised as follows:

1) There is indeed a lack of a systematic procurement strategy selection method locally, able to objectively direct the selection of a procurement method, and contract type, and finally assist in guiding the selection of a standard form of contract in Malaysia.
2) A majority of the industry experts consulted argue that an objective guideline would be of use and importantly help justification of choice and go towards improving efficiency of procurement management in the industry.
3) A noteworthy minority of interviewees however, opined that there is no need for such a guideline, because 'industry already knows what to do'; perhaps however, the viewpoint expressed that 'experienced specialists need no guidance', might be argued to somewhat reinforce current procurement selection routes as being overly reliant upon inherent past experience and subjective familiarity.
4) It is argued here that, both agreement and disagreement with the need for an objective guide, does indeed re-establish the call for a formal, logical selection strategy for project procurement in Malaysia.
5) Selection criteria for selection of procurement type or, selection of contract type or, selection of standard form of contract have been established, verified and ranked/weighted by the interviewees, proving their relevancies and importance to Malaysian construction procurement framework.
6) Importantly this section of the research work, presented here in Chapter 6, has established the correlation(s) between the various procurement methods, contract types and standard forms available in terms of their respective selection criteria.
7) The findings from this correlation study can now be taken forward to establish a locally applicable procurement strategy, in the form of framework decision flow charts; these decisions flow charts are discussed in detail below in Chapter 7.

7. PROCUREMENT SELECTION FRAMEWORK

7.1 General Overview of Chapter

This chapter builds upon the results from the ranking and correlation study detailed in Chapter 6 for the various procurement methods, contract types and standard forms of contract and their respective weighted criteria, to derive a procurement selection framework towards guidance of choice of appropriate standard forms.

Based on the correlation study, the identified selection criteria for each component of the strategy will now be linked with suitable project-specific questions that address all (weighted) important criterion; the (input of an) answer to the derived (project-specific) questions will then lead to (output) guidance for the most appropriate procurement method, contract types and standard form of contract.

Discussion below presents the overall procurement selection framework developed from this work in the form of decision flow charts which include procurement method selection, contract type selection, and standard form of contract selection.

A programme has subsequently been developed from the flow-chart framework, to provide practitioners with an easy-to-use decision making tool. Decision flow charts in combination with the enhancement modules derived in Chapter 5 provide a complete procurement selection framework for construction projects in Malaysia.

The following Table 7.1 provides the general overview of this chapter and Figure 7.1 points to the stage of research in the logic flow of work towards an original contribution of knowledge.

Table 7.1: General Overview of Chapter 7

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 6	*As previous*		
Chapter 7	Procurement Selection Framework: 7.1 General Overview of Chapter 7.2 Procurement Method Selection Framework 7.3 Contract Type Selection Framework 7.4 Standard Forms of Contract Selection Framework 7.5 Combined Decision Flowchart 7.6 Program Designed 7.7 Incorporation of Enhancement Modules 7.8 Section Summary	Chapter 7 presents the correlations in the form of derived questions for the selected criteria with the procurement methods, contract types and standard forms of contract. Decision flowcharts to select the procurement methods, contract types and standard forms of contract are created. Decision flowcharts can be combined with enhancement modules for a systematic standard forms selection and enhancement technique.	Proposed Procurement Selection framework towards selection of standard forms of contract incorporating the enhancement modules A program based on decision flowcharts is written to enhance the ease of selection.

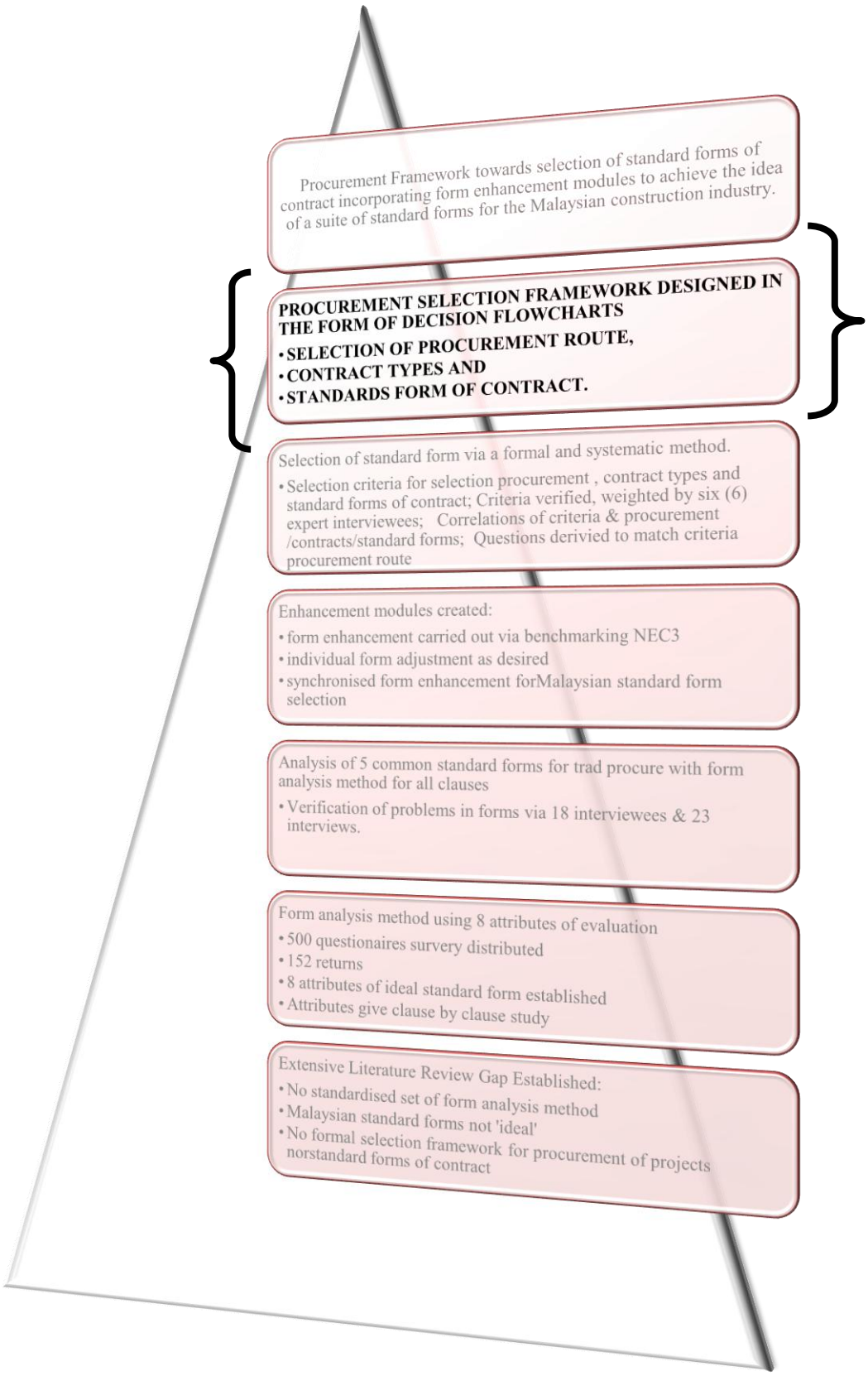


Figure 7.1 Stage of Work in the Logic Flow of Works towards the Original Contribution to Knowledge

7.2 Procurement Method Selection Framework

From the results obtained in the previous Chapter 6 Section 6.4.1 and 6.4.2, it is shown that all of the interviewees have used Traditional Procurement and Design & Build Procurement method. Only two (2) interviewees have used Management Procurement method which is less popular in the Malaysian construction industry.

From results and analysis in Chapter 6 Section 6.4.4, the identified selection criteria from authors such as Love et al (1997), Clamp (2007), NSWG (2008) and Ashworth (1998), weighted and ranked according to importance for procurement method selection listed in order of their relevancy ranking(s) are as follows:

1. Risk allocation of the project.
2. The complexity of the project
3. The speed of the project
4. The competition for the project
5. The quality required
6. The certainty of time and cost
7. Responsibility and role distribution
8. The flexibility for variation

Based on the identified selection criteria above, suitable questions to represent each criterion are derived to generate the flowchart for the selection of the most appropriate procurement method. The questions developed for the flowchart are shown in Table 7.2.

Table 7.2: Questions Derived for Procurement Method Selection Decision Flowchart

	Criteria	Question Derived
1.	Risk allocation of the project.	- Is the client willing to accept risk from the design?
2.	The complexity of the project	- Is the project complex?
3.	The speed of the project	- Is time of the essence?
4.	The competition for the project	- Is competitive pricing important to the client?
5.	The quality required	- Is quality control a priority in the project?
6.	The certainty of time and cost	- Is cost control a priority in the project? - Is scheduling control a priority in the project?
7.	Responsibility and role distribution	- Does the client wish to separate the design and construction? - Does the client have in house design capability? - Does the client have in house management capability?
8.	The flexibility for variation	- Does the project require high level of flexibility?

From results of the correlation of these criteria stated in the Chapter 6 (Section 6.4.5), the derived questions from the identified criteria are matched with the most suitable procurement method which is then used to develop the selection decision flowchart. These matches are summarized in Table 7.3 as follows:

Table 7.3: Correlating Derived Questions with Procurement Method Selection for Decision Flowchart

	Question	YES	NO
1.	Is the client willing to accept risk from the design?	• Design and Build	• Traditional • Management
2.	Is the project complex?	• Design and Build • Management	• Traditional
3.	Is time of the essence?	• Design and Build • Management	• Traditional
4.	Is competitive pricing important to the client?	• Traditional	• All acceptable
5.	Is quality control a priority in the project?	• Traditional	• All acceptable
6.	Is cost control a priority in the project?	• Traditional	• All acceptable
7.	Is scheduling control a priority in the project?	• Traditional	• All acceptable
8.	Does the client wish to separate the design and construction?	• Traditional	• Design and Build
9.	Does the client have in house design capability?	• All acceptable	• Traditional • Management
10.	Does the client have in house management capability?	• Traditional	• Management
11.	Does the project require high level of flexibility?	• Traditional • Management	• Design and Build

Progression through the decision flowchart towards a preferred/directed/best-option procurement method would generally stem from the ranking of the relevancy of the criteria as identified at the beginning of this section (results obtained from Section 6.4.4); with the most important criteria placed nearer the bottom as this/these more important items are argued as having the greatest influence on final selection and thus a key (final) determinant factor in the directed choice form a range of options.

Risk factors aligned with the project, determined from interviewees' level(s) of perception of design risk, is an emphasized priority (of such interviewee-responses), that is, a key decision-maker for final selection of the procurement method. Deciding this/these most important criterion and its/their (latter) position(s) in the decision flowchart, stems from responses generated-&-weighted. Ranking of the other criteria (intermediately weighted responses, namely 2-8) and respective level(s) of complexity of the developed questions provides a rationale towards progression through the logic flow chart. The logic flow is as described as follows:

a) Ranking: questions for *Criteria 2-5* (complexity, speed, competition, quality expectations) will generally form the upper/ initial stages of flow-chart progression, while questions for *Criteria 6-8* (time, cost, responsibility of role and flexibility factors) will generally form the lower/ latter stages of flowchart progression.

b) Questions' design: the placement of questions is sorted/ finalized ultimately by the number of procurement method/s that might be deemed to be applicable. Questions that might be correlated with several procurement methods will be placed at the upper/ initial sections of chart progression, whilst the questions that correlated with a more (singular) specific procurement method/s will form the lower/ latter stages of progression through the chart.

From Table 7.3 and the rational for logic flow above, a decision flowchart has been designed and developed and is shown in Figure 7.2 below.

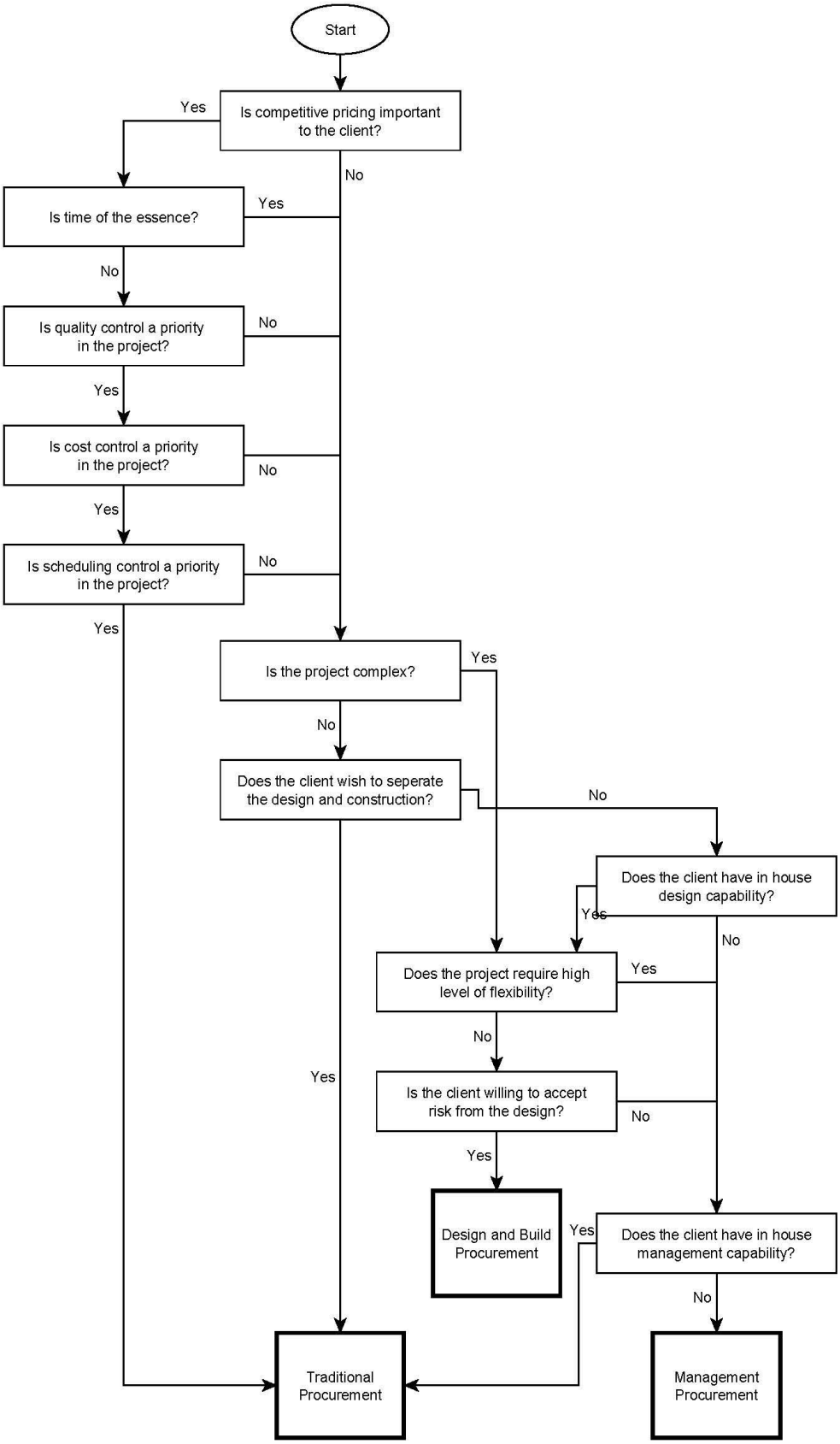


Figure 7.2: Decision Flow Chart for Procurement Method Selection

7.3 Contract Type Selection Framework

Following discussion of procurement methodology above (and given Section 6.5.5 finding that a correlation does exist between procurement method and contract types) decision flowchart(s) now require consideration of contract types. For traditional procurement, the available local contract types include lump sum contracts, measurement contracts and cost reimbursement contracts; whilst, design and build procurement methods normally adopt specific turnkey contracts, design and construct contracts; with, management procurement methods using management contracts. As stated, this study focuses on the five (5) most commonly used Malaysian standard forms under the Traditional Procurement method (the dominant and universal Malaysian approach) thus selection frameworks progression below, continues with its focus upon the Traditional Procurement route.

From the results obtained in the Chapter 6 Section 6.5.1 and 6.5.2, local use of Lump Sum Contract, Measurement Contract, Turnkey Contract and Design & Build Contract dominate. A majority of the representative sample of industry have used Cost Reimbursement Contract while a small number have used a management type of contract, namely Management Contract and Construction Management Contract.

From results and analysis in Chapter 6 Section 6.5.4, the identified selection criteria from authors such as Clamp et al (2007) and JCT (2006) are weighted and ranked according to importance for contract type selection listed in order of their relevancy ranking(s) are as follows:

1. The risk allocation of the project
2. The certainty of time and final cost of the project
3. The nature of work
4. The scope of work
5. Time against scope of work
6. The variation of work
7. The responsibility

Based on the identified criteria (weighted for importance) above, suitable questions to represent each criterion are derived to generate the flowchart for the selection of the most appropriate contract type. The questions developed for the flowchart are shown in Table 7.4.

Table 7.4: Questions Derived for Contract Type Selection Decision Flowchart

	Criteria	Question Derived
	Traditional Procurement Method	
1.	The risk allocation of the project	• Is the client willing to take the risk (from variation and the like)?
2.	The certainty of time and final cost of the project	• Is the certainty of cost important to the client? • Can the quantity of work be measured accurately from the scope of work?
3.	The nature of work	• Is the scope of work big?
4.	The scope of work	• Is the scope of work properly defined?
5.	Time against scope of work	• Is time of the essence?
6.	The variation of work	• Is the client willing to take the risk from variation?
7.	The responsibility	• Does the client wish to have high involvement in the project?
	Design and Build Procurement Method	
8.	Additional question	• Is the contractor self-funding for the project?
	Management Procurement Method	
9.	Additional question	• Does the client choose the "work" contractor directly?

From results of the correlation of these criteria stated above in the Chapter 6 (Section 6.5.5), the derived questions from the identified criteria are matched with the most suitable contract type which is then used to develop the selection decision flowchart. These matches are summarized in Table 7.5 below.

Table 7.5: Correlating Derived Questions with Contract Type Selection for Decision Flowchart

	Question	YES	NO
	Traditional Procurement		
1.	Is the client willing to take the risk from variation?	• Cost Reimbursement	• Measurement
2.	Is the certainty of cost important to the client?	• Lump Sum	• Measurement • Cost Reimbursement
3.	Can the quantity of work be measured accurately from the scope of work?	• Lump Sum	• Measurement • Cost Reimbursement
4.	Is the scope of work big?	• All acceptable	• Lump Sum
5.	Is the scope of work properly defined?	• Lump Sum	• All acceptable
6.	Is time of the essence?	• All acceptable	• Lump Sum
7.	Does the client wish to have high involvement in the project?	• Lump Sum	• Measurement • Cost Reimbursement
	Design and Build Procurement		
8.	Is the contractor self-funding for the project?	• Turnkey	• Design and Build
	Management Procurement		
9.	Does the client want to choose the "work" contractor directly?	• Management	• Construction Management

Progression of the decision flowchart for contract type once again would also generally adhere to the ranking of relevancy of the criteria as identified at the beginning of the section (results obtained from Section 6.5.4) with the most important criteria place the bottom of the decision flowchart as adhere to the reasoning of the most important items having the greatest influence on final selection and thus becoming the key (final) determinant factor in the directed choice of option.

Risk involved in the project especially interviewees' level(s) of acceptance of changes and variation is the emphasized priority of the interviewees (of such interviewee-responses), which decides the exact final selection of the contract type. Deciding this/these most important criterion and its/their position(s) in the decision flowchart, stems from responses generated-&-weighted. Ranking of the other criteria (namely 2-7) and their respective level(s) of complexity of the developed questions in terms of correlation with the contract types will serve as a guideline towards progression through the logic flow of the chart. Logic of flowchart is as described below:

a) Traditional procurement method serves as the basis under the selection of contract types towards the latter selection of standard forms for traditional procurement method.

b) Ranking: questions for Criteria 2-4 (certainty in terms of time and cost, nature of work and scope of work) will generally form the upper/ initial stages of flow-chart progression, while questions for Criteria 5-7 (time against scope of work, variation of work and responsibility factor) will generally form the lower/ latter stages of flowchart progression.

c) Questions' design: the placement of questions is sorted/ finalized ultimately by the number of procurement method/s that might be deemed to be applicable. Questions that might be correlated with several contract types will be placed at the upper/ initial sections of chart progression, whilst the questions that correlated with a more (singular) specific contract type/s will form the lower/ latter stages of progression through the chart.

From Table 7.5 and the rational for logic flow above, the decision flowchart has been designed and developed and is shown in Figure 7.3.

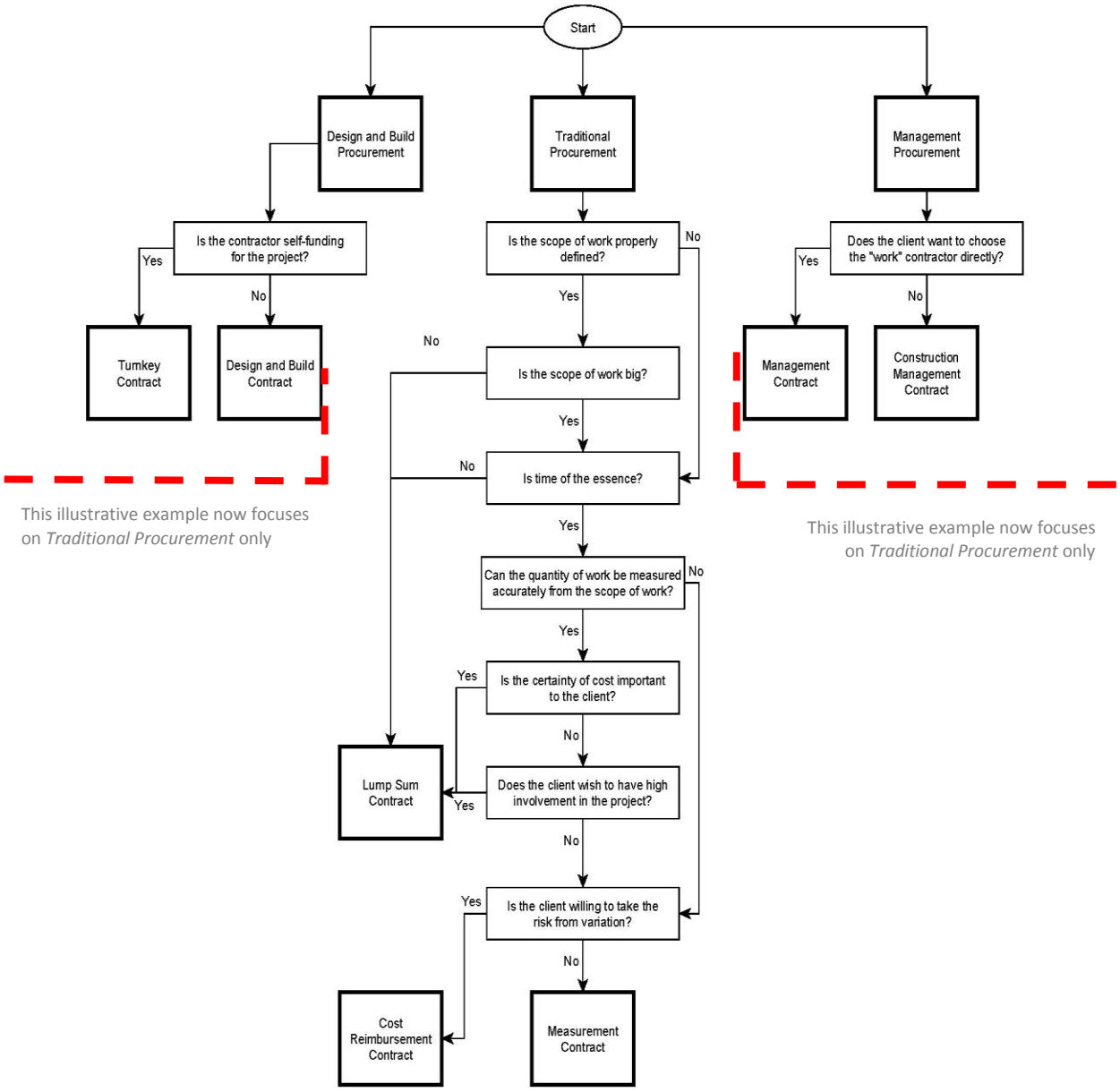


Figure 7.3: Decision Flowchart for Contract Type Selection

7.4 Standard Form of Contract Selection Framework

From the results obtained in Chapter 6 Section 6.6.1 and 6.6.2, it is established that the representative sample of the Malaysian building industry use PWD 203 Form and JKR 2006 Form. All of them have used PAM 1998 Form and PAM 2006 Form. IEM 1989 Form and CIDB 2000 Form shows lower usage by the sample where only two (2) interviewees have used each form respectively.

From results and analysis in Chapter 6 Section 6.6.4, the identified selection criteria from authors such as Ramus et al (2006), Clamp et al (2007), Ashworth (1998), Macpherson (2011) and the local CIDB (2005) are weighted and ranked according to importance for contract type; these are listed in terms of respective relevancy (importance) rankings are as follows:

1. The sector involved in the project
2. The nature of work
3. The selected contract type
4. The selected procurement method
5. The risk and role distribution of the project.
6. The clarity of the form
7. The comprehensiveness of the form
8. The form provision for a clear framework for project management
9. The completeness of the form
10. The flexibility of the form

Based on the identified criteria above, suitable questions to represent each criterion are derived to generate the flowchart for the selection the most appropriate standard form of contract; with questions developed for the flowchart shown in Table 7.6 below.

Table 7.6: Questions Derived for Standard Form of Contract Selection Decision Flowchart

	Criteria	Question Derived
1.	The sector involved in the project	• Is it a State or a Federal government funded project or a private-sector development?
2.	The nature of work	• Is it an international funded project? • Is it a building project? • Is it a Civil Engineering Project?
3.	*The selected contract type*	*No question was asked for this criterion; questions generated are for the selection of standard form of contract for Lump Sum Contract, Measurement Contract and Cost Reimbursement Contract.*
4.	*The selected procurement method*	*No question was asked, the generated questions are for the selection of standard form of contract for Traditional Procurement Method.*
5.	The risk and role distribution of the project.	• Does the client wish to have high involvement in the project?
6.	The clarity of the form	• Does the project require high level of understanding of the form?
7.	The comprehensiveness of the form	• Does the project require detailed procedures in solving issues on site?
8.	The clear framework for Project Management of the form	• Does the project require a clear framework for Project Management?
9.	The completeness of the form	• Does the project require extensive coverage of possible issues on site?
10.	The flexibility of the form	• Does the project require high level of flexibility?

Correlation results stated in the Chapter 6 (Section 6.6.5), allows derived questions from the identified criteria to be matched with the most suitable standard form of contract, which is then used to develop the selection decision flowchart. Matches are summarized in Table 7.7.

Table 7.7: Correlating Derived Questions with Standard Form of Contract Selection for Decision Flowchart

	Question	YES	NO
1.	Is it a government funded project?	• PWD 203 • JKR 2006	• All acceptable
2.	Is it a Federal funded project?	• PWD 203 • JKR 2006	• JKR 2006
3.	Is it an international funded project?	• FIDIC (Out of the scope)	• All acceptable
4.	Is it a building project?	• PAM	• All acceptable
5.	Is it a Civil Engineering Project?	• CIDB • IEM • JKR 2006	• PAM
6.	Does the client wish to have high involvement in the project?	• JKR 2006	• PWD 203 • CIDB
7.	Is a high level of understanding required of the form (from junior staff and the like)?	• PAM • CIDB	• All acceptable
8.	Are detailed procedures in solving issues on site required (for junior staff &etc)?	• CIDB • JKR 2006	• All acceptable
9.	Does the project require a clear framework for Project Management?	• CIDB	• IEM
10.	Does the project require extensive coverage of possible issues on site?	• PWD 203 • PAM	• All acceptable
11.	Does the project require high level of flexibility?	• JKR 2006	• CIDB • PWD 203

Progression of the decision flowchart for standard forms would progress from Traditional Procurement Method to the three (3) specific contract types, namely lump sum contract, measurement contract and cost reimbursement contract. No questions will be asked to correlate procurement method and contract types with the standard forms for this flowchart.

The most important criterion generally also adhere to the ranking of relevancy of the criteria as identified at the beginning of the section (results obtained from Section 6.6.4) with the most important criteria place the bottom of the decision flowchart as adhere to the reasoning of the most important items having the greatest influence on final selection and thus becoming the key (final) determinant factor in the directed choice of option. However, even though, *sector* represented the most important criteria for the selection of standard form, it is truism that government projects have to use government forms such as PWD 203 and JKR 206 whilst all private projects can choose among the five (5) forms. Therefore, *sector* is rearranged to be on top of the flowchart as it correlates with the entire selection of standard forms.

Deciding the most important and other criteria and their positions in the decision flowchart, stems from responses generated-&-weighted. Ranking of the other criteria (namely 2 and 5-10) and their respective level(s) of complexity of the developed questions in terms of

correlation with the standard forms will serve as a guideline towards progression through the logic flow of the chart. Logic of flowchart is as described below:

a) Traditional procurement method serves as the basis under the selection of contract types towards the latter selection of standard forms for traditional procurement method.

b) Lump sum contract, cost reimbursable contract and measurement contract outline the contract types' basis for the selection of standard forms. The five (5) most commonly used standard forms have a family of forms, which caters for these contract types.

c) Ranking: questions for Criteria 2, 5-7 (nature of work, risk and role, clarity and comprehensiveness) will generally form the upper/ initial stages of flow-chart progression, while questions for Criteria 8-10 (clear structured framework for project management, completeness and flexibility) will generally form the lower/ latter stages of flowchart progression.

c) Questions' design: the placement of questions is sorted/ finalized ultimately by the number of procurement method/s that might be deemed to be applicable. Questions that might be correlated with several standard forms will be placed at the upper/ initial sections of chart progression, whilst the questions that correlated with a more (singular) specific standard form/s will form the lower/ latter stages of progression through the chart.

From Table 7.7 and the rational for logic flow above, the decision flowchart has been designed and developed and is shown in Figure 7.4.

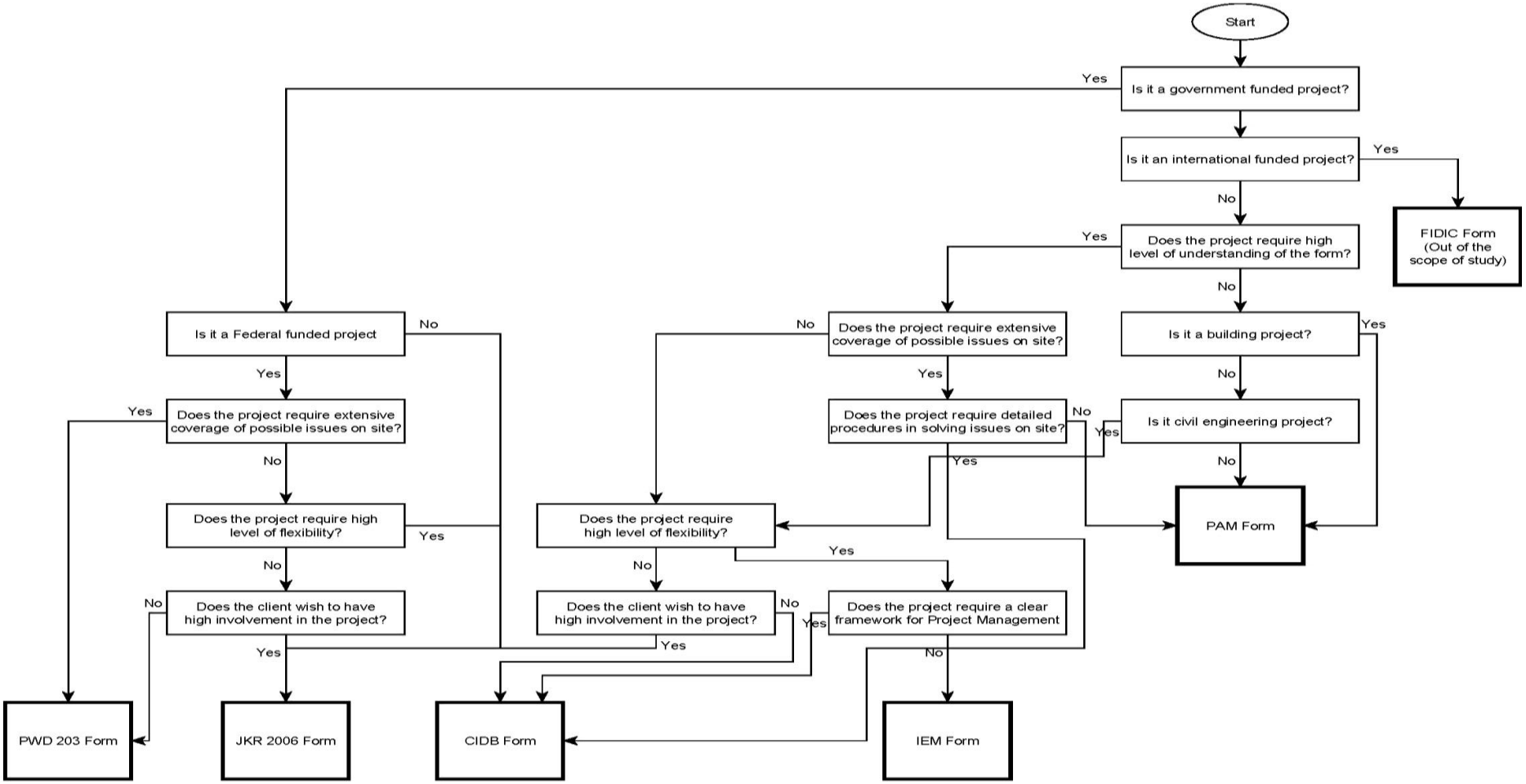


Figure 7.4: Decision Flowchart for Standard Form of Contract Selection

7.5 Combined Framework

From the three (3) decision flowcharts developed namely procurement method decision flowchart, contract type decision flowchart and standard form of contract decision flowchart, a combined decision flowchart for all three (3) decision flowcharts was developed to represent the procurement selection framework for the procurement of construction projects in Malaysia. The combined decision flowchart is shown in Figure 7.5.

The application of the decision flowchart is shown in the following example of a construction project in Section 7.6.1. However, these decision flowcharts may seem somewhat unwieldy to some users and perceived awkwardness of the combined decision flowchart may deter an interest in use and application. Therefore, in line with the aim of this research work which is to provide a systematic and logical procurement selection framework for the construction industry, a *programme* was written to provide practitioners (and particularly perhaps junior practitioners) with an easy-to-use decision guidance tool.

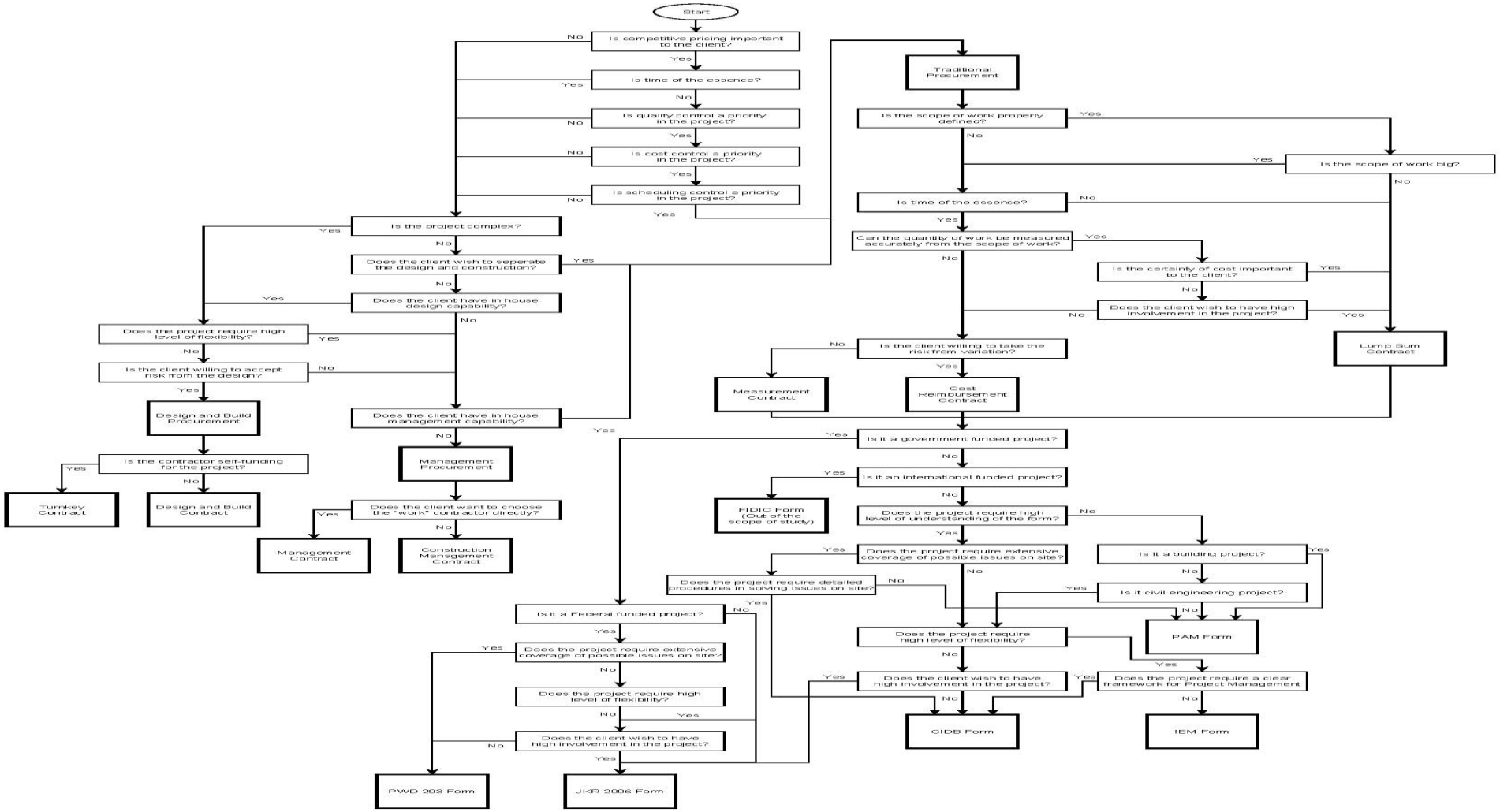


Figure 7.5: Procurement Selection Framework for the Procurement of Construction Projects in Malaysia

7.6 Written Program

From the developed flowcharts, a program was written to present the combination of the three (3) decision flowcharts, using the software 'Microsoft Visual Basic'. Questions designed for the flowchart would be asked and the user is required to input the answer as either a "YES" or "NO", which would then lead on to the decision on the selection as final output of the flow chart.

The program interface comprises of:

1. Flowchart Title
2. Question Asked
3. Yes Button
4. No Button
5. Reset Button
6. Highlighted section of the flowchart
7. Flowchart Outcome

The layout of the program written is shown in Figure 7.6.

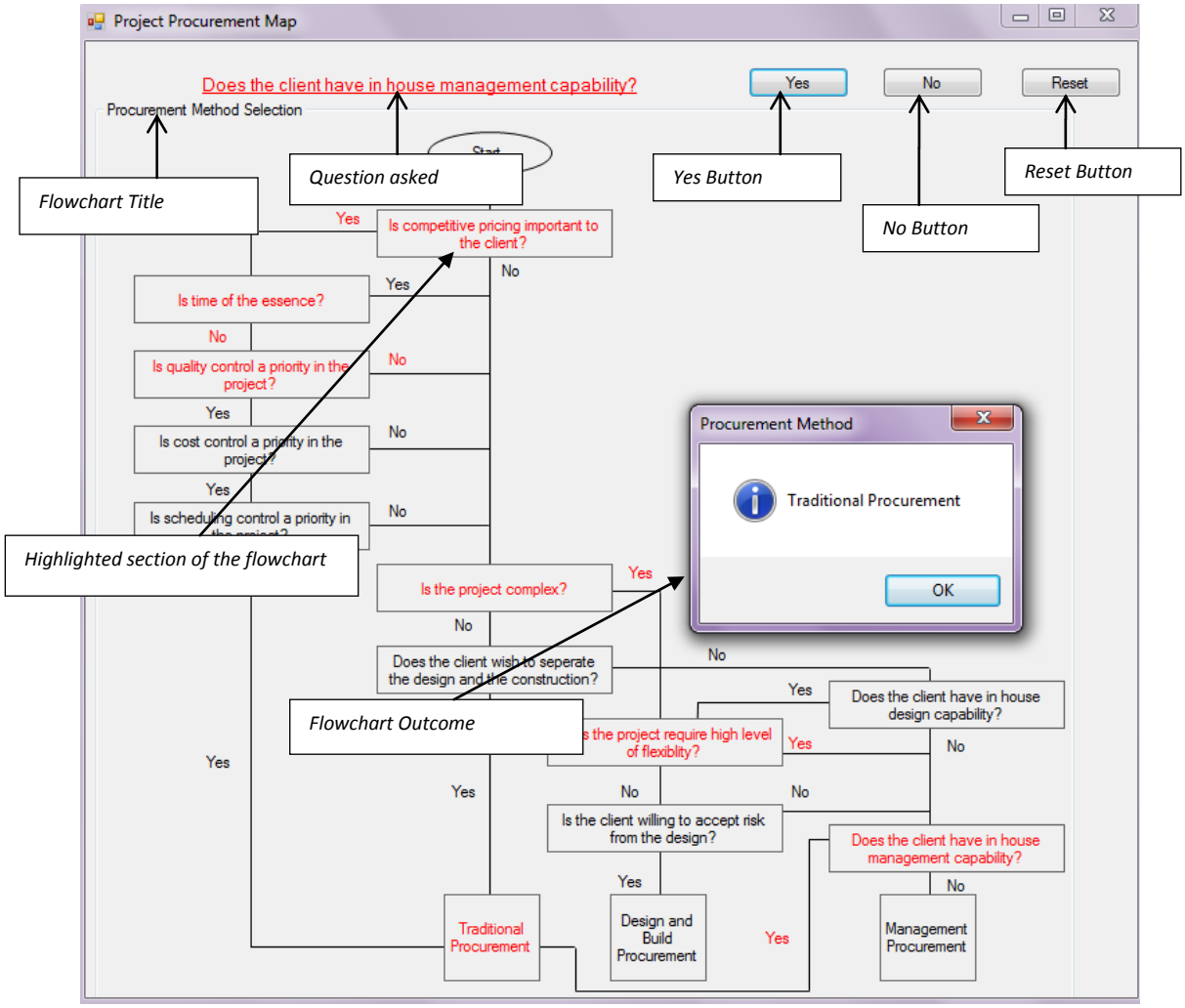


Figure 7.6: Layout of Written Program

7.6.1 Example on Usage of Program: A Warehouse Example

The following basic example shall seek to illustrate use of the program, where there is a proposal for: the construction of storage warehouse (steel construction) incorporating civil works in rural Sarawak (East Malaysia), initiated by a private developer towards provision requirements set out by a (state) government agency as part of their overall-economic-development-plan. The characteristics of the project (required for application of the program) towards the selection of procurement strategy and standard form of contract, are as follows:

- Low *design* complexity, but substantial level of complexity in *contractual arrangement* as it involves a 3rd party end user.
- Client has its own *in house management team* to oversee and manage the project.
- Project is based in Lawas, a rural part of Sarawak where there may be *problems* with: availability of labour, good/quality material and equipment and transportation.

- Client has a strong emphasis on *time* as imposed by the government agency and design and quantity of works are confirmed.
- Contractor needs to be competitive in his pricing as Client is concerned with the *budget* for the project.
- Even though commissioned by the government agency, it is essentially a *private development project.*
- Contractor is expected to manage the project efficiently and be highly flexible in dealing with various risks as it is based in rural Sarawak.

Given the characteristics above, the program will lead the user through the selection procedures as described follows:

1. Procurement Method Selection

Upon running the software, the first decision flowchart on Procurement Method selection would appear, asking and highlighting the first question as seen in Figure 7.7.

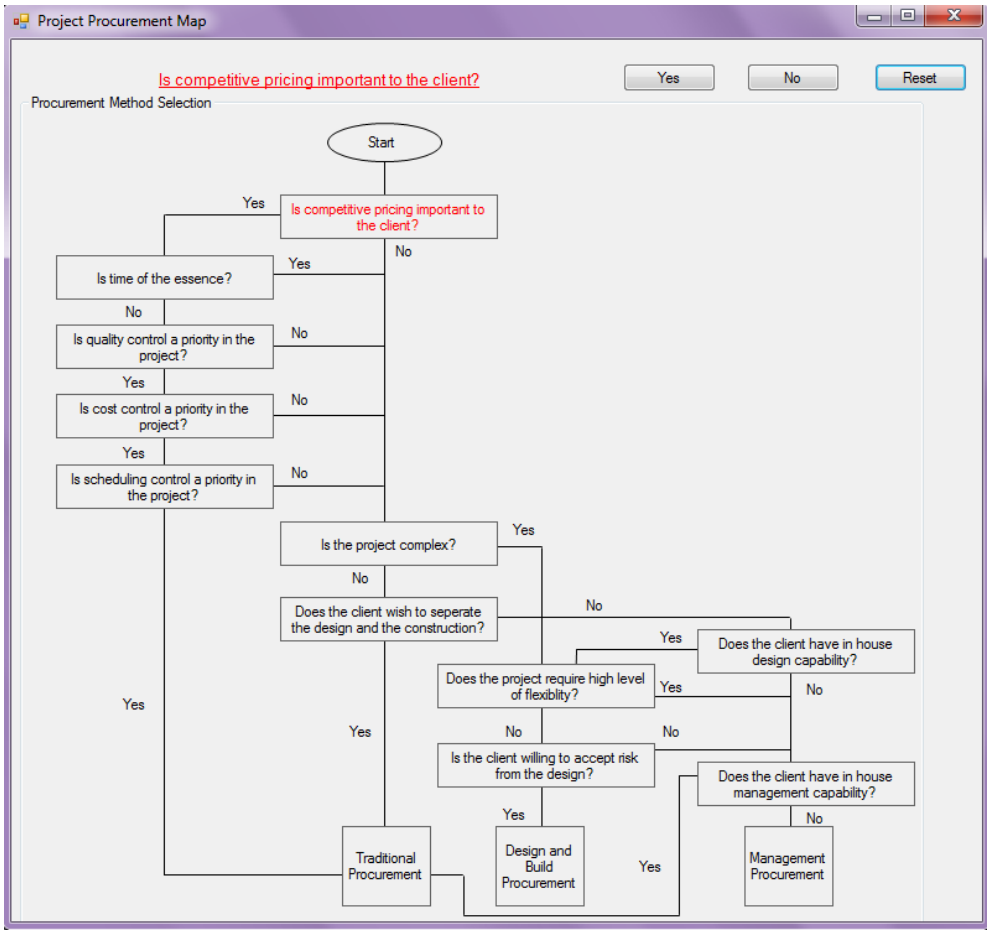


Figure 7.7: Procurement Method Selection

User would be required to choose between "YES" or "NO" answer by clicking the "Yes Button" or "No Button". The questions would continue until reaching the outcome of which procurement method is the most appropriate to be used according to the decision flowchart. The procurement method selected will be shown in an outcome box as seen in Figure 7.8.

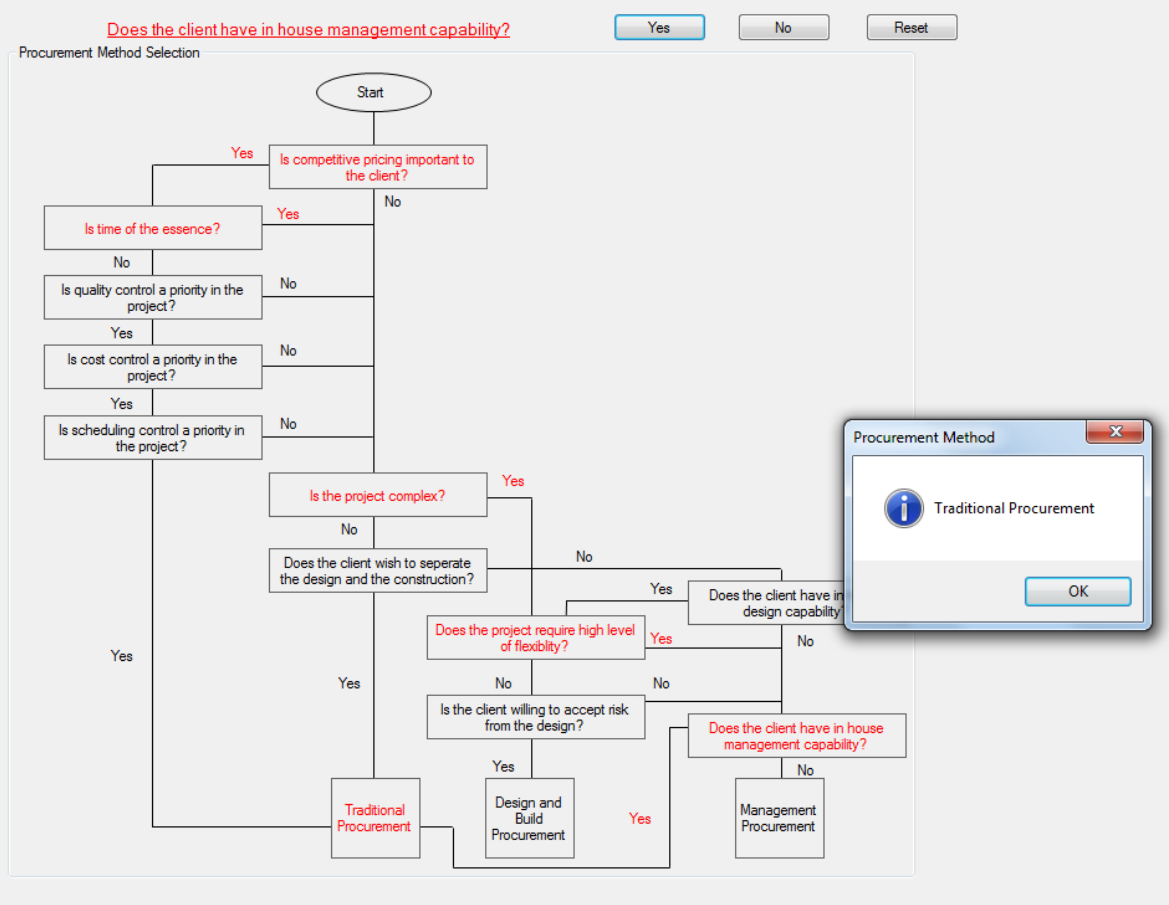


Figure 7.8: Example for Selection of Procurement Method

Based on the criteria of the project, Traditional Procurement method is selected by the programme.

2. Contract Type Selection

Upon completing of the procurement method decision flowchart, the second decision flowchart on Contract Type Selection would appear, asking and highlighting the first question as seen in Figure 7.9.

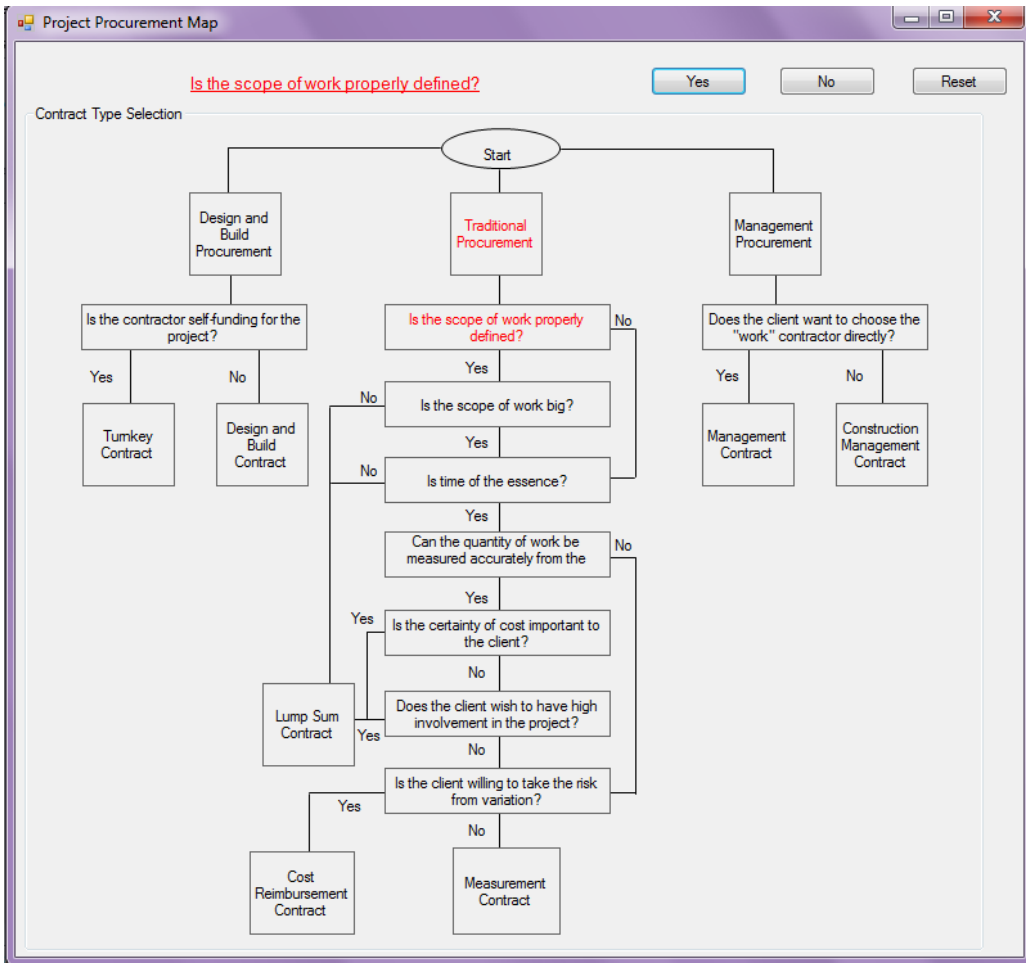


Figure 7.9: Contract Type Selection

User would again be required to choose between “YES” or “NO” answer by clicking the “Yes Button” or “No Button”. The questions would continue until reaching the outcome of which contract type is the most appropriate to be used according to the decision flowchart. The contract type selected will be shown in an outcome box as seen in Figure 7.10.

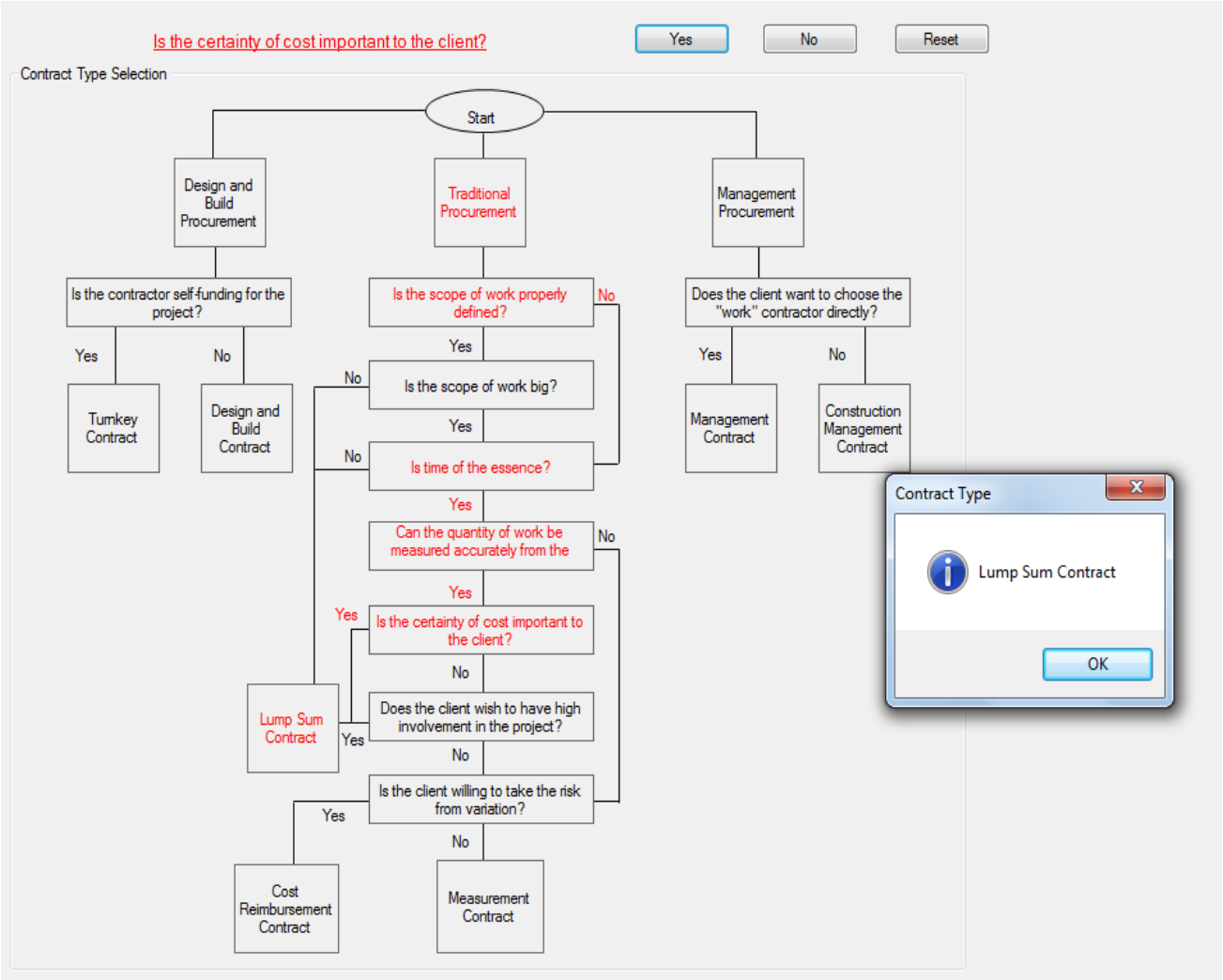


Figure 7.10: Example for Selection of Contract Type

Based on the characteristics previously described, Lump Sum Contract is the selected contract type for the project.

3. Standard Form of Contract Selection

Upon completion of the second decision flowchart, the final decision flowchart on Standard Form of Contract selection would come out, asking and highlighting the first question as seen in Figure 7.11.

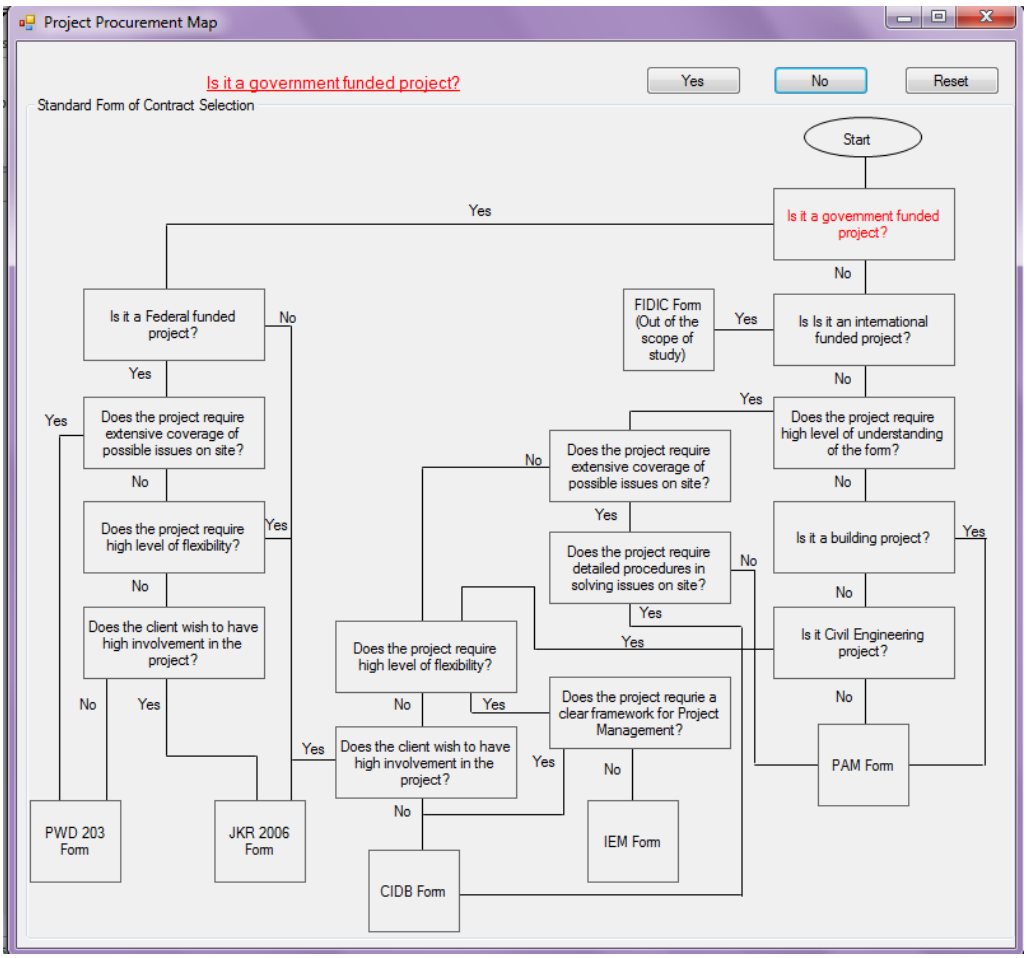


Figure 7.11: Standard Form of Contract Selection

User would again be required to choose between "YES" or "NO" answer by clicking the "Yes Button" or "No Button". The questions would continue until reaching the outcome of which standard form of contract is the most appropriate to be used according to the decision flowchart. The standard form of contract selected will be shown in an outcome box as seen in Figure 7.12.

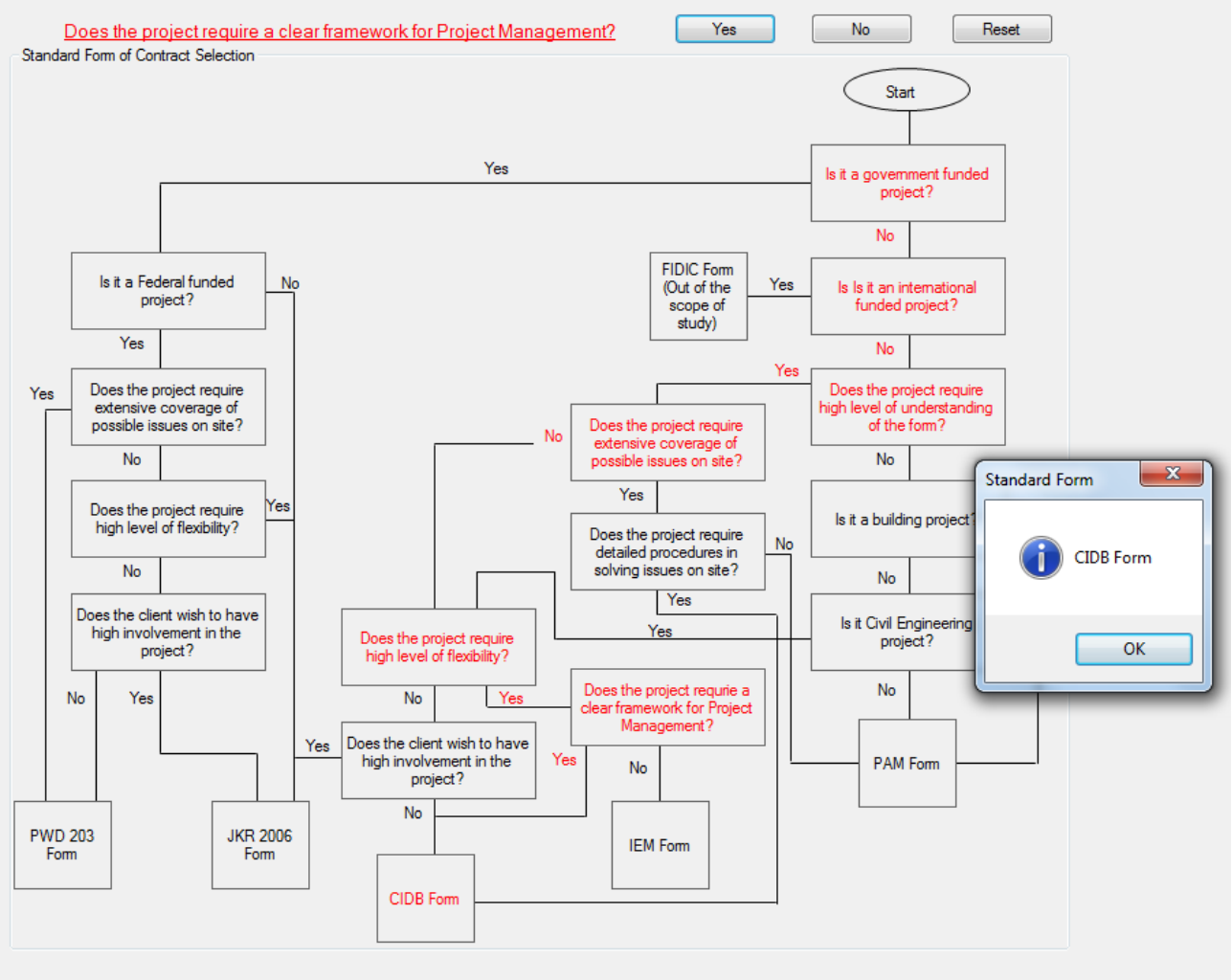


Figure 7.12: Example for Selection of Standard Form of Contract

Upon completion of the final flow chart, user can choose to repeat the procedure of choosing the most appropriate procurement route by pressing the "Reset Button" and repeating the process from the start.

The program suggested the *CIDB 2000 standard form of contract* as the standard form for the project. Traditionally, such projects in Sarawak would have had users 'automatically' choosing JKR 2006 form or PAM 2006 form, instead of the CIDB-2000 indicated. Thus users, without any comprehensive (or indeed basic) study of the various characteristics of the project, would subjectively have chosen their 'usual' forms.

The flowchart above has indeed created an environment for decision makers to consider all available characteristics and present them as objective input variables; this then 'objectifies' and justifies choice of the (somewhat alternative CIDB2000) option as the best way ahead.

The developed procurement selection framework for construction projects in Malaysia is argued to have significant benefit to local construction industry practitioners; namely, in assisting contracts personnel in selecting the most appropriate procurement method, contract type and standard form of contract to be used. Typically, project planners spend large amounts of time in deciding (largely based upon subjective opinion and previous experience) suitable approaches to procure and realise projects. Using the written programme, planners' justifications and resultant selections of the most suitable approaches would be more objective and quicker as seen in the example presented.

The decision flowchart described above, in conjunction with the standard form of contract enhancement modules (described previously), are argued to ensure that personnel take full objective account of all major decision-making processes, both: when making the early (pre-contract) decisions as to which procurement method, contract type and standard form of contract are best suited to particular conditions; and also, for future contract administration during construction that might result from potentially disruptive issues prone to arise from ambiguous, less-than-ideal contract-form conditions and clauses. Hence the selection mechanism for procurement procedures can be shifted away from the traditional subjective choice of the most familiar method and administration based upon previous experience, to a more objective method based upon a solid set of objective selection criteria alongside suggestions for contract administration enhancement that is both consistent and systematic.

The selection framework combined with the enhancement modules (from Chapter 6) for a complete procurement selection framework go towards improved efficiency in choice between options and effectiveness in administration; the following section will further discuss enactment of such a combination.

7.7 Enhancement Modules: Extending the Warehouse Example

Upon selection of the appropriate procurement strategy including guidance towards choice of (the most) appropriate local standard form of contract, practitioners are directed to refer to the enhancement modules described in Chapter 6, to select those modules deemed necessary for a particular form's issues with the related clause(s) enhancement.

Based on the example generated by the programme with an output of a CIDB 2000, it is the suggested that Contract Personnel can then referred to previous Table 5.2 'Problematic Clauses in Five (5) Malaysian Standard Form of Contract to be benchmarked with Relevant Clauses in NEC3' to check for potential problematic clauses at a stage-by-stage progression

through the activities prior to site-mobilisation, during the construction activities and then on to defects liability and completion certificate stages.

Based on the example above of the storage warehouse, if the project has specific 'stage-by-stage' project-progression needs, in terms of the contractor's involvement and site representatives due to its *remote location*, users are directed to refer the summary-section of the (pre-enhancement-module) table as follows:

Table 7.8: Problematic Clauses in Malaysian Standard Form of Contract to be Benchmarked with Relevant Clauses in NEC3

Description of Matters	Problematic Clauses in Five (5) Standard Form of Contract					Relevant NEC 3 Clauses
	PWD 203 A	JKR Sarawak Form of Contract	PAM 2006	IEM 89 CE	CIDB 2000	
Roles, Responsibilities, representatives	Clause 3.0 SO and SO's representative Clause 58.0 Site Agents and Assistants	Clause 6.0 General Obligations of Contractor Clause 11.0 Superintending Officer and Superintending Officers Representatives Clause 12.0 Contractor's Representatives	Clause 1.0 Contractor's Obligations Clause 2.0 Architect's Instructions Clause 8.0 Site Agent	Clause 2.0 Duties of Engineer and Engineer's Representatives Clause 4.0 Works to be to the satisfaction of Engineer Clause 5.0 Engineer's Instruction Clause 18.0 Contractor's Superintendence	**Clause 7.0 General Obligation of Contractor** **Clause 34.0 General Responsibilities**	Clause 10.1Actions Clause 11.2(19) Works information. Clause 13.1 Communications Clause 13.3 Period for reply Clause 13.5 Extending Period of reply Clause 14 .3 Instructions Clause 20.1 Obligation to provide the works Clause 21.1 Contractor's design Clause 22.1 Using Contractor's Design Clause 23.1 Design of Equipment Clause 24.1 Key persons Clause 24.2 Removal of an employee Clause 25.1 Cooperation with Others Clause 26.1 Responsibility for subcontractors. Clause 27.1 Other Responsibilities Option X18 Limitation of liability Clause 60.1(1) Changes to the work information 62.2 Quotation for Compensation Event 62.3 Submission of quotation

Next, the user refers to the Malaysian clauses shown, with relevant NEC 3 clause(s) and its resultant interpretations, and respective enhancement module(s) (described previously in

Section 5.4.14) towards enhancement of clause-enactment for (in this case potential lapses in fulfilment of the parties' roles due to the rural location and potentially less than able stakeholders in terms of) *Roles, Responsibilities, and Representatives*.

Table 7.9: Enhancement Modules

Issue	Clarification of Roles, Responsibilities, and Representatives
Clarity:	NEC3 reduces the ambiguities with issues related to the Contractor's Representatives when it provides for Project Managers to clearly state reasons for termination; providing a specific time frame for removal. NEC3 does not use words such as 'to discretion of Superintending Officer/ Engineer/ Architect' commonly seen in Malaysian forms on such matters.
Comprehensiveness :	Comprehensiveness can be improved by referring to NEC3 Clause 24.1 as it provides procedures for employment as follows : 1. The Contractor submits the name, relevant qualifications and experience of a proposed replacement person to the Project Manager. 2. The Project Manager is to determine acceptance upon submission.; and Clause 24.2 as it provides procedures for removal of employee as follows : 1. The Project Manager instructs the Contractor to remove an employee after having stated his reasons for the instruction. 2. The Contractor is then to remove the employee one day after the instruction of removal.
Completeness :	Completeness can be improved by referring to NEC3 Clause 24.2 as it states that the Project Manager can instruct the Contractor to remove an employee but only after having stated his reasons for the instruction to the satisfaction of the Contractor.
Consistency:	Consistency can be achieved by referring to relevant clauses in NEC3 where Project Manager must provide his approval for the Contractor's representative and any subsequent removal must be found on solid grounds unlike Malaysian forms that generally give the right to the Superintending Officer/Engineer/Architect to overturn any approvals made previously.
Flexibility	Roles of all the contracting parties are clearly and specifically stated in relevant NEC3 clauses on the matter or Contractor's representatives, providing all parties the necessary remedial in contract necessary for various circumstances.
Clear Structured Framework for Project Management :	Site management can be improved by referring to NEC3 Clause 24.2 as it states that unreasonable use of Project Manager's power would be a breach of contract under Clause 10.1 should the stated removal is found to be unreasonable. It also stresses all contracting parties to act as stated in the contract and in a spirit of mutual trust and cooperation.

Table 7.9 (cont): Enhancement Modules

Issue	Clarification of Roles, Responsibilities, and Representatives
Role Distribution :	NEC3 Clause 24.1 as it states Contractor shall submit the name, relevant qualifications and experience of a proposed replacement person to the Project Manager for acceptance; and Clause 24.2 as it states the Contractor is to respond to the instruction of stated removal from one day after the instruction. All roles and functions of the contracting are stated clearly.
Risk Distribution :	Risk distribution can be improved by referring to NEC3 Clause 24.2 as it states that the Project Manager can instruct the Contractor to remove an employee but only after having stated his reasons for the instruction; Clause 24.2 as it states that unreasonable use of Project Manager's power would be a breach of contract under Clause 10.1 which if the stated removal is found to be unreasonable.

The enhancement modules provided here allow subsequently for a systematic form adjusting format based on the eight (8) attributes of evaluation. Users reference the issues deemed in need of improvement alongside attributes to assist with such improvement. This method then avoids subjective decision-making and/or adjustment and/or interpretation of terms and clauses based on experience/familiarity alone and any resultant inappropriateness or inconsistency in enactment of the obligations and responsibilities of the parties involved in the contract.

Importantly, the approach developed serves as a basis for enhancement of all Malaysian forms, which will be discussed and summarised in the following section.

7.8 Section Summary

With the selection framework developed, the issues as seen in Section 2.6.1 Problems Associated with Selection, which are mainly related to not having a systematic and logical selection framework to select the most appropriate procurement strategy for a project including the selection of the most appropriate form are argued to have been addressed. The knowledge gap related to the lack of suitable selection guidelines has been addressed.

Main findings in this chapter 7 can be summarised as follows:

1) Three (3) decision flowcharts which comprises of flowcharts for procurement method selection, contract type selection and standard form of contract selection have been rolled. Flow charts have been combined into an ultimate procurement framework for the Malaysian construction industry.

2) Due to the complexity of the combined decision flowchart, a program has been written to run this flowchart, enabling users to adopt it with ease.
3) Combining the procurement framework and guidelines in this chapter 7 with the enhancement modules developed in previous Chapter 5 allows standard forms of contract in typical local procurement routes to be enhanced towards an adapted-suite of Malaysian forms that retain existing advantages but make the necessary enhancements to the weaknesses and ambiguities.

Ultimately, the framework developed here enables contractual knowledge to be passed-on in a more comprehensive and efficient and objective manner and serve as a guideline for both experienced and non-experienced contract personnel in the future procurement and contract administration of a project.

8. CONCLUSION

8.1 General Overview of Chapter

Chapter 8 concludes the overall research work that has been carried out, by finalising research findings, discussing research limitations and making recommendations for further research. The chapter concludes discussion of the extent to which this work has sought to put together an original contribution to knowledge through development of a new specific procurement selection framework towards the assisting choice of an appropriate standard form of contract, that incorporates form-enhancement modules to achieve an adapted suite of (improved) local standard forms of contract for the Malaysian construction industry.

Table 8.1 below provides the general overview of Chapter 8 with Figure 8.1 indicating the extent to which this final stage of the research undertaken caps the logic flow of work towards an original contribution of knowledge.

Table 8.1: General Overview of Chapter 8

Chapters	Issues Addressed	Point Established/Gap of Research	Way Forward towards addressing Research Problem & Need
Chapter 7	*As previous*		
Chapter 8	Conclusion: 8.1 General Overview of Chapter 8.2 Research Findings 8.3 Recommendations from Research Findings 8.4 Research Constraints 8.5 Recommendations for Future Research	Chapter 8 summarizes the findings from this research project and puts forward recommendations to fill the gap in knowledge outlined previously in preceding sections.	Original contribution to knowledge: The Gap of Research established the following: • Local method of form research not standardized • Standard forms commonly used to delivered; projects are short of being 'ideal'; • A formal, logical set of procurement framework to select the most appropriate form is not available in Malaysia. Gaps addressed by research that has seen: • Development and establishment of a formal form analysis technique, tested on the five (5) most commonly used Malaysian forms; analysis results successfully verified by key industry expert panel; • Forms-enhancement(s) suggested towards synchronized form-improvements to create a suite of adapted Malaysian Standard forms of contract; • Enhanced forms combined with the designed procurement selection framework help select the most appropriate standard forms of contract for construction projects in Malaysia.

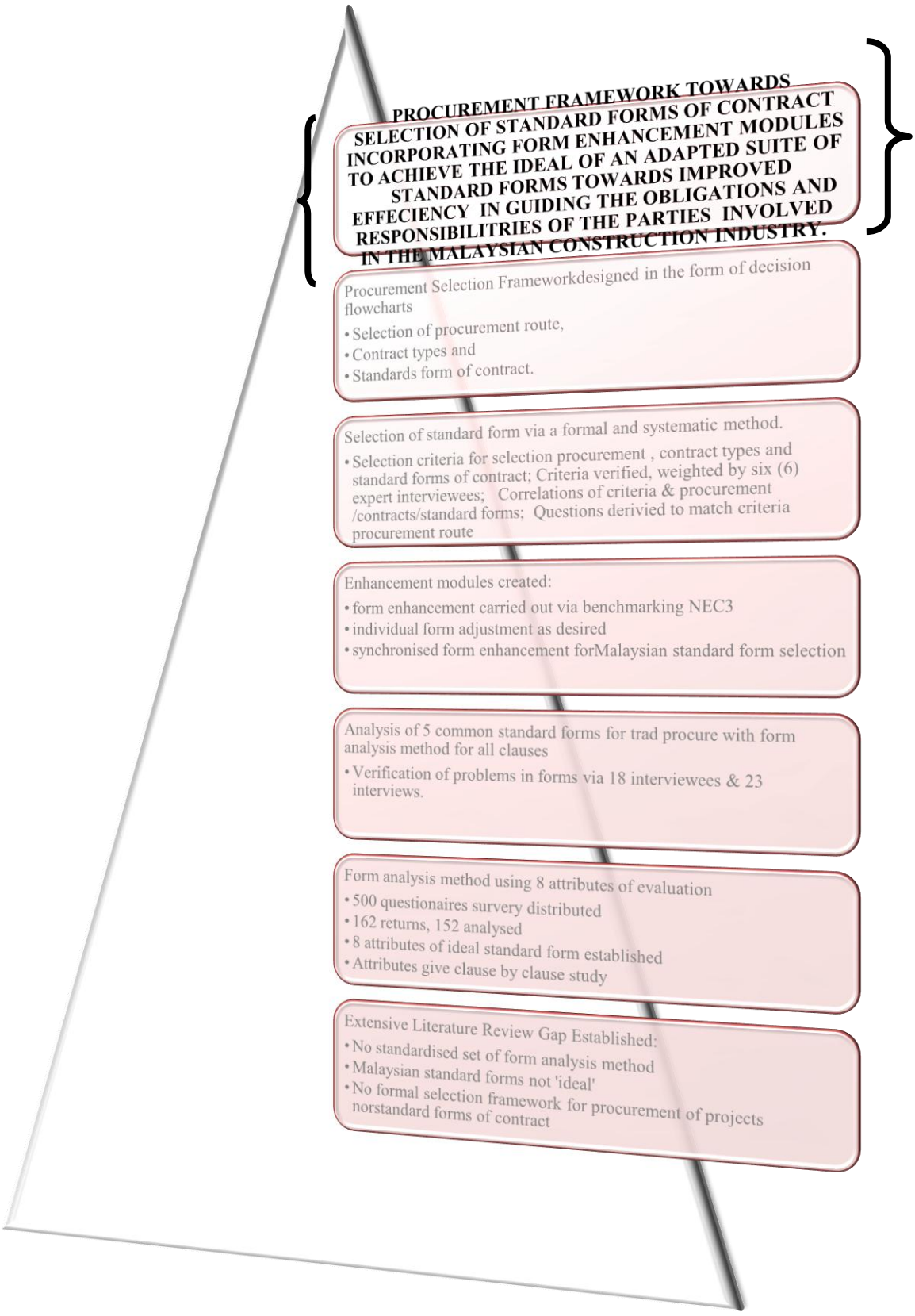


Figure 8.1: Original Contributions to Knowledge

8.2 Research Findings

It has been established by the work conducted in relation to this research project that the Malaysian construction industry depends on construction contracts, especially standard forms of contract to define and govern the contractual relations of the contracting parties; and that as all construction projects are carried in a contractual environment, industry relies heavily on standard forms as a familiar, convenient and cost-effective way of expressing the obligations and rights and responsibilities of the parties involved. The various different sets and variations of standard forms' alternatives exist and prosper through creation and championing and ad-hoc revision by their respective independent professional and government bodies.

The plethora of standard forms available currently have long been subject to revision and revamping (and creation), resulting in an increasing and somewhat confusing number of standard forms for the relatively small construction community of Malaysia. Unfortunately the introduction of both the new and the constant local revisions of existing Malaysian standard forms of contract in construction, have not seen significant improvement in the problems perceived (and proven through law court litigation) in the older forms as industry becomes increasingly litigious; research results presented in Section 4.2, show that Malaysian contract forms, and their (ambiguous) general conditions are more frequent than not, a key source of construction dispute and that both existing and their revised forms fail to cover some of the most common problematic issues on-site such as payment confusion, defects control and liability, misconceptions related to extension of time claims and resultant compensation requests.

Objective (i) is established to address the above issues with standard form of contract in Malaysia. From the literature review and secondary research carried out, it is seen that all the existing standard forms of contract are far from ideal for the Malaysian construction industry. Based on the various shortcomings pointed out by a number of researchers, the standard forms seem to indicate an *in-built quality* problem. It is noted that form-analysis when it is carried out is done based on a subjective commentary basis, with that individuals that seek review coming mainly from those involved in dispute resolution such as arbitrators/construction lawyers with limited review by the construction professionals themselves, who use the forms day-in and day-out and would perhaps be best placed to identify the full range of problematic clauses. Indeed there is no systematic form-research method locally or internationally that can assist systematic review for the construction industry in Malaysia, not is there attempt to compare local existing standard forms using best-practice (one yardstick of) measurement.

This project developed (according to Objective (i)(a)) a specific form measurement method for the purpose of this research work and full reviewed (according to Objective (i)(b))of all the clauses in the most commonly used standard forms of contract used in Malaysia in the traditional procurement route. The method developed by this project adapted and applied a modification of the work being carried out Bubshait and Almohawis whose method sought to analyse the overall general conditions of contract. Analysis conducted by this work identified eleven (11) elements chosen as criteria for a 'good' set of general conditions.

It is noted that this research uses a combination of quantitative and qualitative research methods carried out to study standard forms in Malaysia. Q**uantitative** research methods via extensive analysis of questionnaire surveys related to construction industry project and contract administrator personnel firstly verifies the need of the research and determines the relevancy and weightings of the attributes for form-analysis. **Qualitative** research methods then verify the problematic clauses found in the specific form(s) documents. Qualitative research method identifies the key research approach used to conduct the research works for establishment of the procurement framework towards standard form selection.

The form study method developed here first established criteria/attributes for form measurement using a quantitative method and an extensive questionnaire survey of five hundred (500) respondents in Malaysia currently involved in contract and procurement administration, and sought responses of agreement or otherwise that a range of specified attributes and their parameters (adapted from secondary research) for form analysis were suitable factors to measure the adequacy of forms and their respective clauses. The attributes for evaluation (identified from the original elements) and taken into consideration for investigation purposes became:

- Clarity
- Comprehensiveness
- Completeness
- Consistency
- Flexibility
- Clear structured project management framework
- Fairness or role distribution

- Risk distribution

Each attribute with respective aligned parameters, then provided a basis for evaluation. Upon completion of the survey works, each attribute was weighted in terms of importance. Then each and every clause contained respectively in the five (5) most commonly used standard forms of contract available to the Malaysian construction industry were studied and rated against the attributes of evaluation (applied via the instrument of evaluation in a Likert-scale style). Respective clauses subject to evaluation came from Malaysian standard forms of:

- PWD 203 A
- JKR Sarawak Form of Contract
- PAM 2006
- IEM 89 CE
- CIDB 2000

This method allowed the researcher to evaluate a level of adequacy for every clause with respect to the attributes of evaluation based on the number of problem areas in each attribute, such that collated scores for the respective clauses could be interpreted as:

10 – Perfect Clause (no problem)

8 – Minor Improvement required (1-2 problem areas)

6 – General Improvement required (3-5 problem areas)

4 – Major Improvement required (6-8 problem areas)

2 – Clause re-drafting necessary (more than 8 problem areas)

At the end of the exercise, every single clause attained a Total Evaluation Score (TES) where all the attributes' scores were added up and values of less than 70 with attributes' scores of less than or equal to 6 were classified as problematic clauses (and varying degrees) and further analysed for their specific problems and issues.

In the fulfilment of objective (i)(c), it was found that each Malaysian standard form of contract has its own demerits and the common points among forms, generally stated, are that they are found to be lacking in terms completeness, comprehensiveness and a clear structured framework to enhance project management. The research conducted by this project also finds that forms have problems with risk and role distribution especially the government forms such as PWD 203 A and JKR Sarawak (state) Form of Contract, even though such standard forms

should address the 'equitable principle' requiring that similar projects demand similar contracts and similar levels of party responsibilities and obligation, especially in light of the fact that the standard form of general conditions should allocate risks fairly between the parties. However, the current local Malaysia standard forms under study did not achieve these attributes of 'fairness' well. The IEM 89 CE form was found to be very outdated and rated as one of the least adequate forms, while CIDB 2000 created to override and the PWD 203 forms and to take precedent in the private market, being somewhat a newer form compared to the others and seeming to be least problematic, (perhaps because it) has nominal/limited usage/uptake. Other forms are mainly revised from their predecessors. Whilst the update of PAM 2006 sought clarification and comprehensiveness, many of the clauses remain ambiguous and leave decision making to the judgment of the 'architect' as superintending officer.

The method of form study developed by the research work here has successfully identified and explained the detail of the respective problems and issues with each of these standard forms. Generally, the results shown are very consistent with the nature of the forms themselves especially with respect to the (arguably biased nature and) characteristics of (professional/client-representative specific) drafting bodies, their reviews and other existing commentaries on the same forms.

To further prove the reliability and validity of the form-study method developed, an intensive verification exercise (in fulfilment of Objective (ii) of this study) was carried out with a qualitative method with a selected requisite sample of experienced contract experts active in the local construction industry, chosen as representative of the top professions/ professionals in Malaysia. A total of twenty three (23) semi- structured interviews were carried out across eighteen (18) key expert-interviewees for each of the five (5) locally applicable Malaysian standard forms of contract alternatives.

Data gathered confirmed the existence of the problems and negative-issues arising from the application of the local standard forms in practice. Findings show that problems and issues identified by the document(s)' analysis were relevant widely across the industry. The verification exercise shows that Malaysian standard forms of contract, albeit under constant and recent revision and revamping, are still short of providing an ideal project administration tool. There is no one single form that could completely fulfil the eight (8) attributes of evaluation of a good/ best-practice standard form in Malaysia.

Traditionally, form improvements/revisions in Malaysian are done by a group of individuals aligned with the professional organizations and bodies which drafted them in the first place,

predominantly on a standalone ad-hoc basis. Such revisions are again usually based on the personal experience and expertise of the revising persons with basis and methods that lack objectivity and vary much across individuals and organizations. Such revisions may improve the forms in certain issues and/or certain attributes but may not achieve the overall desired effect of an ideal best-practice form. Also found, with the current practice of selecting standard forms being dangerously hinged on the familiarity factor and an unsubstantiated reliance on the 'one-we-always-use' and the problems and issues seen in the standard forms available, it was deemed essential that the standard forms be studied and be subject to a framework or process that facilitates structured revision or redrafting towards a standardized method to achieve synchronized improvements.

This research throughout the discussion above, strongly advocates for a regulated method of standard form and clause analysis to be carried out mainly by construction contract practitioners themselves rather than be left to the legal personnel unfamiliar with the nuances of claims, extension of time and variances in civil engineering projects; the research supports the concept of standard forms for the industry by the industry.

It is also strongly noted through the data gathering exercise conducted, that the divergence of aims, egos and interests among the typical engineering construction projects stakeholders as well as their respective professional bodies and authorities are rooted very firmly, and as such it was argued (above) to have been very difficult if not impossible to advocate for a single set of standard forms that could be used across the board for all Malaysian construction projects.

However, in order to achieve best-practice Malaysian standard forms that can address the limitations of the current documentation, construction stakeholders do require and need to be guided to go towards one specific, unified framework (and analysis-criteria), at this point in time. The concept of an 'ideal' adapted-suite of forms for Malaysian users is more likely to materialize. Hence the idea of proposing an adapted suite of standard forms, enhanced by best-practice modules, to cater for all construction projects, by building upon (and enhancing) the existing standard forms is deemed plausible and the best way forward (and thus the establishing of Objective (iii)).

Standard forms structure relationships between the parties in a contract and provide the administrative procedures necessary for the realization of the legal relationship. All standard forms of contract need to appreciate and incorporate the special requirements and circumstances that specific projects call for. It is therefore important that the existing forms systematically coordinate with one another (and respective stage-by-stage clarification of roles and responsibility). To this end, this research work (in fulfilment of Objective (iii) of the

study) has developed an incorporation of 'enhancement modules' to augment and improve the current existing standard forms on use.

The enhancement modules developed by this work are created by benchmarking all the problematic clauses in each standard form against a form that is considered as a best-practice ideal. Respective contract clauses that scored the Total Evaluation Score (TES) of less or equal to 70 are benchmarked for enhancement. As mentioned in various sections of the work above, NEC3 was chosen for benchmarking purposes for this research alongside its attributes of good clarity and enhanced project management procedure. Cross standard form equivalent clauses with problematic clauses were assessed alongside with the best-practice equivalencies in NEC3, which have been studied and reviewed based on commentaries. Positive characteristics with respect to the eight (8) attributes found in NEC3 are used to suggest a specific enhancement module to address the limitations of the "Problematic Clauses" in the respective local standard forms.

This research developed and worked out a set of enhancement modules under specific clusters of typical matters/issues of a standard form to address all problematic clauses in the five (5) local standard forms. Should contract personnel want to make minor adjustment to the any specific standard forms, they can refer to the enhancement modules in general and if there is any specific issue to address, they can refer to the relevant clauses to achieve a methodical form clarification/adjustment. A main goal remains to harmonize the existing standard forms in order to achieve a systematic framework for enhanced standard forms, which users can pick and use with ease.

It is once again argued that the need for such an adapted-suite of forms is established when CIDB 2000 was rolled out towards overriding PWD 203 forms and take precedent in the private market, but instead fail to achieve any reasonable level of usage; new form introductions (no matter how 'good') are almost guaranteed to have no uptake. The need for the coordinated enhancement of existing forms introduced by this research in Chapter 5 is essential.

It is also established from this research work that the Malaysian construction industry does not yet have a formal, systematic framework to guide procurement routes for its construction projects and hence, the establishment of Objective (iv) of this study. Selection of procurement methods, contract types and standard forms of contract rely strongly on the contract personnel and/or contract professionals' judgment and familiarity with a specific route. Typically clients specify the procurement route based on their own corporate in-house internal tradition(s),

which are generally based on the principles of 'what-works' and the decision of a small number of decision maker/s.

As a fulfilment of Objective (iv) (a)-(b), a methodology that sought to address such a knowledge-gap, first sought to develop objective structured form-analysis, then established enhancement modules, and ultimately established a procurement selection framework, in which the research drew on the extensive expertise and experience of a panel of six (6) key local expert stakeholders as interviewees on the matter of procurement of construction projects was established.

Findings related to procurement method selection, contract type selection and standard form of contract selections are discussed herewith. On the matter of selection of procurement methods, the key expert interviewees revealed that on a general basis, Traditional Procurement is preferable for most of the projects, especially when there is ample time to plan for the project. Traditional Procurement would be deemed appropriate since it leads to an overall controllable and lower price project. If the project is big and complex, Design and Build Procurement method may be used. The sample of leading experts also stated that selection will be based on experience and weighting on a criterion versus acceptable risk.

A total of seven (7) selection criteria for selection the procurement route for a construction projects were identified weighted and verified. They are listed in order as follows:

1. The speed of the project
2. The complexity of the project
3. The quality required
4. The flexibility for variation
5. The certainty of time and cost
6. The competition for the project
7. Responsibility and role distribution
8. Risk allocation of the project.

A consensus view is that a proper selection guideline for the most appropriate procurement method is highly desirable.

In terms of the selection of contract types, the primary form research conducted points out that having a proper selection guideline for the most appropriate contract type is important.

By having a proper selection guideline for contract realization, the risk can be minimized and properly managed. One key viewpoint is that risk cannot be eliminated from a project but by selecting an appropriate contract, the risk will be controlled properly. Another finding was that although an objective structured selection guideline is good, it is still important for (the panel interviewed that) the contract personnel have experience in contracting before using the guideline developed by this project, adding that the guideline will be a good reference for people who are new to contracting. A total of seven (7) criteria for the selection of an appropriate procurement route for construction projects were identified, weighted and verified by the sample. They are listed in order as follows:

1. The nature of work
2. The scope of work
3. The responsibility
4. The certainty of time and final cost of the project
5. Time against scope of work
6. The variation of work
7. The risk allocation of the project.

On the matter of selection of standard forms of contract, it was found that in selecting which standard forms of contract to use, one of the most important criteria is familiarity of the decision maker with the standard form; adding to the statement, locally there is a desire to be 'familiar' with the standard form, to use it effectively.

Another consensus view was that in a government project, there is no selection option and they are required to use JKR 2006 Form if the project is for the Sarawak Government and PWD 203 family of forms for other states of Malaysia. A majority intoned that having a selection guideline for the most appropriate standard form of contract would however be very beneficial. It can be stated that different standard forms have different attributes and having a proper structured guideline to select the most appropriate form on different situations would be good, (but again the panel suggests that it must be used with personnel who are well experienced). A major aspect that arose from the findings gathered was that, by having a structured objective selection guideline (such as that developed by this research), justification of choice can be improved and, overall risk can be properly managed and minimized.

A total of seven (7) selection criteria for selection the procurement route for a construction projects were identified, weighted and verified, listed as follows:

1. The selected procurement method
2. The selected contract type
3. The nature of work
4. The sector involved in the project
5. The clarity of the form
6. The completeness of the form
7. The comprehensiveness of the form
8. The flexibility of the form
9. The form provision for a clear framework for project management
10. The risk and role distribution of the project.

All selection criteria were successfully correlated (in fulfilment of Objective (iv)(c)) with the procurement methods, contract types and standard forms of contract via the results as described in Chapter 6. Upon establishing the correlation, suitable questions were derived to match selection criteria. These derived questions were then matched with the various procurement methods, contract types and standard forms of contract. Based on these correlations, decision flowcharts are designed.

Flowcharts are designed in the fulfilment of objective (v) (a)-(c). A specific decision flowchart was developed to serve as a framework to select the most suitable procurement method. From the procurement method selected, a specific decision flowchart was developed as a framework to select the most suitable contract types. Finally, based on traditional procurement method and the various contract types, a specific decision flowchart was developed as a framework to select the most suitable standard form of contract for the particular project. A total of three (3) decision flowcharts were established from this research work, namely Procurement Method Selection Decision Flowchart, Contract Type Selection Decision Flowchart and Standard Form of Contract Selection Decision Flowchart.

A combined decision flowchart, which comprises the three (3) components, namely procurement method selection decision flowchart; contract type selection decision flowchart; and standard form of contract selection decision flowchart, has been developed. The flowchart can be used either as single flowchart by the component or as an overall combined guideline for the selection of procurement route procurement of projects in Malaysia. The flowchart comprises of questions generated from the identified criteria where the developed logic-flow

questions asked require simple "YES" and "NO" answer, which would ultimately lead to the most appropriate procurement method, contract type and standard form of contract.

As the combined decision flowchart from this research works, may be unwieldy and may deter industry from using it, a user friendly program was written to provide users with easy to use drop-down menus. It is hoped that the program/decision flowchart can provide the Malaysian construction industry a systematic method of procurement route selection

Combining the procurement decision flowcharts and the enhancement modules (in the fulfilment of Objective (vi), the new procurement framework to select an appropriate standard form for the Malaysian construction industry has been created. It is argued that the construction industry is dynamic and ever changing and hence, forms need to change as the industry progresses, and as such enhancement should seek to update forms based upon current best-practice, and not repetitively simply augment long standing problems. Recurring problems require specific method of form enhancement; with enhancement modules requiring to be based on the benchmarking method with a close to 'ideal' clause. Hence, the modules developed here can provide a basis for a coordinated form enhancement exercise which will improve the inherent quality of the existing Malaysian standard forms; this alongside a systematic method to select an appropriate form allows progression towards reduced disputes and less non-productive contractual disruptions.

This original contribution to knowledge enables forms usage to be based on the idea of an adapted enhanced suite of contract clauses that builds upon and improves the existing documents. Most importantly, with this developed framework, which includes a new, unique and original guideline for standard form selection and the relevant new, unique and orginal related directed enhancement modules, Malaysian construction will have a systematic, comprehensive and hopefully an efficient set of guidelines that make better use of the existing forms to serve as an enhanced contracting framework for Malaysian construction contracting. This research work has successfully developed and established a framework for Malaysian construction contracting. With a new, unique and original system for the appropriate selection of the forms, alongside the complementary and new, unique and original related enhancement modules, it is hoped that this work can bring about improvements that are critical for Malaysian construction contracting and perhaps serve as a guideline for cross-border counterparts.

8.3 Original Contribution to Knowledge

The research work conducted here has in effect produced a new procurement selection framework towards the selection of an optimally, fit-for-purpose standard form(s) of contract. This marks a new way forward for standard form selection for Malaysian construction projects. The primary recommendations to be generated from this research work are as follows:

- Construction contract personnel should be given the confidence that, with guidance, they need not necessary continue with the current practice of procurement selection focused on the 'subjective familiarity' factor and a Clients' 'unsubstantiated' dictate;
- The decision flowcharts developed and designed here can help contract administrators to choose and justify a new objective the procurement route beter suited to project requirements;
- This newly developed procurement framework may be consulted for specific projects to ensure that all the relevant factors are considered objectively to the betterment of a smooth design realisation,.
- Upon selecting the appropriate form, the framework with its suggested and directed enhancement modules, can assist in making coordinated adjustment to the standard forms chosen as the most fit-for-purpose form.
- The enhancement modules can be used by Malaysian professional bodies and authorities to form a more synchronized form enhancement for all existing forms to work towards a standardized suite of adapted and enhanced Malaysian standard forms of contract.
- The suggested form analysis method developed here provides a systematic method for form study and can be used as a standardized method for form review for future form revisions and/or redrafting.
- The suggested form analysis method with the eight (8) attributes of evaluation and their respective parameters can also be used locally and for international counterparts for form review to address the existing gap in current research regarding the need for standard forms and general conditions study and research into an objective, repeatable, clause assessment technique.

8.4 Research Constraints

The selection framework was limited to the selection of procurement methods, contract types and standard forms of contract, since the main aim of the research was to address work for a selection framework towards the selection of standard forms. Standard forms chosen for study mainly concentrate on forms for traditional procurement methods.

It is noted that standard form(s) and clause redrafting was not carried out by this research, as such an exercise requires the coming together of industry-wide practitioners' review panel with various representatives from different professions to achieve a precise, documented suite of standard forms. The developed enhancement modules provided serve as a way forward for such endeavours.

For the design of the standard Malaysian contract document enhancement modules, it is worthy to note whilst NEC3 sought to provide coverage for a suggested explicit improvement of local clause ambiguity, NEC3 as a stand-alone import is very unlikely to be a panacea for Malaysia. NEC3 does have many positive traits but is highly unlikely to be applicable to the Malaysian construction industry in its current form, not least in terms of the local conservative attitude of stakeholders who refuse to deviate away from the current existing formats, and indeed reject whole-scale the roll-out of any new forms (as evidenced in the nominal uptake of CIDB).

It is also noted that the procurement framework developed cannot be physically tested via this research as it would require an industry partner to uptake such recommendations from (complete design) project conceptualisation to realisation; this is suggested to represent an acceptable limitation to the work at hand.

8.5 Recommendations for Further Research

To complement the work described above, it is recommended that further research be conducted into the preliminary processes involved in tendering towards a more complete 'all-stage' procurement project selection guideline for construction projects in Malaysia; in other words, work into future instigation, maintenance and policing of tender lists and their respective qualification mechanisms is in order.

It is also suggested future research to include a pilot study of the usage of the procurement framework with the relevant enhancement modules to test run the reliability of the model

developed here; at the very least inot a minor (sub)contract(ed) activity of the work breakdown structure of a larger project.

It is also hoped that various governmental and professional bodies can use this model of enhancement modules to upgrade their existing forms, which leads to the fulfilment of the idea of a suite of standard forms in the Malaysian construction industry. Such an exercise will also require key industry panels to study enhancement modules with the selected benchmark and alongside perhaps benchmarking against other non-commonwealth (non-UK system) standard forms.

To further improve the accuracy and applicability of the decision flowchart developed by this current work, it is recommended that the sample be increased to other participants in the government organisations, who represents one of the key players in the construction industry

The enhancement modules and decision can also be tested out on non-commonwealth (non UK system) South East Asian industry participants and environments to note the differences.

With this structure for form study and enhancement, other forms used for alliancing and partnering procurement routes (currently of very nominal interest in Malaysia) can be studied to give a more complete model of the suite of adapted and enhanced standard forms research.

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APPENDIX A:

Questionnaire Format and Samples for Quantitative Survey of Attributes and Disputes

Dear Respondents:

This questionnaire is distributed to conduct a study on construction standard forms of contract in Malaysia and its relationship with construction disputes. The results will be used purely for academic studies in Curtin University of Technology Sarawak and Universiti Malaysia Sarawak.

Your kind cooperation is highly appreciated.

Section A: Background of Respondent

1. Age of respondents:
2. Sex:
3. Category of Profession:
   (For example: Engineering Academics, QS, Engineers, Architects, Project Managers, Construction Managers, etc)
4. Area of Specialisation:
   (For example: Bridge, Road, Water, Structure, Project Management, Mechanical, Electrical etc)
5. No of years of Working Experience:
6. Type of organisation:
   (For example: Employers (Government or Private), Designers or Consultants, Contractors)

Section B: Degree of Importance on Attributes Essential to an Ideal Standard Forms in Malaysia

Please kindly state your opinion on the degree of importance on the eight (8) attributes identified as essential to a contract form in Malaysia construction Industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured project management framework, fairness or role distribution and risk distribution. Note that the parameters for each attribute are per attached.

Please assign a numerical rank to each attribute in order of descending importance. (i.e most important =1, least important =8)

Clarity	☐
Comprehensiveness	☐
Completeness	☐
Consistency	☐
Flexibility	☐
Clear structured project management framework	☐
Fairness or role distribution	☐
Risk Distribution	☐

IF you would like to add any other attribute which you think is important to form analysis, please state below:

_____

_____

Parameters:-

Attribute	Parameters, P	Clarification on Parameters
Clarity	1. Language used 2. Structure of sentence 3. Length of sentence	1. Simple English and non legalistic, no ambiguities and/or errors 2. Brief and concise, understand upon first read 3. Less than 40 words per sentence.
Comprehensiveness	1. Details of procedures, including 2. Time frame/s	1. Step by step guides towards resolving issues 2. Provision of time frame for parties to action within.
Completeness	1. Coverage of relevant issues	1. Covering the necessary issues within the same topic
Consistency	1. Conflict between clauses, references, cross referencing to other clause/external law	1. Conflict of issues between clauses and/or making a necessary cross referencing and/or make reference to external law/policy/ Act.
Flexibility	1. Procedures/options for application of various situation 2. Open ended/close ended	1. Provision to handle other similar situations under the same topic 2. Clause too loose and leaving decision to discretion of certain party or unnecessary rigid.
Clear Structured Project Management Framework	1. Procedures/option to enhance project management	1. Procedures to enhance site management (time, cost, quality, safety) 2. Procedures to enhance contract administration 3. Procedures to enhance team and/or people management
Fairness/Role Distribution	1. Balance rights and responsibilities of parties involved	1. List down the rights and responsibilities of Employer and/or his representatives 2. List down the rights and responsibilities of Contractor
Risk Distribution	1. Even distribution of negative impacts/consequences	1. Negative impacts to the contractor 2. Negative impacts to the Employer .

Section C: Standard Forms of Contract and Disputes in Construction

1. Did the respondents ever come across any disputes which stems from the forms that they used?
   (Yes/No)
2. If yes, what was the dispute resolution method used?
   _____
   (Formal – Through court, Formal Arbitration, Informal –Site Mediation and others)
3. What issues is the dispute regarding? Please state.
   _____
   (For Example: Time issues, Payment Issues, Variation order issues, Costing Issues, Quality Issues, Safety Issues and others)
4. Other Details of the dispute, if allowed?

_____

_____

_____

5. Was it the problem with standard forms that has? Tick one or more of the following:
   - Ambiguous clauses on certain issues (unclear, incomprehensible) ☐
   - Incompleteness clauses (clauses did not cater for the issues) ☐
   - Incomprehensive clauses (clauses cater for the issues but not adequate) ☐
   - Inconsistency in clauses and other documents ☐
   - Unequal distribution of risk and roles in clauses ☐

   Others, if any:

_____

_____

6. Overall, would the respondents think that it is better for construction contracting to draft forms according to projects need? Or it is better to keep the practice of using standard forms? Why?

_____

_____

_____

Thank you for your kind assistance and cooperation.

Sample 1:

Dear Respondents:

This questionnaire is distributed to conduct a study on construction standard forms of contract in Malaysia and its relationship with construction disputes. The results will be used purely for academic studies in Curtin University of Technology Sarawak and Universiti Malaysia Sarawak.

Your kind cooperation is highly appreciated.

Section A: Background of Respondent

1. Age of respondents: 45
2. Sex: MALE
3. Category of Profession: senior QS
   (For example: Engineering Academics, QS, Engineers, Architects, Project Managers, Construction Managers, etc)
4. Area of Specialisation: all kind of construction
   (For example: Bridge, Road, Water, Structure, Project Management, Mechanical, Electrical etc)
5. No of years of Working Experience: 18
6. Type of organisation: private construction firm
   (For example: Employers (Government or Private), Designers or Consultants, Contractors)

Section B: Degree of Importance on Attributes Essential to an Ideal Standard Forms in Malaysia

Please kindly state your opinion on the degree of importance on the eight (8) attributes identified as essential to a contract form in Malaysia construction Industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured project management framework, fairness or role distribution and risk distribution. Note that the parameters for each attribute are per attached.

Please assign a numerical rank to each attribute in order of descending importance. (i.e most important =1, least important =8)

Clarity	8
Comprehensiveness	7
Completeness	4
Consistency	6
Flexibility	5
Clear structured project management framework	3
Fairness or role distribution	2
Risk Distribution	1

IF you would like to add any other attribute which you think is important to form analysis, please state below:

_____

_____

Section C: Standard Forms of Contract and Disputes in Construction

1. Did the respondents ever come across any disputes which stems from the forms that they used? Y
2. If yes, what was the dispute resolution method used? Informal arbitration
   (Formal – Through court, Formal Arbitration, Informal –Site Mediation and others)
3. What issues is the dispute regarding? Please state. Payment, defect
   (For Example: Time issues, Payment Issues, Variation order issues, Costing Issues, Quality Issues, Safety Issues and others)
4. Other Details of the dispute, if allowed?
   -
5. Was it the problem with standard forms that has? Tick one or more of the following:

• Ambiguous clauses on certain issues (unclear, incomprehensible)	x
• Incompleteness clauses (clauses did not cater for the issues)	x
• Incomprehensive clauses (clauses cater for the issues but not adequate)	x
• Inconsistency in clauses and other documents	x
• Unequal distribution of risk and roles in clauses	

Others, if any:

_____

_____

6. Overall, would the respondents think that it is better for construction contracting to draft forms according to projects need? Or it is better to keep the practice of using standard forms? Why?

_____

_____

_____

Thank you for your kind assistance and cooperation.

Sample 2:

Dear Respondents:

This questionnaire is distributed to conduct a study on construction standard forms of contract in Malaysia and its relationship with construction disputes. The results will be used purely for academic studies in Curtin University of Technology Sarawak and Universiti Malaysia Sarawak.

Your kind cooperation is highly appreciated.

Section A: Background of Respondent

1. Age of respondents: 43
2. Sex: MALE
3. Category of Profession: engineer

(For example: Engineering Academics, QS, Engineers, Architects, Project Managers, Construction Managers, etc)

4. Area of Specialisation: bridge and roads

(For example: Bridge, Road, Water, Structure, Project Management, Mechanical, Electrical etc)

5. No of years of Working Experience: 20
6. Type of organisation: Contractors

   (For example: Employers (Government or Private), Designers or Consultants, Contractors)

Section B: Degree of Importance on Attributes Essential to an Ideal Standard Forms in Malaysia

Please kindly state your opinion on the degree of importance on the eight (8) attributes identified as essential to a contract form in Malaysia construction Industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured project management framework, fairness or role distribution and risk distribution. Note that the parameters for each attribute are per attached.

Please assign a numerical rank to each attribute in order of descending importance. (i.e most important =1, least important =8)

Clarity	3
Comprehensiveness	4
Completeness	2
Consistency	6
Flexibility	1
Clear structured project management framework	8
Fairness or role distribution	5
Risk Distribution	7

IF you would like to add any other attribute which you think is important to form analysis, please state below:

_____

Section C: Standard Forms of Contract and Disputes in Construction

1. Did the respondents ever come across any disputes which stems from the forms that they used? Yes
2. If yes, what was the dispute resolution method used? Formal arbitrators
   (Formal – Through court, Formal Arbitration, Informal –Site Mediation and others)
3. What issues is the dispute regarding? Please state. Variation order
   (For Example: Time issues, Payment Issues, Variation order issues, Costing Issues, Quality Issues, Safety Issues and others)

4. Other Details of the dispute, if allowed?

   -

5. Was it the problem with standard forms that has? Tick one or more of the following:

• Ambiguous clauses on certain issues (unclear, incomprehensible)	x
• Incompleteness clauses (clauses did not cater for the issues)	
• Incomprehensive clauses (clauses cater for the issues but not adequate)	
• Inconsistency in clauses and other documents	
• Unequal distribution of risk and roles in clauses	

Others, if any:

_____

_____

6. Overall, would the respondents think that it is better for construction contracting to draft forms according to projects need? Or it is better to keep the practice of using standard forms? Why?

_____

_____

_____

Thank you for your kind assistance and cooperation.

Sample 3:

Dear Respondents:

This questionnaire is distributed to conduct a study on construction standard forms of contract in Malaysia and its relationship with construction disputes. The results will be used purely for academic studies in Curtin University of Technology Sarawak and Universiti Malaysia Sarawak.

Your kind cooperation is highly appreciated.

Section A: Background of Respondent

1. Age of respondents:42
2. Sex: FEMALE
3. Category of Profession: ENGINEER

(For example: Engineering Academics, QS, Engineers, Architects, Project Managers, Construction Managers, etc)

4. Area of Specialisation: STRUCTURAL

(For example: Bridge, Road, Water, Structure, Project Management, Mechanical, Electrical etc)

5. No of years of Working Experience: 16
6. Type of organisation: CONSULTANT

   (For example: Employers (Government or Private), Designers or Consultants, Contractors)

Section B: Degree of Importance on Attributes Essential to an Ideal Standard Forms in Malaysia

Please kindly state your opinion on the degree of importance on the eight (8) attributes identified as essential to a contract form in Malaysia construction Industry, namely: clarity, comprehensiveness, completeness, consistency, flexibility, clear structured project management framework, fairness or role distribution and risk distribution. Note that the parameters for each attribute are per attached.

Clarity	2
Comprehensiveness	1
Completeness	3
Consistency	4
Flexibility	5
Clear structured project management framework	7
Fairness or role distribution	6
Risk Distribution	8

IF you would like to add any other attribute which you think is important to form analysis, please state below:

_____

_____

Section C: Standard Forms of Contract and Disputes in Construction

1. Did the respondents ever come across any disputes which stems from the forms that they used? Yes
2. If yes, what was the dispute resolution method used? arbitration
   (Formal – Through court, Formal Arbitration, Informal –Site Mediation and others)
3. What issues is the dispute regarding? Please state. Payment
   (For Example: Time issues, Payment Issues, Variation order issues, Costing Issues, Quality Issues, Safety Issues and others)
4. Other Details of the dispute, if allowed?
   -

5. Was it the problem with standard forms that has? Tick one or more of the following:

• Ambiguous clauses on certain issues (unclear, incomprehensible)	X
• Incompleteness clauses (clauses did not cater for the issues)	
• Incomprehensive clauses (clauses cater for the issues but not adequate)	
• Inconsistency in clauses and other documents	X
• Unequal distribution of risk and roles in clauses	

Others, if any:

_____

_____

6. Overall, would the respondents think that it is better for construction contracting to draft forms according to projects need? Or it is better to keep the practice of using standard forms? Why?

_____

_____

_____

Thank you for your kind assistance and cooperation.

APPENDIX B:

IEM 89 CE Analysis of Problematic Clauses According to Attributes of Evaluation

1. Clarity

Table 1: Analysis of 'Problematic Clauses' In Terms Of Clarity

Clause No and Title		Para-meter	Description of Problem Areas
3	Scope of Contract	1	Language used is understandable.
		2	The clause is difficult to read and not readily understandable.
		3	The first sentence consists of 58 words in a sentence. This is lengthy and not easy to understand.
5	Engineer's Instruction	1	The repetition of word "seven days" within one sentence leads to confusion in clause 5 (c). No punctuation marks at clause 5 (b).
		2	The clause is difficult to read and not readily understandable.
		3	This clause is too lengthy. Second sentence of clause 5(b) is the longest sentence consists of 106 words without any punctuation marks. This is exhaustive.
8	Sufficiency of Contract Document	1	Overall the language used in this clause is simple, no jargon is found.
		2	This clause is difficult to read especially with the use of exception parts.
8	Sufficiency of Contract Document	3	This clause consists of long sentence with 61 words without any punctuation marks. This is exhaustive.
9	Material and Workmanship	1	Overall the language used in this clause is simple, no jargon is found.
		2	The clause is difficult to read and not readily understandable.
		3	This clause is too lengthy. Second sentence of clause 9(b) is the longest sentence consists of 109 words without any punctuation marks. This is exhaustive.
11	Statutory Obligations	1	Jargons such as indemnified, acquaint are used in this clause.
		2	In clause 11(b) cover more than 1 subject, in the first sentence it covers the Contractor and the second sentence it covers Employer.
		3	Clause 11 (e) consists of 97 words in a sentence. This is lengthy and not easy to understand.

Table 1 (cont): Analysis of 'Problematic Clauses' In Terms Of Clarity

Clause No and Title		Para-meter	Description of Problem Areas
13	Setting Out	1	Overall the language used in this clause is simple, no jargon is found.
		2	There are more than two lengthy sentences in this clause makes it hard to understand.
		3	This clause consists of 78 words in a sentence. This is lengthy and not easy to understand.
14	Inspection of Site	1	Overall the language used in this clause is simple, no jargon is found.
		2	The entire clause is expressed in 2 sentences, making the sentences long and difficult to read.
		3	The clause consists of 122 words in a sentence. This is lengthy and not easy to understand.
18	Contractor's Superintendence	1	Jargon such as Superintendence' is found in this clause and this is not a commonly used and readily understandable word.
		2	This clause consists of 4 sentences and covers 3 subjects.
		3	Last sentence of this clause consists of 80 words in a sentence. This is lengthy and not easy to understand.
21	Removal of Workmanship	1	This clause using words such as 'good character' and 'efficient', 'incompetent', which can be ambiguous and subjective to the opinion of the Engineer.
		2	This clause consists of 4 sentences and covers 3 subjects.
		3	Length of sentence is comprehensible.
24	Measurement and Valuation of Works Including Variations	1	This clause used fairly legalistic language with many exception parts, and adverb such as reasonable and proper are used .
		2	The clause is difficult to read and not readily understandable.
		3	This clause having very long sentence, reader needs to read more than twice to understand the clause.
26	Measurement	1	Jargon such as forthwith is used in clause 26(b); adverb such as specifically are used in clause 26 (c).
		2	Clause 26 (b) consists of 5 sentences and covers 2 subjects (i.e. Engineer and contractor).
		3	Clause 26 (b) consists of 70 words in the 5th sentence. This is lengthy and not easy to understand.

Table 1 (cont): Analysis of 'Problematic Clauses' In Terms Of Clarity

Clause No and Title		Para-meter	Description of Problem Areas
38	Commence-ment Time And Delays	1	Jargons such as commence, sanctioned, and possession are used in this clause. Besides, adverbs such as further, expressly, and wholly are found in clause 35(b).
38	Commence-ment Time And Delays	2	The clause is difficult to read and not readily understandable.
		3	Clause 38 (b) consists of 185 words in the 1st sentence. This is lengthy and not easy to understand.
43	Partial Occupation by Employer	1	Terms such as 'neither unreasonably distant from nor unreasonably close to the date', 'in the opinion of the Engineer', 'fair nor reasonable' are ambiguous.
		2	The clause is difficult to read and not readily understandable.
		3	Clause 43(f) consists of 97 words. This is lengthy and not easy to understand.
51	Termination of Contractor's Employment	1	Terms such as reasonable', 'diligently', 'regularly' are ambiguous.
		2	The clause is difficult to read and not readily understandable.
		3	Clause 51c (v) consists of 294 words. This is lengthy and not easy to understand by reading it once.

2. Comprehensiveness

Parameter
1- Details of procedure
2- include time frames

Table 2: Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1 & 2	This clause does not cover the procedure for : i. various duties of the Engineer as the administrator of the contract; ii. duties include among others, timely instructions and direction; sufficiency of information and design to be provided; decisions on issues such as variation, loss and expenses, extension of time ; and iii. disagreement when contractor is dissatisfied with the decision of the Engineer's Representative.
3	Scope of Contract	1 & 2	This clause discusses more on the contractor's general obligations instead of matters related to scope of contract.
4	Work to be to satisfaction of engineer	1 & 2	This clause does not mention the area/ issue which need complete satisfaction of Engineer.
5	Engineer's Instruction	1 & 2	This clause lack of procedures for : i. the contractor to disagree with instruction issues and a mean to come to a consensus , ii. emergency situation , and iii. claim and delay.
8	Sufficiency of Contract Document	1 & 2	This clause does not provide: i. procedures and time frame for informing on the discrepancies; ii. procedures and time frame for approval or further instructions by engineer; and iii. procedures if the engineer were to find discrepancies.
9	Material and Workmanship	1 & 2	This clause does not mention on: i. the submission of quality plan and work method statement for the endorsement of the Engineer; and ii. procedure of testing of material and goods; and opening up for inspection works covered up

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
10	Unfixed Material and Goods	1 & 2	This clause does not provide the procedure for the : i. contractor to submit warranties and guarantees from supplier and subcontractor for goods and material supply say a declaration from encumbrances of the material; ii. contractor to be responsible to the loss and damage.
11	Statutory Obligation	1 & 2	This clause does not cover the procedures for: i. sanction when the contractor does not comply or default with payment of the required fees and charges;and ii. execution on variation order, should it arise out of the compliance to the authority requirement.
12	Patent Rights and Royalties	1 & 2	This clause does not cover the procedure for: i. indemnifying the Employer; and ii. remedying infringement comes from compliance.
14	Inspection of Site	1 & 2	The clause does not cover the procedures: i. extend of examination over site information; ii. exchange of information regarding the site that needs to be provided for by the Employer and his representatives; and iii. to deal with inaccurate and incomplete information.
18	Contractor's Superintendence	1 & 2	This clause does not provide the procedures for: i. removal of contractor's representative and ii. contractor to disagree with the removal
21	Removal of Workmanship	1 & 2	This clause does not provide the procedures for: i. removal; and ii. disagreement by contractor.

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
23	Variations	1 &2	This clause does not include the procedures for : i. contractor to disagree with the variation works such as cardinal changes; ii. contractor is to offer a proposal for variations; iii. how the contractor treat variation order not given in writing; and iv. time frame for written instructions to follow verbal instruction given in the clause.
24	Measurement and Valuation of Works Including Variations	1 &2	This clause does not provide adequate coverage on: i. formulas for measurement of the quantity of work; ii. procedures of the measurement is to be carried out; iii. time frames for the proposing and approval by the Engineer ; and iv. procedures for contractor to disagree to the valuation of rates and prices proposed by the engineer.
26	Measurement	1 & 2	This clause does not provide: i. procedure to determine whether the contract is Bill of Quantities contract or a contract based on drawing and specification with provisional and prime cost items; and ii. Subsequent procedure after informing on the disagreement over the measurement iii. Part 26c is unclear of the terms 'general and local customs'.
27	Sub-letting and Assignment	1 & 2	This clause fails to cover the procedure for : i. employment of sub contractor/s; ii. sub-let the whole work; iii. employer to take over contractual responsibility; and iv. effecting the assignment.
28	Nominated Sub-Contractor and/or Nominated Supplier	1 & 2	This clause does not cover : i. a formal procedure during disagreement of contractor with the choice of nominated sub-contractor and/or nominated suppliers;

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
31	Artisans and Tradesmen	1 & 2	There is no coverage on : i. the time frame for reporting by the contractor; ii. time frame for issuance of instructions by the Engineer; i. procedure for execution of works to proceed; ii. procedure for claim of loss and expenses; and iii. procedure for extension of time when discrepancies required rectifications by other contractors.
32	Indemnities to Employer with respect to Personal Injuries and Damage to Property	1 & 2	This clause does not cover the procedures for the various methods (deduction in payment, insurance) for the Contractor to indemnify the Employer.
38	Commencement Time And Delays	1 & 2	This clause does not have : i. procedure for payment for the occupied parts, performance bond and calculation of the retention sum; ii. discussion on the various risks involved; iii. coverage on the effect of partial occupation and Contractor's work flow, safety precautions and plans for the end users and occupiers; and iv. procedures for the extra insurance coverage for end users and occupiers.

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
39	Completion of Works'	1 & 2	This clause does not cover: i. the procedure for testing and commissioning ; ii. time frame for Engineer to issue Certificate of Partial Completion; iii. the procedure for contractor to inform and apply Certificate of Partial Completion; iv. the procedure for Engineer to decide, if otherwise state the reasons for that; and v. the procedure for Engineer to certify practical completion including the date for completed works.
42	Partial Occupation by Employer	1 & 2	This clause does not provide: i. procedures for payment for the occupied parts, performance bond and calculation of the retention sum; ii. discussion on the various risks involved; iii. the coverage on the effect of partial occupation and Contractor's work flow, safety precautions and plans for the end users and occupiers; and iv. procedures for the extra insurance coverage for end users and occupiers.
43	Delay and Extension of Time	1 & 2	This clause basically gives minimal coverage on : i. the procedures for notification of delay; and ii. a formal application of extension of time by the contractor. This clause does not include: i. time frame; ii. documents (working program, prove of work as a critical activity, previous applications); and iii. Employer's right in this matter; whether the Contractor can disagree with extension granted or not granted and the procedures for disagreement

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
			On the Engineer's part, this clause does not include: i. guidelines and time frame on how Engineer is to assess the applications including consideration for extension previously granted, concurrent delay, effect of additional and deduction of provisional quantities; ii. request for additional information; and iii. procedures for approving or rejecting the extension of time application
44	Loss and Expenses caused by Delays	1 & 2	This clause is lack of procedure for: i. submission of claim by contractor; and ii. Engineer's decision on approval or disapproval for the claim.
45	Defects after Completion	1 & 2	This clause does not provide: i. time frame for Engineer to generate the Schedule of defects after site inspection, testing and commissioning and/or after issuance of Certificate of Practical completion; ii. time frame to rectify the necessary defect; iii. procedure and time frame to handle critical and emergency defects; iv. further retesting and access for contractor to come in to rectify defects; v. follow on actions upon issuance of the certificate of making good; and vi. procedure if Engineer decides that certificate of making good defects is not to be issued as yet.

Table 2 (cont): Analysis of 'Problematic Clauses' In Terms Of Comprehensiveness

Clause		Para-meter	Description
48	Final Account Certificates	1 & 2	In part (a) regarding to penultimate, the clause is insufficient in terms of : i. procedure for penultimate claim as to how the Engineer should certify with a certain time frame; ii. procedure for contractor to disagree with the penultimate certification; iii. procedure for calculation of the penultimate payment; iv. procedure for contractor to disagree; and v. time frame on penultimate payment to be settled. In part (b &c) regarding to the final account, the clause is insufficient in terms of: i. time frame on when the Engineer is to make the assessment of the defects in the Schedule of Defects; ii. procedures if the contractor disagrees with the final account; and iii. the period of honouring the certificate by the Employer.
49	Effect of Engineer's Certificates	1 & 2	The clause does not: i. define certificates and ii. make exception for the final certificates to have effect in dispute resolution proceeding/s.
51	Termination of Contractor's Employment	1 & 2	This clause does not cover the procedure: i. after termination; ii. for contractor's to disagree to the reasons for determination; and iii. on how contractor response to the notice .

3. Completeness

Parameter 1- Coverage of issues & matter that is relevant within the same topic

Table 3: Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	This clause does not cover i. various duties of the Engineer as the administrator of the contract and ii. the limitations to the engineer's power.
3	Scope of Contract	1	Instead of stating matter related to the scope of work, this clause discusses more on the contractor's general obligations.
4	Work to be to satisfaction of engineer	1	This clause does not mention the area/ issue which need complete satisfaction of Engineer.
5	Engineer's Instruction	1	This clause does not have the coverage on: i. Right for the contractor to disagree with instruction issues and a mean to come to a consensus , ii. Instructions for emergency situations , and iii. claim and delay.
8	Sufficiency of Contract Document	1	This clause does not cover i. the definition of contract documents and ii. if the engineer is to find discrepancy or search for discrepancy.
9	Material and Workmanship	1	In this clause , there is no: i. explanations with respect to conditions pertaining to the need for testing, retesting and opening up; tests that are intended and provided for or not intended; carrying out of tests elsewhere in another location; conditions for costs of test to be borne by Employer; ii. explanation for the terms with respect to 'notice from contractor to Engineer before cover up'; Engineer fails to show up; effects of opening up on time and cost; reinstating back the opening up; conditions for cost of opening up to be borne by Employer; and iii. mention on the submission of quality plan and work method statement for the endorsement of the Engineer in order for work to be more efficient managed on

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
			site.
10	Unfixed Material and Goods	1	This clause does not cover: i. the situation that only certain percentage of the value of materials and goods are made and not the full amount; ii. the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter, i.e. a declaration for material to be free from encumbrances iii. the method on how the contractor should be responsible for loss and damage of the materials and goods; and iv. sanction if the contractor does not take up his responsibility to loss and damage of the materials and goods.
11	Statutory Obligation	1	This clause does not cover: i. the fees and charges required and relevant for a specific contract to be stated in Appendix or elsewhere in the contract; ii. sanction when the contractor does not comply or default with payment of the required fees and charges; and iii. issue on variations order.
12	Patent Rights and Royalties	1	This clause does not cover the method for: i. indemnifying the Employer; and ii. indemnifying the infringement comes from compliance.
14	Inspection of Site	1	This clause does not cover: i. type of information on site to be given in Appendix or elsewhere in the contract; ii. type of information give by employer; and iii. remedies and/or contracting parties' responsibilities for inaccurate or insufficient information.

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
18	Contractor's Superintendence	1	This clause does not provide the right for contractor to disagree with the removal of his agent nor the conditions for Engineer to order removal
21	Removal of Workmanship	1	This clause does not cover: i. ground for removal by Engineer; ii. right for disagreement by contractor; and iii. claim for time in the event of delay due labour/workmen/tradesmen shortages.
23	Variations	1	This clause does not cover: i. right for contractor to disagree with the variation works such as cardinal changes; ii. when contractor is to offer a proposal for variations; iii. the condition on issuance of verbal instruction when it is necessary ; and iv. emergency situation.
24	Measurement and Valuation of Works Including Variations	1	This clause does not provide adequate coverage on: i. measurement of the quantity of work ; ii. standard is used for valuation; and iii. contractor's right to disagree to the valuation of rates and prices proposed by the engineer.
26	Measurement	1	This clause does not cover: i. specifically to whether it is applicable to a Bill of Quantities contract or a contract based on drawing and specification with provisional and prime cost items; and ii. subsequent action after informing on the disagreement over the measurement .

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
27	Sub-letting and Assignment	1	This clause fails to cover matters with respect to i. conditions precedent to employment of sub contractor/s; ii. sub-let the whole work; iii. right for employer to take over contractual responsibility; iv. assignment for insurance or financing purposes; v. specific terms and condition necessary to effect the assignment; and vi. right of Employer to assign.
28	Nominated Sub-Contractor and/or Nominated Supplier	1	This clause does not cover: i. ground and right for disagreement by contractor over the nomination; ii. method for indemnification for the nominated sub-contractor to indemnify for contractor; and iii. condition for employer to pay for the nominated sub-contractor.
31	Artisans and Tradesmen	1	There is no mention on: i. contractor's responsibility in reporting discrepancies in their works; ii. expenses of rectifications if there is discrepancies; iii. claim of loss and expenses, if there is problem with works by others; and iv. extension of time should the discrepancies required rectifications by other contractors.
38	Commencement Time And Delays	1	This clause does not cover: i. condition precedent to commencement of work ; ii. method of statement including quality and safety plan to be submitted before commencement of works; iii. addressing the effect on delay in full possession; and iv. commencement of work to be the date as stated on the letter of award/ acceptance.

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
39	Completion of Works'	1	This clause does not provide coverage on: i. certificate for non completion ; ii. calculation for completion date; iii. issue with respect to testing and commissioning for contractor before the issuance of Certificate of Practical Completion; and iv. standard for engineer to based on the issue of Certificate of Partial Completion.
42	Partial Occupation by Employer	1	This clause does not have coverage on : i. issues on payment for the occupied parts, performance bond and the calculation of retention sum; ii. risk involved in partial occupation upon Contractor's work flow.; iii. issues of defect liability and delays for uncompleted parts; iv. issuance of certificate of non completion for uncompleted parts; and v. separate insurances for end-users and occupiers
43	Delay and Extension of Time	1	In this clause , there is no coverage : i. for contractor to apply extension of time; ii. standard on how Engineer is to assess extension of time; iii. of reasons; and iv. right of contractor to disagree.
44	Loss and Expenses caused by Delays	1	This clause the coverage for : i. reasons loss and expenses is not sufficient ; ii. conditions precedent to the Engineer's decision of approval or disapproval

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
45	Defects after Completion	1	This clause does not provide: i. definition in terms of defects and types of defect which is the contractor to be liable of; ii. testing and commission on defective parts during defect liability period and/or after the issuance of Certificate of Completion; iii. critical or emergency defects; iv. remedies for the Employer when contractor fail to carry out the rectification works for the defects; v. statement of default or the consent of the contractor is needed when Employer employs someone else to do it;
45	Defects after Completion	1	vi. follow on actions after the certificate of making good defect (whether the contractor is relieved from his responsibilities, payment, removal of workmen and equipment and any continuous warranty, if necessary); and vii. actions if Engineer decides that certificate of making good defects is not to be issued as yet.
48	Final Account Certificates	1	In part (a), the clause is insufficient in terms of: i. penultimate claim as to how the Engineer should certify with a certain time frame; ii. right for contractor to disagree; iii. calculation of the penultimate payment; and iv. when the payment should be settled. In part (b &c) regarding to the final account, the clause does not cover: i. the Engineer to make the assessment of the defects in the Schedule of Defects; ii. right for contractor to disagrees with the final account; iii. dispute resolution; and the period of honouring the certificate by the Employer.

Table 3 (cont): Analysis of 'Problematic Clauses' In Terms Of Completeness

Clause		Para-meter	Description
51	Termination of Contractor's Employment	1	This clause does not cover: i. effects after termination; ii. right for contractor's to disagree; iii. method of reaching consensus before the clause of determination is activated; iv. the situation when the contractor is underpaid during determination (case when work is slowed down due to payment reason); v. estimation of what belongs to the Employer and contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site; and vi. issue of suspension.

4. Consistency

Parameter 1- Conflicts between clauses, references, cross referencing to others clauses and external law

Table 4: Analysis of 'Problematic Clauses' In Terms Of Consistency

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	Part 2b states the duties and limitation of the power of the Engineer's representatives. The Engineers from time to time can delegate the representatives' powers and authorities vested in the Engineer and any instruction and approval by the representatives would then be binding between the contractor and Employer (as in Part 2c). Part 2c (i) however states if the Engineer's fail to disapprove, the Engineer reserve the right to do so after. This lacks consistency .
3	Scope of Contract	1	This clause conflict within the clause itself. Whereby this clause is scope of contract but talks about contractor obligations.

Table 4 (cont): Analysis of 'Problematic Clauses' In Terms Of Consistency

Clause		Para-meter	Description
4	Work to be to satisfaction of engineer	1	There is no reference made to the others clauses which indicate where the satisfaction of Engineer is required.
5	Engineer's Instruction	1	Clause does not make reference to Extension of time clauses. In clause 5, it states that the contractor shall within 30 days of receipt of such instruction; however in clause 48, it stated that as is practicable but not later than three (3) months after practical completion of the works. This clause itself is contradicting. When instructions are to be in writing, but the clause starts to provide for an option for oral instructions and to be follow up in writing is a form of contradiction. Part b also states that the contractor should 'forthwith', which has an immediate effect, to comply with instructions but subsequently, in the following sentence, he has seven (7) days.
8	Sufficiency of Contract Document	1	This clause does not provide reference to other parts of the form or contract for the definition of contract document.
9	Material and Workmanship	1	Both issue on testing of material and goods and opening up for inspection works covered up are lump up together in this clause. This is inappropriate because issue relevant to the material and goods are not consistent with issues on opening up, vice versa.
11	Statutory Obligation	1	No reference to the external law and regulation.
12	Patent Rights and Royalties	1	This clause does not provide reference for the specific acts, regulations or law of which it may be relevant to the patent rights and royalties.
23	Variations	1	It is stated that no variations is to be made by contractor without an order in writing but subsequently allows for verbal instructions, if Engineer deemed necessary and contractor to comply with such order. Later, it is stated that verbal instructions can be confirmed with written instruction before or after the execution of work and will be deemed as written instruction. This is a contradiction within the clause.

Table 4 (cont): Analysis of 'Problematic Clauses' In Terms Of Consistency

Clause		Para-meter	Description
26	Measurement	1	The clause is not presented to be an option but a specific clause which states that the quantities set in the Bill of Quantities are estimated value. This is not consistent with the basis of the contract and does not extend the coverage for a contract based on drawing and specification with provisional items.
28	Nominated Sub-Contractor and/or Nominated Supplier	1	The contractor is fully responsible for the nominated sub-contractors' works, actions, defaults, but employee reserve the to pay directly to nominated sub-contractor and nominate supplier.
32	Indemnities to Employer with respect to Personal Injuries and Damage to Property	1	This clause also does not make references to the matters of insurances which are well covered in latter clauses.
38	Commencement Time And Delays	1	Heading actually inconsistent with the clause this can be seen where: i. this clause basically explains on commencement time and possession of site but issues of delays are covered in Clause 43;and ii. Part 38b (ii) states the matter regarding to charges and payments for way leaves, which is in fact more relevant to Clause 11.
39	Completion of Works'	1	No reference to Certificate for Non- Completion.
47	Defects after Completion	1	This clause does not properly refer to others clauses such as completion works and certificate on non completion.
48	Final Account Certificates		As soon as practicable but not later than three(3) month after the completion of work the contractor should submit full particulars of all claim made by himself, but the final account is only closed three(3) month after the Defect liability Period or after other certificates making good defects.

5. Flexibility

Parameter
1- Application to various situations
2- Open/ Close ended

Table 5: Analysis of 'Problematic Clauses' In Terms Of Flexibility

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	-
		2	This clause is too open ended in such a way that when Engineer's representatives fail to disapprove, the Engineer reserves the right.
5	Engineer's Instruction	1	Contractor must comply within seven (7) days as stated but this time frame stated may not be practicable if the scope of the instructions is big and involves additional costs and expenses, which is then subjected to conditions of other clauses.
		2	Time frame in this clause is rather tight as contractor must comply engineer's instruction within seven (7) days as stated
8	Sufficiency of Contract Document	1	Contractor into initiate be responsible look up for discrepancy instead of Engineer take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found.
		2	-
9	Material and Workmanship	1	This clause does not mention on the submission of quality plan and work method statement for the endorsement of the Engineer.
		2	-

Table 5 (cont): Analysis of 'Problematic Clauses' In Terms Of Flexibility

Clause		Para-meter	Description
10	Unfixed Material and Goods	1	This clause gives rise to legal issues regarding ownership of the materials and goods as it does not cover the fact that only certain percentage of the value of materials and goods are made and not the full amount. It also fails to cover the materials and goods supplied by the suppliers and/or subcontractors whether nominated or otherwise of which payment has not been made to the latter.
		2	Client has possession not legal title of the material and goods.
14	Inspection of Site	1	No statement to request the contractor to price risks and any discrepancies accordingly and look into the sufficiency of the contract sum.
		2	-
18	Contractor's Superintendence	1	
		2	-Approval given to contractor's representative can be withdrawn at any time.
23	Variations	1	The procedure and time frame in this clause for verbal instruction are not clear. Emergency situation is not covered.
		2	-
26	Measurement	1	The clause is not presented to be an option but a specific clause which states that the quantities set in the Bill of Quantities are estimated value. This is not consistent with the basis of the contract and does not extend the coverage for a contract based on drawing and specification with provisional items.
		2	-

Table 5 (cont): Analysis of 'Problematic Clauses' In Terms Of Flexibility

Clause		Para-meter	Description
27	Sub-letting and Assignment	1	-
		2	This clause does not mention: i. Sub-contracting are not allowed in whole part of work; ii. assignment are not allowed in whole part of work
28	Nominated Sub-Contractor and/or Nominated Suppliers	1	-
		2	Employer has to pay to the nominated sub-contractor but no condition and procedure are provided. There is no method provided to indemnify contractor. Thus this is too open ended.
31	Artisans and Tradesmen	1	There is no coverage on procedures that previously mentioned under 'comprehensiveness' thus it cannot apply to various situations.
		2	This clause is too open ended.
32	Indemnities to Employer in respect of Personal Injuries and Damage to Property	1	When death, injury or damage is caused by any act or neglect by the Employer and his representatives, there is no reduction in the proportion liable by the Contractor.
		2	-
38	Commencement Time And Delays	1	There is no mention on commencement of work to be the date as stated on letter of award or acceptance that work can only commence but stating work can commence after receiving a written notice from engineer.
		2	-
39	Completion of Works'	1	-
		2	Lack of coverage on many issues leaves this clause open ended.

Table 5 (cont): Analysis of 'Problematic Clauses' In Terms Of Flexibility

Clause		Para-meter	Description
42	Partial Occupation by Employer	1	No adequate coverage on consequential effects of partial occupation and the various risks involved.
		2	Certain authorities may refuse to issue permits for occupation based on a partially completed site.
43	Delay and Extension of Time	1	Reasons stated in 43a-k, as reasons stated can be further expanded to include other potential risks
		2	List of reasons is not enough.
44	Loss and Expenses caused by Delays	1	Loss and expenses for other reasons than delay should be included.
		2	-
45	Defects after Completion	1	This clause does not cover critical and emergency defects occur during defect liability period. If there is no stated, the defect completion period is 6 months, which is tight and rather uncommon..
		2	Defects on the schedule of must be completed with reasonable time but no later than 3 month this is too open ended.
48	Final Account Certificates	1	-
		2	Lack of coverage on many issues leaves this clause open ended.
49	Effect of Engineer's Certificates	1	The clause does not define certificates and does not make exception for the final certificates to have effect in dispute resolution proceeding/s which is common in other forms.
		2	-
51	Termination of Contractor's Employment	1	No coverage on suspension of works.
		2	-

6. Clear Structured Framework for Project Management

Parameter 1- Procedure / options to enhanced site administration, contract or site management., team management and people management

Table 6: Analysis of 'Problematic Clauses' In Terms Of Clear Structured Project Management Framework

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	This clause does not cover the various duties of the Engineer as the administrator of the contract , It fails to provide procedure for disagreement when contractor is dissatisfied with the decision of the Engineer's Representative and stated that Engineer's Representative fails to disapprove, the Engineer reserve the right these leads to difficulties in management of the site.
5	Engineer's Instruction	1	This clause does not cover the procedures for the contractor to disagree with instruction issues and mean to come to a consensus. This is not conducive for good site management.
8	Sufficiency of Contract Document	1	This clause does not provide the shared responsibilities between engineer and contractor in checking and reporting discrepancies order to enhance the framework for good project management on site.
9	Material and Workmanship	1	Both issue on material and goods and opening up are lump together. This will cause difficulties when to managing the both. Submission of quality, safety together with work method statement plan is good for site management but this is not included.
10	Unfixed Material and Goods	1	Without proper sanction for contractor for not taking the responsibility for material and goods on site, the clause does not enhance good site management.

Table 6 (cont): Analysis of 'Problematic Clauses' In Terms Of Clear Structured Project Management Framework

Clause		Para-meter	Description
11	Statutory Obligation	1	This clause does not cover: i. Fees and charges required and relevant for a specific work to help reminding the Contractor his responsibility; and ii. assistance to be provided by Employer and its representatives included as certain authorities require the submission of documents and liaison specifically from the Employer's representatives.
12	Patent Rights and Royalties	1	Without method for indemnifying infringement comes from compliance does not give rise to good contract management.
14	Inspection of Site	1	Without the coverage previously stated in 'completeness', thus the clause does not give good contract management.
18	Contractor's Superintendence	1	Approval for the agent can be withdrawn at anytime and the Contractor does not have right / procedure to disagree. Thus, this does not give rise to good team and people management.
23	Variations	1	Managing verbal instruction on variation is complicated due to the lack of procedure and time frame. Inclusion of verbal instructions in of site diary record will prevent future disputes but it is not covered here.
24	Measurement and Valuation of Works Including Variations	1	Without the coverage on measurement of work and how to carry out such measurement, these do not enhance good project management principle.
27	Sub-letting and Assignment	1	Sub-letting and assignment without full coverage on those issue previously mentioned will create difficulties on project management.

Table 6 (cont): Analysis of 'Problematic Clauses' In Terms Of Clear Structured Project Management Framework

Clause		Para-meter	Description
28	Nominated Sub-Contractor and/or Nominated Supplier	1	The contractor is fully responsible for the nominated sub-contractors' works, actions, defaults, but employee reserve the rights to pay directly to nominated sub-contractor and nominate supplier. This will cause contractor finding it difficult to manage his team because he will lost control over nominated sub-contractor.
31	Artisans and Tradesmen	1	Without coverage to all issue with other contractors on site, it can be difficult to manage and coordinate the work. The Engineer is not called to do the coordination works
38	Commencement Time And Delays	1	Without the full coverage on commencement time and delay as mention in comprehensiveness previously will create difficulties to project management.
39	Completion of Works'	1	Lack of coverage on many issues as previously mentioned leaves this clause open ended does not enhance good contract management.
42	Partial Occupation by Employer	1	Without the coverage on : i. consequential effect of partial occupation and various risks involved; ii. certain authorities refusing to issue permit of partial occupation; and iii. issues of payment for occupied parts, performance bond and calculation of retention sum Issue of partial occupation cannot be effectively managed.

Table 6 (cont): Analysis of 'Problematic Clauses' In Terms Of Clear Structured Project Management Framework

Clause		Para-meter	Description
43	Delay and Extension of Time	1	Since this clause does not have enough coverage of various issue and procedures as previously, it thus does not enhance good contract management.
44	Loss and Expenses caused by Delays	1	Since this clause does not have enough coverage of various issue and procedures as previously mentioned, thus it does not enhance good contract management.
45	Defects after Completion	1	Since this clause does not have enough coverage of various issue and procedures as previously mentioned, thus it does not enhance good contract management.
48	Final Account Certificates	1	Since this clause does not have enough coverage of various issue and procedures as previously mentioned, it thus does not enhance good contract management.
51	Termination of Contractor's Employment	1	The clause does not cover the contractor's disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated thus it does not enhance good site and contract management.

7. Role Distribution

Parameter 1- Balanced rights and responsibility of parties involved.

Table 7: Analysis of 'Problematic Clauses' In Terms Of Role Distribution

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	This clause does not : i. cover the various duties of the Engineer as the administrator of the contract; ii. limits the Engineer's power . Besides, in this clause the contractor has no right to disagree to the Engineer.
4	Work to be to satisfaction of engineer	1	This clause indicates the power of the Engineer and to comply and strictly adhere to the Engineer's instructions and directions and provides an absolute power to decide with no limitations on the Engineer's power.
5	Engineer's Instruction	1	All of Engineer's instruction must be in writing and oral instructions have no immediate effect. Contractor is to confirm within seven (7) days the oral instruction given and the Engineer is does not reply within the next seven (7) days, contractor's confirmation will take effect based on the latter seven (7) days.
5	Engineer's Instruction	1	When instructions are to be in writing, providing a choice for the Engineer to confirm his oral instruction in writing makes the role distribution uneven
8	Sufficiency of Contract Document	1	Contractor into initiate and be responsible look up for discrepancy instead of Engineer take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found, when the contractor is respond, No responsibility for the Engineer to do regular checking on contract document is stated and he is inform the discrepancy and response only when expenses are expected.
9	Materials and Workmanship	1	The engineer can instruct for opening up and or retesting without stating the conditions precedent.

Table 7 (cont): Analysis of 'Problematic Clauses' In Terms Of Role Distribution

Clause		Para-meter	Description
11	Statutory Obligation	1	Assistance to be provided by Employer and its representatives is included as certain authorities require the submission of documents and liaison specifically from the Employer's representatives.
12	Patent Rights and Royalties	1	Contractor is to indemnify the employer from claim and procedure arising from patent right and royalties but does not cover the method on how.
14	Inspection of Site	1	The contracting parties' responsibilities for inaccurate and incomplete information are not stated. Types of information regarding the site that needs to be provided for by the Employer and his representatives are not mentioned.
18	Contractor's Superintendence	1	Engineer was granted a large extent in his power without limitation. .No statement provided on duties of the contractor's representative.
21	Removal of Workmanship	1	It is too subjective to the opinion on engineer with respect to removal. Engineer was granted a large extent in his power without limitation.
23	Variations	1	In this clause: i. Engineer has power to order variations; ii. there is no limitation on Engineer's power; iii. contractor has no right to disagree; and iv. Engineer has a choice to issue verbal or written instructions.
24	Measurement and Valuation of Works Including Variations	1	In this clause: i. time frames for contractor to propose valuation is given but frames proposing and approval by the Engineer are not mentioned; ii. Engineer fixes all rates and prices in his opinion; and iii. Contractor has no right to disagree.

Table 7 (cont): Analysis of 'Problematic Clauses' In Terms Of Role Distribution

Clause		Para-meter	Description
27	Sub-Letting And Assignment	1	In this clause: i. subcontractor and assignment is allowed but conditions precedent to the employment of subcontractor is not seen; ii. it does not mention employer to take over contractual responsibility if necessary; and iii. does not cover condition precedent to assignment.
28	Nominated Sub-Contractor and/or Nominated Supplier	1	In this clause: i. the engagement of Nominated Sub-contractor and nominated suppliers to be nominated and decided by the Engineer ; ii. contractor has no right to disagree; iii. Engineer to pay the Nominated Sub-contractor and nominated suppliers directly can create difficulties for the contractor to manage the works as he would lose the full authority over the nominated sub-contractors.
31	Artisans and Tradesmen	1	There is no coverage on Engineer, Employer, and Contractor's responsibilities.
32	Indemnities to Employer in respect of Personal Injuries and Damage to Property	1	When death, injury or damage is caused by any act or neglect by the Employer and his representatives, there is no reduction in the proportion liable by the Contractor.
38	Commencement Time And Delays	1	The clause is focused on potential possession and the related extension of time and payment issue but does not cover failure of employer to give others parts of the works. This clause also does not cover fully role distribution on possession of site and Work on site within the stated period and after receiving a written notice from the Engineer.

Table 7 (cont): Analysis of 'Problematic Clauses' In Terms Of Role Distribution

Clause		Para-meter	Description
39	Completion of Works'	1	The Engineer is to issue the Certificate of Completion when the work is deemed to have reach practical completion according to his satisfaction.
42	Partial Occupation by Employer	1	This clause does not have coverage on: i. Contractor's work flow with respect to partial occupation; ii. further insurances for the end-users;and iii. Contractor's safety precautions and plans for the end users and occupiers.
43	Delay and Extension of Time	1	In this clause: i. contractor should immediately submit a written given notice of the causes of the delay to the Engineer and the Engineer would as soon as possible give a decision; ii. contractor has no right to disagree.; iii. implying that the Engineer is final ; and iv. does not mention the Employer's right in this matter.
44	Loss and Expenses caused by Delays	1	This clause is does not cover the procedure for: i. claim by contractor; and ii. Engineer's decision on approval and disapproval.
47	Defects after Completion	1	Contractor role is make good of defects after completion , but no coverage of: i. defects ; ii. types of defects ; iii. emergency defect occur during defect liability period. Engineer role is to generate schedule of defects but no time frame is provided for. Employer can get others contractor to rectify but procedures for doing so is not clear.

Table 7 (cont): Analysis of 'Problematic Clauses' In Terms Of Role Distribution

Clause		Para-meter	Description
48	Final Account Certificates	1	Engineer is supposed to make assessment of the defects in the Schedule of Defects but the clause is lack of comprehensiveness as presented previously.
51	Termination of Contractor's Employment	1	Engineer only needs to serve notice specifying the default and contractor only have fourteen (14) days after such notice receiving the notice' to react.

8. Risk Distribution

Parameter 1- Even distribution of negative impact or consequences.

Table 8: Analysis of 'Problematic Clauses' In Terms Of Risk Distribution

Clause		Para-meter	Description
2	Duties of Engineer and Engineer's Representatives'	1	In this clause: i. limitation of Engineer's power is not listed and ii. the contractor has no right to disagree to the Engineer.
4	Work to be to satisfaction of engineer	1	This clause indicates the power of the Engineer and to comply and strictly adhere to the Engineer's instructions and directions and provides an absolute power to decide with no limitations on the Engineer's power.
5	Engineer's Instruction	1	In clause there is no limitation of Engineer's power, Contractor has no mean for disagree for disagree of instruction and it is unclear for claim loss and expense due to Engineer's instructions.
8	Sufficiency of Contract Document	1	Contractor into initiate be responsible look up for discrepancy instead of Engineer take up the responsibilities for more vigorous checking of the contract documents and inform on discrepancies, if they are found. This might leads to the contractor use the discrepancy of the contract as additional advantage to lessen his obligations.

Table 8 (cont): Analysis of 'Problematic Clauses' In Terms Of Risk Distribution

Clause		Para-meter	Description
9	Materials and Workmanship	1	The engineer can instruct for opening up and testing without stating the conditions precedent.
10	Unfixed Material and Goods	1	In this clause: i. client has possession but not the legal title of the material and goods; ii. absence of proper sanction for not taking the responsibility for material and goods on site; and iii. material and good to be free from encumbrances.
11	Statutory Obligation	1	This clause does not cover: i. variation caused by complying of statutory obligation, and ii. absence of sanction when the contractor does not comply with payment of the required fees and charges.
12	Patent Rights and Royalties	1	The clause does not cover the method for indemnifying should infringement comes from compliance with the clause.
14	Inspection of Site	1	The contractor has to take at his own risk for the accuracies of information and document given by the Employer
18	Contractor's Superintendence	1	This clause: i. approval given to contractor's representative can be withdrawn at any time; ii. no procedure provided for disagreement of contractor; and iii. no limitations on Engineer's power.
21	Removal of Workmanship	1	In this clause: i. with respect to removal, it is too subjective to the opinion on Engineer; ii. Engineer was granted a large extent in his power without limitations; and iii. it does not cover the claim for time in the event of delay due labour/workmen/tradesmen shortages.

Table 8 (cont): Analysis of 'Problematic Clauses' In Terms Of Risk Distribution

Clause		Para-meter	Description
23	Variations	1	This clause: i. Contractor has no right and procedures to disagree; ii. Contractor has no right and procedures to propose variation; and iii. there is no limitation on Engineer's power on the issue of variations.
24	Measurement and Valuation of Works Including Variations	1	In this clause: i. there is no standard for valuation to be based on; ii. Engineer fixed all rates; and iii. Contractor cannot disagree with it.
27	Sub-letting and Assignment	1	In this clause: i. subcontractor and assignment is allowed but conditions precedent to the employment of subcontractor is not seen; ii. it does not mention employer to take over contractual responsibility; and iii. does not cover condition precedent to assignment.
28	Nominated Sub-Contractor and/or Nominated Supplier	1	In this clause: i. contractor has no right to disagree; ii. there is no method of indemnification for negligence ; and iii. there is no method of indemnification for Nominated Sub-Contractor.
31	Artisans and Tradesmen	1	There is no coverage on Engineer, Employer, and Contractor's responsibilities
32	Indemnities to Employer with respect to Personal Injuries and Damage to Property	1	When death, injury or damage is caused by any act or neglect by the Employer and his representatives, there is no reduction in the proportion liable by the Contractor.

Table 8 (cont): Analysis of 'Problematic Clauses' In Terms Of Risk Distribution

Clause		Para-meter	Description
38	Commencement Time And Delays	1	This clause does not explain on the effect of delay in full possession of site.
39	Completion of Works'	1	No limitation to Engineer's power to certify practical completion as it is based on his satisfaction.
42	Partial Occupation by Employer	1	Some authorities may refuse to issue partial occupations permits. In this clause, there is no coverage on: i. consequential effects/risks off a partially site to the end user or occupiers; and ii. consequential effects/risks off a partially completed site to the Contractor.
43	Delay and Extension of Time	1	This clause: i. There is no coverage on procedures as previously mentioned in 'comprehensiveness'; and ii. Contractor cannot disagree with the extension of time granted.
44	Loss and Expenses caused by Delays	1	This clause is does not cover the procedure for: i. claim by contractor; and ii. Engineer's decision on approval and disapproval.
45	Defects after Completion	1	No coverage on issues in 'completeness' as previously mentioned, thus it does not cover the parties in terms of risk.
48	Final Account Certificates	1	No coverage on issues in 'completeness' as previously mentioned, thus it does not cover the parties in terms of risk.
51	Termination of Contractor's Employment	1	Reasons for defaults are ambiguous and there is no coverage on issues in 'completeness' as previously mentioned, thus it is unequal to risk distribution.

APPENDIX C:

Interview Transcripts for 23 Interviews for Verification of Problematic Clauses

1. PWD 203A

Clause 3 The SO and SO's representative

Interviewee 1

Interviewee 1 mentioned that it is the power of the SO to delegate and hence, it is normal to see the SO delegating any powers and authorities vested in the SO to his representative. The problem in PWD form is usually the SO is someone from the Government and hence, he may not be as independent and clause as such is giving a lot of power to the SO, which may not necessary be good in view of the 'looseness' in the government sector.

But he reminded that this is first and foremost a government form and hence to be employer based and give such power to the SO is normal. So the contractor must understand this and take what he thinks is calculated risk.

Interviewee 2

Interviewee 2 is in the opinion that he would rate the clarity of this clause as low. Most sentences in PWD 203A are short but somehow, long sentences like this exist and that makes it very legalese.

The general philosophy of the form is if there is a fault, it must be the contractor's and hence, the SO are give the right to revert any decision make the SO's representatives. From his experience is managing the contract for KLIA, it is a tough form on the contractor. And therefore, it is definitely true to say that the contractor has not right to disagree if the SO wants to revert any decision.

Interviewee 3

As construction lawyer, Interviewee 3 said he is used to the long sentences but definitely there is room for improvement.

Interviewee 3 stated that the contractor must be ready to take calculated risks when he enters into such a contract because essentially, it is an unfair form. It is definitely true to say that professional personnel on site cannot be really 'professional' when the SO is given such rights to revert any decision (approved or fail to disapprove) when executing this contract. It will cause confusion and of course can be disputed, but it is not so easy as disputes can be equate to challenging the government

Interviewee 4

Interviewee 4 is in the opinion that the overall form is not well draft out. Even though he is used to reading long sentences, he was in the opinion that a lay person may find the sentences long and difficult to read.

Interviewee 4 agreed that it can be confusing and problematic when SO has already listed down the vested powers to his representative including approving the works and material, SO himself can disapprove later. He believed that the clause is written in such a way that it leaves issues to the discretion of the SO. It is an Employer's form after all. Hence, if there is an experienced SO, potential disputes arising will be less. If the SO is a 'fault-finder', then this is going to be tough for the Contractor.

Interviewee 5

Interviewee 5 agreed that there is an advocacy for simple English and simplified structure for sentences in standard form. This form is certainly inflexible is such a sense.

Clause 6 Scope of Contract'

Interviewee 1

According to Interviewee 1, as far as the Government is concerned, it will do its duties and obligations. It will pay and hence, it expects the Contractor to perform. So it will list down the duties and obligations because to the Government, the Contractor has a better chance of not doing his obligations. He reinstated that it is an employer based form after all.

Interviewee 2

Interviewee 2 agreed that the title contradicts the content and therefore, it is a form of discrepancies, which actually to him, is all over the PWD form. Form users do need to read to make sure they understood the form.

As for not listing the Government or SO's responsibilities, the clause is fairly consistent in that sense. It has successfully not covered as much as it possibly can on the duties and responsibilities of the Government's side.

Interviewee 3

Interviewee 3 did not think there is much issues of inconsistency here as most form users practicing should know that this clause will not provide much detail in terms of reference to other clauses but it may be true to say that the obligations of contractor can be more extensive and comprehensive. In a way, this is a contradicting form. It wants to list down the Contractor's obligation but did not go all the way because it is assumed that other clauses will do the coverage.

Interviewee 4

Interviewee 4 agreed that the title of the clause is not so appropriate. He did not think that it is possible to include various referencing in the clause and emphasized that practice is important in understanding the form. But he agreed the list of obligations can be better extended.

He also mentioned that obligations of SO is based on code of practice, which is part of the law and therefore not stated in the contract. His various duties are stated in the various clauses in the form.

Interviewee 5

Interviewee 5 stated it is a purist approach to get Government to assume some risks. It happens in some forms but it is definitely not happening in this one. So not stating the obligations of the Government is quite normal. If the definition of fairness and risk is one sided, then he agreed that this is the way PWD form is.

Clause 8 Contract Documents

Interviewee 1

Interviewee 1 agreed that the sentences are long and words used tend to be ambiguous. He mentioned that it is a drafting issue.

With SO usually from the government agencies, it is really impossible for the form to provide for SO to check and hold same amount of responsibilities as the Contractor in terms of checking for discrepancies. From the Government perspective, it is paying the Contractor to take up those risks. In his opinion, Contractor will fare better if they price the work and risks accordingly and try not to think of shortcuts. It is really quite pointless to expect fairness or equal risk distribution.

Interviewee 2

Interviewee 2 agreed that ambiguous terms exists and with words like 'true intent' users would not really know what it to be expected of them.

Once again Interviewee 2 emphasized that this is a government form and risk is almost definitely place on the contractor, who wants to do the job. He believed that this is an over archaic way of using standard form. There is definitely no time frame or procedures provided for the SO to response. It does not enhance site management because if everything is the Contractor's problem and the Contractor needs to find the solution, it is of no benefit to the Government if Contractor ends up cutting corners.

Interviewee 3

Interviewee 3 did not think the terms used in this clause is that bad but it is definitely legalese. He would also think it is better to have contract documents properly listed instead of trying to cover the issues with terms such as mutually explanatory.

As for checking of discrepancies solely the responsibilities of the Contractor, the practice has always been as such. He agreed that there should be a time frame for SO to response. The problem is SO cannot be independent because

he represents the Government. If there is a 3rd party serving as the contract administrator, it is definitely easier for the Government to put more responsibilities on him.

Interviewee 4

Interviewee 4 mentioned that form users may not really understand these terms unless they have been practising with the form for a while. And he agreed that the sentences are long. He also agreed that if the contract documents list is provided, it would be better, which is normally the case in the recently revised form.

He also mentioned that it is true that Engineer or SO will be more alert if they also share the responsibilities in checking and reporting on discrepancies. But to put in down in the form, there is definitely still some way to go. And the reason for no time frame once again is because the form wants to give flexibility to the SO.

Interviewee 5

Interviewee 5 stated that certain words are used in the old forms and because it has always been there and there are not better terms, they remain in the new form. Generally, the Contractor has no bargaining power and therefore, the risk taken is highly. Government simply would not want to borne any consequences of any unforeseeable conditions.

Clause 14 Indemnity In Respect Of Personal Injuries and Damage to Property

Interviewee 1

Interviewee 1 agreed that there should be more procedures or methods for indemnification. When the Contractor undertakes and says that he will indemnify, it means that he undertakes to do the job properly and if there is a damage/injury/death of a 3rd person, the Contractor will compensate the Government. It is true that if the clause does not make reference to insurances clauses, then it can be unsure as how the Contractor will be indemnifying the Government.

He agreed that normally Employer will need to responsible if he is the cause of the problem. For example, should there be compliance by the Contractor over the instructions of the SO, and the building caught fire, the Employer will be responsible. In this case, Government has gotten the Contractor to take up insurance and he will then claim through the Contractor. It is basically the Government way of mitigating their risks to another 3 rd party. In a way, it is agreed that it is unfair and unequal in terms of risk distribution. Unfortunately, that is the practice that everyone knows.

Interviewee 2

Interviewee 2 agreed that there are long sentences within the clause and that affects the clarity of the clause. He also agreed on the inconsistencies in terms of referencing among the related clauses here. He believed that the clauses can be better connected with one another to provide for an overall more complete coverage of the issues of indemnification and insurance.

Interviewee 3

Interviewee 3 opined that clause is readable but when it comes to execution, the form users may not really know what to do. The clause required the Contractor to indemnify the Governement in whatever circumstances but does not really state the indemnification procedures or methods. He opined that the clause may not be as effective as it is assumed to be.

Interviewee 4

Interview 4 mentioned that a complete indemnification from the Contractor to Government is really arguable and it had been disputed before in arbitration cases where Contractor insists that the fault is the SO's instruction and hence, the Government should be liable for it. He agreed that the clause inherently has problem and should be better drafted to have equal responsibility in terms on indemnification by the both side.

He agreed that as Clause 14-18 are related, it is better to cross referenced them in order to provide for a better coverage and avoid confusion.

Interviewee 5

According to Interviewee 5, other forms may see that Employer to take up more risks especially for unforeseeable conditions but the Employer here is usually the Government. The practice here is the risks has to be passed on to the Contractor

Clause 15 Insurance Against Personal Injuries and Damage of Property

Interviewee 1

Interviewee 1 opined that it was good the form actually has a SOSCO clause which is not presented in other forms but he agreed that SOSCO is only to cover the injuries. And in SOSCO is a legal requirement, which pays out quite a minimum sum. Damage of Property will usually be taken up under Contractor's all risk.

He mentioned here that the clause actually wanted the Contractor to take up a separate insurance to cover for injuries and damage of property. He agreed that the Clause is really not so specific and Contractors may have misses if he is to take the clause as it is and price wrongly. But interestingly in his experience, most Contractors seem to know what to do. So, it looks like everyone knows their role, which of course does not mean that the contract is not necessary or can be drafted sloppily.

Interviewee 2

Interviewee 2 agreed that there are long sentences within the clause and that affects the clarity of the clause. He also agreed on the inconsistencies in terms of referencing among the related clauses here. He believed that the clauses can be better connected with one another to provide for an overall more complete coverage of the issues of indemnification and insurance.

Interviewee 3

Interviewee 3 again agreed that the sentences even though are readable but may be difficult to understand when executing the clause. Contractor is required to take up insurance for injuries and damage of properties but later on Clause 17 covers SOSCO and Clause 18 cover insurance of works. The confusion may set in when the form users thinks that Clause 17 and 18 are the necessary insurance and may not realise to the need to take up a separate one and hence, does not price accordingly. These clauses really should be cross referenced to improve on the clarity.

He noted that insurance must be taken up as that is law and that buying insurance is statutory and the Government wants to put it down in contracts so that Contractor does not flout the rules and once it is contractual, it can take immediate actions since it is a breach of contract.

Interviewee 4

Interviewee 4 mentioned that the clause mainly focused on the Contractor's responsibility to take up the insurance to cover the liability of the Contractor and his team. Generally, because the Contractor has taken up the insurance, claims arising from Government's default will also be covered via the same insurance. Hence, the Contractor must accordingly. This is common practice but he agreed that the clause is not clear on this matter.

Interviewee 5

Even though not clearly stated, the clause is actually requiring the Contractor to take up insurance for personal injuries which is usually dealt with under Employee's Social Security Act 1969 and Workmen's Compensation Insurance. Therefore the Contractor is to take up at least two (2) insurances, one of the workers and one for the works. He agreed that the clauses when not specific and not properly crossed referenced will create much uncertainties and ambiguities.

Clause 18 Insurance of Works

Interviewee 1

According to Interviewee 1, insurance is a form of transferring risk to a 3rd party by the payment of sum of money called premium. Government is paying the Contractor to take out insurance and therefore, the Contractor must price it in accordingly.

If the contractor fails to take it up, the Government will buy and deduct the payment from the Contract Sum. He opined that this practice should not be there as it is no good when Government buying the insurance, it will become a choice for the Contractor to either buy or leave it to the Employer. He agreed that the clause is not well-drafted without enough of coverage and remedial actions.

Interviewee 2

Interviewee 2 agreed that there are long sentences within the clause and that affects the clarity of the clause. He also agreed on the inconsistencies in terms of referencing among the related clauses here. He believed that the clauses can be better connected with one another to provide for an overall more complete coverage of the issues of indemnification and insurance.

Interviewee 3

Interviewee 3 opined that the remedies for the Government if the Contractor fails to take up the insurance can be more extensive such as not allowing site possession or commencement of works until he does so. Insurance must be taken up as that is law and he opined that buying insurance is statutory and the Government wants to put it down in contracts so that Contractor does not flout the rules and once it is contractual, it can take immediate actions since it is a breach of contract. The sanction for not taking up insurance should be more specific in order to be more effective.

Interviewee 4

Interviewee 4 opined that the clause required for insurance other than that for injuries and damage of property. This is to insure the works against the 'natural forces' or unexpected events.
He agreed that cross referencing is very much needed to complete the coverage on the issue of indemnification and insurance. Interviewee 4 also agreed that the sanctions for failing to take up any of the insurance should be clearly specified and not just be left up to deduction of payments

Interviewee 5

Interviewee 5 mentioned that under common law, the Employer has to take up a policy to make sure that contractor gets insurance. It is definitely the Contractor's obligation and he would usually take the all-risk insurance.

Clause 19 Setting Out

Interviewee1

Interviewee 1 reinstated this form drafted by the Government and not a negotiated form as some would like to think it is. This is a form by the Government for the Government and therefore it is expected that even though checking is done, it has to emphasize that it does not relieve the Contractor of his responsibilities. Hence, the Contractor should really price for the potential errors and it must be remembered that SO does not necessary do the design in this form unlike the role of Engineer/Architect in forms like PAM where the SO responsibilities is actually more. So here the SO play the role of the agent of the Government and therefore not held accountable even if he has checked the setting out works.

Interviewee 2

Interviewee 2 said that this is essentially not a fair form as one must remember this is a Government form. So to the Government, the SO is just there to check but not to certify that Contractor have set up accordingly. It is the Contractor's duties to carry out the setting out work properly and carefully.

Interviewee 3

In practice according to Interviewee 3, this clause essentially amplifies the Contractor's responsibilities. It really wants to make sure that the Contractor knows the responsibilities so that the Government is protected.

Interviewee 4

According to Interviewee 4, it must be reminded that if the SO is the agent of the Government, he essentially a given a lot power for decision to be made and works to progress on site. It does seem generally to be an unfair that SO is not taking the actual responsibilities while so much power has been given to him. It may not be easy to say

such delegation of power is unfair but it is definitely biased towards the Government who pays for the Contractor to take up such responsibilities. Such a case may be different if the SO is the Engineer or Architect in a IEM or PAM form.

Interviewee 5

Interviewee 5 stated that if one take a neutral approach, the form is obviously biased towards the Government. It is typical of this form not to take the responsibilities such as being responsible for. In the holistic approach, it is of course better that both side take some responsibilities in terms of the setting out work.

Clause 20 Unfixed materials and Goods

Interviewee 1

Interviewee 1 was definitely concerned on the issue of legal title and ownership of the materials and goods. He agreed that this can really be an issue should the suppliers or sub-contractor come to claim or remove their material because payment has not been made. There is basically no retention of title clause in Malaysian forms, which says title is passed but ownership is only given upon completion of payment. It is better to request for transfer of title or declaration that the material and goods are free from encumbrances.

Interviewee 2

Interviewee 2 agreed that legally it is true that Government does not own the material and goods because he has not pay in full and he does not owe the legal titles of the items. This remains a big issue in clauses as such because it is usual that the title is passed upon the delivery of those items. He stated that Once materials are affixed to the land, title passes from the contractor to the Employer even when the materials have not been paid for. If however the employer has paid for the materials and they are not attached to the land, the employer will only own the materials if the contractor to whom he made payment had title.

Interviewee 3

According to Interviewee 3, another important aspect on title is the relationship between the main contractor and its sub-contractor or supplier. Normally it is implied that the latest titles for material and good will pass from the supplier or sub-contractor of the unfixed goods or materials to the main contractor at the time of delivery and it is not dependent on whether payment has been made unless the sub-contractor or supplier include the retention of title clause in their agreement with the Contractor.

Say if the main contractor does not pay the sub-contractor, the title has not been passed and sub-contractor and Employer do not have a contract even. Interviewees 3 strongly suggested that the clause must look at the issues of material by supplier and sub-contractor carefully.

Interviewee 4

According to Interviewee 4, the clause is drafted to protect the Government from situations of Contractor delivering the material and goods prematurely, claim for payment and take them elsewhere. It also insists on the Contractor to look after the material and goods delivered and are liable for the damages of such items. These are the obligations of Contractor and should remain as such.

But Interviewee 1 reminded that the clause did not deal with issues on ownership of such material and good. If the clause is unclear, the titles material, goods and equipment can be still under the Contractor. Based on his experience, there have been seen cases of suppliers coming in to remove the material as the Contractor has not been paying them. Therefore, the Employer really has to be careful with making the payment/s to the Contractor, which has been set normally at 75% of the material worth. Either that or the clause has to be tightened up.

Interviewee 5

In the opinion of Interviewee 5, forms like to concentrate on standards and quality of material delivered which basically render clause as such ambiguous as to what standard of measurement if quality based upon besides of course the specification. He stated that the issue with titles and ownership should be the focused of unfixed material and goods.

Clause 21 Compliance with the Law'

Interviewee 1

According to Interviewee 1, compliance with law means that the contracting parties have to follow whichever law and whichever part that is not followed; contracting party has to be liable for it. For example, if the Contractor employed illegal workers on site, he has broken the Law of Malaysia and also breached the contract. In some circumstance, it may be more effective to actually use the Law while in others cases, one does not need to use the law since there is a breach of contract already.

He agreed that statutory requirements and compliance to law should be treated differently and extended coverage should be included for both. It is already done in other forms like PAM.

Interviewee 2

Interviewee 2 is in the opinion that the clause tries to cover too many things within a short clause. It in fact should just follow on the Compliance with the Law and not try to incorporate statutory requirements, which generally includes fees, permits etc by authorities bodies. Both warrant their own respective coverage. Therefore, he agreed that this clause is still rather raw.

Interviewee 3

Interviewee 3 opined that the clause is not meant to cover other issues such as obtaining permits and zoning fees. And the form does not cover specifically on these issues. Essentially the Government is asking the Contractor to pay for fees and charges that he needs to start work and do the work accordingly. He agreed that this is written to protect the Government. Therefore, it is important to price it carefully when the Employer is the Government and if the form is adapted by a private client, it may be good to clarify. There are definitely some points to be improved here.

Interviewee 4

Interviewee 4 agreed that this clause fails to cover the consequences or remedies if the Contractor failed to comply with payment of the required fees and charges. For example, the Employer can hold Contractor's payment or deduct the payment from the Contractor for the amount he is accountable for. However, he did not think this is a big issue because in practice, the Government does have the authority to deduct payment of the Contractor.

Interviewee 4 agreed that in terms of coordination it is appropriate for the Government to provide help through his designers and/or SO as it is easier to deal among the government agencies. For example, if the project involves digging the council road, JKR's letter asking for permission will be more effective than the Contractor trying to coordinate the liaison.

Interviewee 5

As Engineer himself, he definitely sees the point of providing assistance to the Contractor when liaising with the authorities. This is even more so if he is the designer for the job.

It is important to state that Contract is to be complying with the Law of Malaysia especially if a foreign company has undertaken to do the job. Generally, FIDIC may be their choice as they may find PWD biased to Malaysian's Employer.

Clause 22 Design

Interviewee 1

Interviewee 1 agreed that the Contractor must be liable for the temporary works design. The clause has not been clear about the issue of design. He opined that the clause tries to make the form flexible by introducing design component but then it go blotchy and did not fully spell out the what constitutes design and how and when the clause is used.

In his opinion, level of involvement in design from the Contractor very much dependent on the contract type. Most of the time, the Employer will undertake the risks. But in this case, the Government wants the contractor to take up full responsibilities for his design portion. He totally agreed that with Professional Indemnity insurance of a professional designer, this clause is meaningless.

Interviewee 2

He agreed that this clause is not comprehensive because the issue of design must be made dealt with in conjunction with different parts of the contracts, procedures and other external elements. The drafters must be cognisant to include the whole package that constitutes a design work. He also reminded that the form is not a one size fit all form and therefore, the form must be clear on the extent of design and what components requires design before drafting the form. Again throwing a clause as such without much explanations and references to other relevant documents or clauses can be more of a problem than a protection to the Government.

Interviewee 3

Interviewee 3 reminded that SO is not an independent certifier for the design the Contractor needs to do and submitted. He should not be put to 'approve' the design as that would carry liability. Instead they should be a professional person under the Government to approve of design so that Government is covered or the Contractor must submit a design that is done by a professional designer with professional certification. Unless the SO is also the designer then he cannot take up any joint liability. Essentially this clause is not written correctly.

Interviewee 4

Interviewee 4 agreed to the issues raised from this clause. The portion the Contractor need to design whether it is alternative design or a part to be designed by him, he has to take responsibility, which is without a doubt. The checker or certifier has to take certain amount of responsibilities but definitely not to the extent of the designer. He mentioned that there is no coverage of temporary works design too which is generally by the Contractor.

He emphasized that Government should and must make sure that for the Contractor's design portion; it must be signed by a professional engineer who is covered with Professional Indemnity Insurance. In fact it would be quite silly for Government to accept just any drawings and design from the Contractor.

Interviewee 5

From the purist approach, Employer should take some risks even in the design. It actually cannot be risk free by mitigating it to the Contractor as such stated in the clause. It may be just an impracticable assumption. The form should really bring in professional designer when handling the design aspects as it can be better cover with Tort Law and not contract law.

Clause 23.0 Employment of Workmen

Interviewee 1

Interviewee 1 is in the opinion that this clause is actually quite extensive in coverage on the necessary issue of dealing with workmen. There are SOSCO, insurances and this clause. In a way this form is complete in these provisions. However, he agreed that safety and health should be included in the form if not this clause.

Interviewee 2

Interviewee 2 mentioned that when dealing with workmen, the Government tries to be benevolent and kind. It puts in many safeguards to protect the workmen. It is true that it seems that the clause is putting the Contractor in a 'bad light' in the by being very strict about how the Contractor have to manage the workmen, implying that he may be abusive or ignorant in managing his workers. It is not exactly a bad thing. If clauses as such can help the Contractor to practice his workmen management, it is good in the long run.

Interviewee 3

Interviewee 3 also does not agree with language use some parts are ambiguous and long. It is not that hard to understand but in practical, it is not easy to execute. Generally he opined that paying for SOSCO is statutory and the Government wants to put it down in contracts so that Contractor doesn't flout the rules and once it is contractual, it can take immediate actions since it is a breach of contract.

However, he did not favour the clause such as the SO at his liberty can object and or removal of workmen. This amplification of SO's power can be more effectively done should the clause on removal of workmen be more procedural and coverage on conditions of removal extended.

At this point in time, many laborers still do not know their rights under the labour law well, and therefore, immediate termination and removal are still not challenged. In some cases overseas, such actions may cause a lawsuit.

Interviewee 4:

Interviewee 4 agreed that the clause has ambiguous terms like 'good character, careful' as it is pointless to state such because there may be over 10 to 100 workers, sometimes more, on site at the one time and the workers are not interviewed like in the normal business employment and hence, how would the Contractor or his agents actually know the character of every single person employed. He opined that it will be better to put in the tighter clause in terms of removal.

He agreed that the clause should cover other issues like safety and health. It seems that the clause has not caught on to the more updated issues of workmen management.

Interviewee 5:

Interviewee 5 also think that the Government has to upkeep an image of benevolence and therefore all these items in the Clauses are there not because the Contractor does not know what to do but it is more like saying Government protect the weak. He agreed that thoroughness can be better achieved with incorporation of safety and health which is actually important to the workmen on site.

Clause 24 Variation

Interviewee 1

Interviewee 1 stated technically this clause left a lot to be desired. It is basically a simple clause which says that if there is a variation, a variation will be ordered. And the Contractor shall forthwith comply with the order. There is really no question of whether the Contractor agrees to do the work or not and whether the price is right or not. Basically, there is no equitable principle here.

He also agreed that the clause should be tied in with instructions. When instructions are given, the Contractor shall forthwith carry out the work. And here it states that the contractor shall forthwith carry out the works upon receiving variation order indicating the order must come first. The question remains what if the instructions warrant variations, then which one would govern.

Interviewee 2

According to Interviewee 2, it is worthwhile to remember that there in order to approve the variation or a variation that is beyond certain amount, the government agencies have their standard operating procedures. Therefore, if the procedures and time frame are provided, it will almost be impossible to meet them. Hence, PWD form would opt to ignore them and leave it to discretion of the SO. It is a case of why put it down if we cannot meet it anyway.
Interviewee 3

Interview 3 mentioned that by reading the clause, one would think that it can be executed. Problems of execution are not apparent. But the clause in actual fact is not procedural. It covers the minimal and leaves the critical issues such as issuance of variation to the SO. It does not tell the users anything at all and of course the method of measurement later will be affected as well.

Interviewee 4

According to Interviewee 4, he has seen many cases of variation only being approved at the end of the project. It is definitely unfair and risky for the Contractor who has carried out the works already most of the time. It is a tight situation for the Contractor. If he does not proceed with the works, his other parts of the contract may be affected or delayed and in some cases urgent issues. If he proceeds, he risked not being assessed and paid accordingly.

The form essentially does not protect him. His remedy will be to must make sure the instructions to add or deduct certain works are in writing or recorded in the site diary record and should he later disagrees with variation valuation or in some rare cases, variation order totally not put forward, he can dispute that..

Interviewee 5

Interviewee 5 agreed that the clause should be tie in closely with instructions. If the instructions constitute a variation and yet there is an urgent need to carry out the works, there must be a mean of recording such instructions.

He generally agreed that the clause has insufficient coverage on the aspect of variation and improvements are needed but he reminded that Contractor does have the common law to protect him.

Clause 25 Valuation of Variation

Interviewee 1

Interviewee 1 acknowledged that the clause does not cover whether Contractor can reject a variation orders. He agreed that this is dangerous especially when dealing with cardinal changes.

And to give SO such power to determine the valuation and rates is very much consistent in this form. The problem again lies in the fact that SO being independent is a myth and the presumption of professionalism is really a false premise. Unfortunately the form is as it is, therefore, he urged Contractor to calculate the risks and price accordingly.

Interviewee 2

Interviewee 2 mentioned that the form is a very flexible form in a bad way. Many terms are un-spelt and left to the discretion of the SO. With sensitive issues as variation, it is bound to be argued and challenged with the way it is drafted. But Government agencies is betting on the fact most Contractors would not bargain or challenged the Government because that would unspoken means the Contractor's name disappearing from the Government's list.

He stated again that to assess a variation based on SO's discretion is deemed as unfair and claims for time and cost must be put forward even though it is not spelt out in the clause. Even though things are not spelt out in the contract, the law says that there are guidelines (legal precedence, legal principles and trade practices) that the Contractor's side can rely on.

Interviewee 3

Interviewee 3 agreed that method of valuation is not clear and in fact by reading the clause, there is no method of valuation as it just completely dependent on the SO's discretion. There is no standard and guideline. The reasonableness of the valuation is dependent on the Contractor. If he thinks it is acceptable and reasonable he accepts it and if he finds it unreasonable, he can argue in practice, even if it is not stated contractually. In other words he can dispute the SO's valuation. But that would be a painful process and this form is obviously not going to make it easy for the Contractor.

Interviewee 4

Interviewee 4 said that this form does required experienced contractors and may not be good for the novel ones. It requires practice to manage all these clauses. When things are not spelt out, users fall back onto practice. This is an old industry, which makes practice an advantage.

He agreed with the issues put forward in this clause. The clause is not necessary unfair but it is definitely biased towards the Government and SO is hence looked upon to have supremacy over Contractor. This is because he reminded that it is not easy to get away with the so called 'tyranny' as all contract administrators should know that the practice is there. When things go into dispute, practice is going to the first of all.

Interviewee 5

According to Interviewee 5, method of ascertainment of variation in this contract is based on Bill of Quantities. It is true to say that some rates may not be covered in Bills of Quantity, but SO is to make a valuation at his discretion, including making adjustment of the rates if necessary. Method of measurement for items that are not included in the bills of quantity such as rocks or hard material excavation is based on Malaysian Standard of measurement.

He was in the opinion that variation works must be assessed with respect to time and cost and the Contractor must reserve the right to claim in writing in order to make it effective. There will be no such events that the Government or SO will remind the Contractor to claim.

Clause 28 Payment to Contractor and Interim Certificates

Interviewee 1

Interviewee 1 is the opinion that the payment procedures are very a standard procedure. And being a standard procedure does not necessary make it right. He agreed to the issues brought up from the clause especially of the 90% of material on site instead of the traditional 75%. The reason why in the first place 75% is because Government does not want to pay full in case the Contractor sends his material prematurely and claim for payment. Then there is the issue of Contractor not paying his suppliers because he has not been pay full and the suppliers claim the material back.

Interviewee 1 opined that to up the percentage to 90% would really not make a lot difference. Contractor can now be more tempted to send items prematurely and still not pay his suppliers while the Government still cannot claim that this material belongs to the Government legally. He agreed that Contractor to declare that the title of material is free from encumbrances may be more helpful.

With regards to the retention amount not being included, he explained that this form seems to be taking the performance bond as the retention, which is actually incorrect. The Government should do both. By observing this issue here, he opined that it is a strange form in that sense.

Interviewee 2

Interviewee 2 was again stating that this is part of the flexibility given to the SO and Government when handling any issues that need certification from the SO. No time frame and no procedures because the SO knows what to do. It is not fair to the Contractor no doubt.

However, it is noted that in many cases, Government actually defaults. If the contract says payment has to be made within 45 days after the certification, many times due to Government's standard operating procedures, it will be delayed. If payment cannot be made because somebody is on leave or off for a course or any other reasons, the Government still defaulted. It is just whether the Contractor wants to hike up the issues or he simply accepts that this is the way those agencies work and manage his works and claims accordingly.

Interviewee 3

Interviewee 3 agreed that the clause in not complete or comprehensive enough. There is basically no yardstick to the evaluation on the claim for the SO and in fact there does not seem to be a need to submit an interim claim by the Contractor. This basically means the SO will inform the contractor that he has make an assessment and he will prepare the certificates and all the contractor needs to do is wait for his payment.. He was unsure of the rationale behind this but this is definitely a different way in drafting a payment clause

Interviewee 4

Interviewee 4 agreed that that this payment has a minimum involvement from the Contractor in terms of requesting for payment. This is not necessary good as practically the Contractor should submit a proper claim in accordance to the guideline and the SO to assess and prepare the certificates to be signed (hence, agreed) by the Contractor before the Government proceed with the payment. It is true that the form cannot spell out everything but such procedures are the minimum guidelines required.

Should there be a dispute, the procedures will be scrutinised and examined and parties who does not follow will be in the breach. By not having procedure, it does not mean it does not exist. Drafters would be wrong to think that less is better for this issue of payment. It is definitely one of most disputed issues in construction cases. Form flexibility cannot be achieved by this way.

He also mentioned by paying 90% for material on site can only help with the cash flow but that is not going to make any difference in the issue of ownership of the material. For that it still needs the titles. He opined that the form seems to want to try to be radically different but not very consistent about it. In some clauses, it is hard on the Contractor but with clauses such as this one, it suddenly starts to get kind.

Interviewee 5

Interviewee 5 explained that stage payment means the Government can split the one payment to the Contractor into stages. This is to give the flexibility to the Government especially at the end of a financial year and the funds are not enough to make a full payment. In almost all cases, the Contractor will consent.

Interviewee 5 also agreed that the issue of retention sum is not mentioned in the clause for the calculation of payment

Clause 31 Final Account and Payment Certificate

Interviewee 1

Interviewee 1 mentioned that Government form likes the idea of off set with payment. Hence, one can see in many clauses when the Government like to do permitted deductions. But deductions really cannot be done without the consent of the Contractor. Government or SO cannot simply give the Contractor's works to anybody without first getting the consent from the Contractor.

While it is true that Contractor need to agree on the final account, it will probably be impossible to get the clause to give the right for the Contractor to disagree. He did not think the PWD can ever be drafted to be fairer to the Contractor. The Government will not put itself is such a hard position. Therefore, it is an onerous form but one have to remember that Contractor gets into it with their eyes wide opened, so it may be difficult to shout for foul play after he has agree to the terms. It is also reminded that in practice, Contractor can and had previously disagreed and disputed the final certification. Hence, it is not beyond hope but the procedures are painful.

Interviewee 2

Interviewee 2 stated that essentially this is a Government and with working with these agencies, such efficiencies level is rather expected. The final account would have to go through various red tapes and hence, the request for submission as early as 3 months before issuance of certificate of practical completion till 3 months after end of defects liability or issuance of certificate of making good defects.

Besides Interviewee 2 emphasized that the reasons why procedures with final account are not well defined is mainly due to the fact that Government agencies have their own set of rules and regulations and the clause is to provide such flexibility to the agencies. Hence, many procedures and time frame will be left to the discretion of the SO.

Interviewee 3

Again Interviewee 3 mentioned that this clause does not have much content like the variation clause. He mentioned it is one of those incomplete clauses in this form. The SO is an evaluator here with a very arbitrary role. In fact roles of Engineer/Architect or the designer of the project should be more defined here in terms of payment certification. It is interesting to see the role of professional persons in clauses like extension of time but not payment clause, assuming that final accounts deal more with accounting rather than the need to certify physical work before payment is made.

Interviewee 4

Interviewee 4 agreed that there is no mention on penultimate claim and payment and reference to the start of defects liability period. As opposed to other forms such as say the IEM form, PWD has the SO that is suppose to certify and prepare account ready for payment. In IEM forms, Engineer who is like the designer of the works will be put in charge of such tasks and it is more practical to do so because he can make the assessment based on his design. He opined that final account settlement actually relies heavily on the completion of defects rectification and assessment of the remedy works.

In addition, Interviewee 4 agreed the time frame given is rather odd. Contractor is to submit his claim 3 month after the certificate of practical completion but the Engineer has 3 months after defects liability or certificate of making good to certify. He suggested that it should be Contractor to submit 3 months before end of defects liability and Engineer has 3 months after to certify. He also opined that there should be a final account meeting before the Engineer to make the certification so that chances of disagreement can be lessened.

Interviewee 5

Interviewee 5 explained that permitted deduction actually means that consent must be given by the Contractor before such deduction is executed. This is very importantly legally as the Contractor should have the first right to make good of defects and any outstanding works.

He also agreed that the clause is not complete procedurally which should include the treatment of penultimate claim and payment, assessment of defects and/or outstanding works and finally assessment of the final claim and payment.

Clause 32 Effect of Engineer's Certificates

Interviewee 1

Interviewee 1 opined that the clause is clear as in there are no certificates by the Engineer that are conclusive, which actually contradicts the role of professional persons who are trained to make judgment in a fair and just manner.

Interviewee 2

The Government may want to think that no certificates by Engineer's are conclusive but in the eyes of the common law, Architects and Engineers are professional practitioners who are governed by the code of practice. In any court proceedings, their certifications will hold some weights. Judges will not ignore the opinions of the Engineer.

Interviewee 3

Interviewee 3 agreed that the kinds of certificates even though are already implied here, it would be better to be more specific by making references to them.

Interviewee 4

Interviewee 4 stated that the clause is pretty clear when it says no certificates and that would include final certificates to be conclusive evidence. In arbitration proceedings, it may not be used as conclusive evidence, but it will be used as evidences especially the final certificates.

He also reminded that Engineers are governed by their code of practice and code of practice is statues and the general practice. Code of practice also spells out the standard of practice. So it is not possible to overrule completely a professional engineer's decision unless the government decides also to sue the Engineer for negligence.

Interviewee 5

Interviewee 5 stated that even though the contract states that no certificates of Engineer's can be used as conclusive evidence, it is not possible to overwrite the law and judicial policy. If the judges call for it as evidence, one has to prove that it is erroneous document and therefore cannot be used as evidence completely. Otherwise, they will be used as evidence.

Clause 35 Materials, Goods and Workmanship

Interviewee 1

Interviewee 1 stated that when the SO is not the designer for the works, his functions as a valuer and certifier is somewhat inadequate. It is difficult for him to call for further testing and inspection or opening up if he does not have a solid reason for the Contractor to do so. Besides as he is still the agent of the Employer, whatever decisions he makes, whether it is opening up or further testing may not seems to be independent at all.

The clause of course drafted in such a way that gives SO absolute discretion to order for opening up or testing. If the clause starts to give procedures and provisions for such instruction, the SO will be losing that absolute power.

Interviewee 2

In the opinion of Interviewee 2, it is the philosophy of PWD form that if there is a problem or a mistake, it must be the contractor's mistake or problem. So if the SO calls for opening up it must be the Contractor's problem and

therefore he must open up as ordered. To the Government, the clause does not need to include the many issues such as SO failing to show up before covering up or the conditions that calls for opening up. Whether it is sloppy drafting or plain biasness, he cannot comment but he has always believed in being specific and a form and its clauses being thorough. This is not seen in this clause

Interviewee 3

Interviewee 3 stated that the clause is very much hinged on the professionalism of the SO. As the contract administrator he evaluates the work done and the material and goods brought in to site. This evaluator has no standard or yardstick for his measurement, so his evaluator role is extremely arbitrary. If he thinks it is necessary to open up then Contractor must open, request of further testing or works is not done accordingly. No disagreement or arguments here. The clause has basically leave things to the discretion of the SO. And that is the way this form is, bias to the Government on the face value

Interviewee 4

Interviewee 4 opined that it is reasonable for the SO to request for test certificates and vouchers to prove for the origin of the material and goods. There are cases of stolen material and goods or smuggled material and goods. That is breaking the law.

According to Interviewee 4, the matters on testing of material and goods are covered more in the following clause, which is on inspection and testing. On the matter of covering up he agreed that clause is very bare about the matter. It is important that the clause give the right to SO for opening up but he agreed to with that power, there should be some limitations to curb any unreasonableness.

From his experience, quality of works and material is always a commonly disputed matter and many times lead to a claim/dispute on cost and time. Interviewee 4 strongly advocated for zero disputes in the construction industry as he sees it as an unproductive exercise. He therefore believed that it is better to rely on practice rather than contract or standard form. But the form cannot be too bare on the matter covered. Relying completely on practice alone may be arbitrary. Therefore, the form must provide the framework for all the contracting parties and certainly if the form can provide for a good framework, it will make practice a lot simpler

Interviewee 5

It is important that the SO is being given the power to instruct for opening up and testing but without the systematic procedures in place, it will get difficult to control such events. Then, arguments and disagreements will be abound.

Clause 36 Inspection and Testing of Material, Goods and Equipment

Interviewee 1

He reminded that the certification function of the SO here is somewhat contradicting with the function as the agent of Government. So the SO as a quasi adjudicator concept is already gone.

Now, with clauses such as this, it actually does not require him to act independently just professionally. If he can work professionally, all will be fine. Otherwise, with this sort of clauses, which gives him power to decide, there will definitely be trouble.

Interviewee 2

Interviewee 2 opined that the problem is the similar to the previous clause. In fact this clause is a follow on of previous Clause 35. Similarly the form is drafted in such a way that if there is a problem or a mistake, it must be the contractor's mistake or problem. Hence, it provides a lot power to the SO in ordering for testing and inspection on the basis that with power delegated to the SO, he is empower to move things on site.

Interviewee 3

Interviewee 3 stressed that the clause is very much hinged on the professionalism of the SO. As the contract administrator he evaluates the work done and the material and goods brought in to site. This evaluator has no standard or yardstick for his measurement, so his evaluator role is extremely arbitrary. If he thinks it is necessary to open up then Contractor must open, request of further testing or works is not done accordingly. No disagreement

or arguments here. The clause has basically leave things to the discretion of the SO. And that is the way this form is, bias to the Government on the face value

Interviewee 4

Interviewee 4 agreed that the term 'proposals for inspecting the design and setting out of the Works and testing the material and workmanship' used can be simply replaced by the term 'quality plan'. Instead of 'the SO may reasonably require', 'SO to provide the reasons' may be more adequate. He believed the reasonable is always blur term. It usually talks about the industry standard, not the Contractor's or SO's standard. This is the kind of term that can cause disputes.

Interviewee 5

Interviewee 5 agreed to the idea of a quality plan to be incorporated in the standard form. This in his opinion has to be done with the work method statement. This is a way contracting parties can quantify the idea of quality, which unfortunately has always been subjective. Clauses on quality here are basically leaving things up to the SO to decide. If quality plan can help the SO to decide and the Contractor to accept the SO's decisions, then it is providing a common language between the Contractor and SO, which is very much desired.

Clause 38 Possession of Site

Interviewee 1

Interviewee 1 stated firmly that possession of site should be a condition precedent to commencement of works. One can commence works such as organising the resources based on letter of award which is a quasi- contract but Contractor must insist on the full possession before starting physical works on site. The procedures after possession of site and before the commencement of works should be clearly stated too. One of such issue is the performance bond.

Interviewee 2

Interviewee 2 agreed to the points brought up in the discussion of this clause on possession of site. It does not discuss about partial possession but actually implied in the clause that it can be done through sub-clause 38.6.
It also looks like the contractor can terminate should the possession of site be over ninety (90) days but he agreed that it looks like termination by the Contractor is not covered in this form. So yes he can terminate but how he goes about doing it is not covered. Again the 'you are at my mercy' philosophy is working here. But any experienced contract administrator would know that this philosophy is not indefinite.

Interviewee 3

Legally, according to Interviewee 3, this clause is incorrect. Possession of site must be given before the commencement of works. Instead, it becomes 'as complete as may reasonably be possible'. This is the form way of mitigating the risk of not being able to give possession of site to the Contractor.
The ninety (90) days period stated here is seems like a cut off date but it is more implied than the actual provision. The clause is also not clear about the procedures to start work if the site is given immediately or given within the ninety (90) days. Performance bond should be a condition precedent to commencement of work.

Interviewee 4

Interviewee 4 said again to deal with Government contracts, the key word is practice. Form and their clauses will not help the Contractor. He definitely agreed to the points raised from this clause but this a government form after all. He insisted that it is the practice that will make things easier. Talk behind closed doors, and ask for assistance from individual officers may be an easier way out of things. Contractually the Contractor is at the mercy of the Government. The Contractor on the hand has the common law to rely on. But playing it the hard way will not achieve anything. If one accepted the contract by signing on it, that essentially means he is willing to take it all up ~ the good and the bad.

Interviewee 5

Delay is a breach of contract on the Contractor's part but if delay is caused by delay in possession of site, then this clause is saying that it will not constitute a breach on the Government's part. This is to prevent that time is at large, which would bring an end to Contractor's primary obligation to fulfil the contract with the time period fixed. If

time is at large, liquidated damages also cannot apply because the Government has lost the right to it by breaching through not being able to provide the contractor with possession of site.

On the matter of delay in possession of site, Clause 43 only allows for extension of time which does not extend to claim for loss and expenses in Clause 44. He mentioned that this is the fundamental risk allocation is defined in this contract.

Clause 42 Partial Occupation/Taking Over by Employer

Interviewee 1

Interviewee 1 stated that this is a rather standard clause dealing with partial occupation. However, he agreed that management of a partial occupied site is certainly different as any Architect or Engineer would tell you. From the project management perspective, he opined that it is not a basic contract anymore, in fact almost a brand new contract.

But as far as the Government is concerned that is the Contractor's management and here it will not interfere. If partial occupation is stated earlier in the contract, then the Contractor must price it in accordingly. If partial occupation is proposed towards the end of the project when a delay of the overall project is imminent, then he supposed the Contractor will have to be thankful about it as the liquidated damages portion will reduce accordingly.

Interviewee 2

Interviewee 2 stated that contractually the clause is fine. Basically there are not clear guidelines for project management in the contract. So strictly speaking, how to manage partial occupation and rest of the works after that is not part of the contract between the parties.
However, if Government insists on partial occupation, as he believed, there are their own guideline and standard operating procedures to handle this internally. He agreed that getting the Contractor to submit their plans after partial occupation may be a good risk management method.

Interviewee 3

Interviewee 3 mentioned that the problems brought up here is strictly speaking not contractual. But he agreed that issues of retention sum, payments, and certificates are contractual matters. References should be made at the very least. So, he agreed that the clause does not cover enough.

Interviewee 4

Partial occupation is good and bad at the same time according to Interviewee 4. Good because partial of the work is taken by the Government already and hence a liquidated damages and many other contractual obligations will reduced accordingly. Government gets to use a portion of the facilities first. The bad bit is the management of the rest of the works.
He agreed that partial occupation is hard to manage if it is not planned for earlier in the project procurement stage. His main concern is authority refusing to accept the portion of the works. For example, JKR (Government) issues to contract to build the road but councils will be the one maintain the road. Councils may then not agree to take over the maintenance of the roads until the whole package is handed over. What use would the partial occupation be when the road is still under the maintenance of the JKR, which means JKR will now have an additional burden. And how that can be passed on to the Contractor remains unclear in the clause.

Interviewee 5

According to Interviewee 5 partial occupation needs to be managed on the ground. The clause is certainly lacking of some of the contractual issues which makes in incomplete. He reckoned also that a submission of new working program and work method is good and even if it is left aside by the Government, it will certainly help the Contractor to seriously look at the implication of partial occupation to their project management.

Clause 43 Delay and Extension of Time

Interviewee 1

Interviewee 1 opined that force majeure is an overused term. It never happens because it must be an act that is so interventionist and absolutely unforeseeable. He went on to state that reasons to be granted extension of time is not extensive either.

He reminded that a contract is where the contracting parties should know what is performance required and how to determine the performance and how everyone should behave. When all these are very unclear as seen here, contracting parties only have industry practice to rely upon, which again hinge on the persons administrating it.

Worst still the form have clauses as such which has a heavy reliance on the judgement of the Engineer who is suppose to evaluate fairly and reasonably. At least, this is not dependent on the 'independent' judgement of the SO but a professional person who is expected to act professionally.

Interviewee 2

Interviewee 2 gave his view on the terms of act of God or Force Majeure. It is noted that the term here is a legal concept but the clause does not list out the list of things which constitute an act of God. Many things can fall under act of God but it does not mean that force majeure equals all these events. It is usually need to be proven in the Contract. The classic term is the inclement weather. It is neither the Government nor the Contractor's fault because it is a natural phenomenon but to claim extension of time, it has to follow the guideline of inclement weather.
It must be realised that the clause stated exactly which events that allowed for the application of extension of time and Contractor cannot assume that if there is an event that is beyond anyone's control, he is allowed for compensation in terms of time. Beyond anyone's control may be factually true, it needs to be proven related to the stated events, which allow the claim for extra time. Such are the pitfalls for form users.

Interviewee 3

Interviewee 3 opined that this clause did not fully cover the issue of delay and extension of time. It basically just provide the form users with events that allow for extension of time and the Engineer (i.e. the officer named in Appendix) who has to fair and reasonable in his opinion whether the grant the extension of time should be granted or not.

Interviewee 3 was in the opinion that methodology for assessing and evaluating the extension of time needs to be established in order to achieve better facilitation of the clause. He agreed that the clause is not complete and some users may not be able to execute the clause even though the clause is readable. Execution is going to be a problem.

Interviewee 4

Interviewee 4 agreed that for an Engineer to assess extension of time, there are procedures that are really necessary. There should be minimum time for the Engineer to assess the claims as that would affect the next planning and further claims. There is this tendency of Government to only give extension of time approval at the end of the project at the one go but liquidated damage will proceed the moment the project's period ended.

He also agreed that there should be a set of procedure for the Contractor to put forward his disagreement over the extension of time granted or not granted. This is a critical issue as there is direct monetary effect related extension of time especially when the liquidated damages charges are high. If there is a way for the contracting parties to agree to disagree, it will definitely minimise the possibility of disputes and manage it at the ground level.

Normally, in practice, Engineer would communicate with the Contractor before officially put forward the assessment results. He also opined that it would not be easier to a government form to take such steps as granting rights to the Contractor to disagree but the Government should really look at the bigger picture of good cooperation and effective communication.

Interviewee 5

Clause 43 is not a consistent clause according to Interviewee 5. The name of officer here is the Engineer in charge of the works, not the SO for the works. Experienced practitioners should be able to handle the clause but first timer to the form would need some guidance.

Besides, it is interesting when the SO's judgement is sufficient in many issues but here the Engineer becomes important person whose decision matters. But SO must also be satisfied with the prevention measures taken by Contractor to prevent delays. With the term SO and Engineer appearing a different times and different places, form users would really have to keep an eye out to effect good communication.
In addition, Interviewee 5 also mentioned that ground conditions and inclement weather although are reasonable conditions to apply for extension of time, one must be careful with the rules of claiming based on these basis.

Clause 44 Loss and Expenses

Interviewee 1

Interviewee 1 related that this clause only covers the loss and expenses on the ground of time and the reasons are limited to those under the ones stated. He opined that even the clause looks unfair but most contractors actually understood that with Government forms and that they claim of loss and expenses are practically not allowed even if it involves a variation order. Extension of time will be granted but not claims on loss and expenses. In fact, interestingly, almost all the Contractors he dealt with knows it and for them to sign and get into the contract, maybe they did not think of it as unfair but understood that this is the way the Government form is.

Interviewee 2

Most forms according to Interviewee 2 will allow for extension of time, so that the Contractor is relieved from Liquidated Damages term. But by the same token, only certain events that caused delays and with extension of time approved can the claim for loss and expenses stand. In other words, other events, which are nobody's fault, Contractor will not get compensated. Hence the form is for sure in favour towards the Government.
Some contracting group out there actually do not realised what they have signed up for. They thought that when some events are outside their control which is not fault driven will allow them for compensation but unfortunately this form already spelt is out legally that liability is with the Contractor.

Interviewee 3

Interviewee 3 stated that the form is clear about claims for loss and expenses are limited to the reasons stated. The contractors who get into it know that they are taking calculated risks. He agreed that it is bias and contractor has to bear more risks for the contract.

Interviewee 4

Interviewee 4 agreed that the claim procedures for loss and expenses are not clear. He opined that there are basically no procedures stated in the clause. While he advocates for the right to claim for loss and expenses that can be proven to cause such losses or expenses, regardless of whether it is time related or not, the clause essentially only deals with those related to time. He reminded that under the common law, Contractor can apply for compensation and if he is rejected, he can proceed to claim for loss and expenses.

Interviewee 5

Interviewee 5 opined that there is not consistency between the clause 43-and 4 as well as Clause 44 is not about loss and expenses but simply clause on prolongation cost. And it only covers minimal specific events for claim of loss and expenses. Even with delay in possession of site, Clause 43 only allows for extension of time which does not extend to claim for loss and expenses in Clause 44. In other words, the clause 44 here only covers for prolongation costs but not all prolongation costs or costs caused by other events or events due to SO's instructions or Government's default.

He, however, mentioned that if the Contractor thinks that he has a case where loss and expenses is incurred due to certain reasons other than delay, he certainly should try to reserve the right to make a claim or make application for compensation. The payment for loss and expenses will be made through the certificates. Otherwise, the other way is to sue for damages.

Clause 47.0 Sub- Contract or Assignment

Interviewee 1

Subcontracting is the method of contracting in this country, which is not going to change for awhile to come. Interviewee 1 certainly does not agreed on full sub-contracting but it looks like the clause is implying that one can do that. This is definitely not healthy when a government contract does that as it is showing by example that such

practice is allowed. Interviewee 1 opined that there is enough of inefficiencies and looseness in the Government sector already and to engage in such activities will not do any good to the whole sector.

He emphasized that assignment can only be done for financial and insurance purpose. He also noted that the consent is given by the SO rather than the Government itself, which again gives a lot of power to the SO to give his 'independent' decisions.

Interviewee 2

Interviewee 2 reinstated his previous point that the form tries to flexible but in a bad way. He opined that full sub-contracting is certainly difficult to manage. He has handled many cases of disputes that are due to full sub-contracting o assignment of the works to another group. It is very complicated to handle. He opined that this clause is a major loophole for the Government, which needs to be tightened up.

Interviewee 3

Interviewee 3 stated that this form provides for Government interferences with nominated sub-contractor and suppliers in terms of payment but the same does not apply to privately engaged sub-contractor. In this case, Government will be treating the privately engaged sub-contractor as workmen of the Contractor and hence, it is important that the Contractor have to have the similar conditions for the Contract to be translated to the sub-contract. Say the SOSCO and time sheets and so forth. Usually it would be better if there is a sub-contract agreement attached to the main form to achieve for better consistencies.

Interviewee 4

Full subcontracting in the opinion of Interviewee 4 is like sub-sales of contracts where one in fact sells the contract to earn the difference in between. What is happening now is the sub-sales can go through many hands. He definitely would not agree with it. In fact, he stated that it is dangerous practice. He opined that the form really needs to state that NO sub-contracting of the full portion of works is allowed. In fact he mentioned that nothing more than 50%. If the Contractor cannot even do half of the works assign to him, he is not even qualified in the first place to tender.

He mentioned that in Malaysia we have yet to have a public contracting act and this culture of full sub-contracting is rampant. Management of sub-contractors on site is already difficult and with full sub-contracting and it is likely the project ended up not even able to locate the original contractor to execute his duties and responsibilities.

He also noted to ambiguities related to the terms used in this clause.

Interviewee 5

Interviewee 5 wanted to take note that the person giving consent for sub-contracting works is the SO, and not the Employer, who will based on his subjective opinion to approve or disapprove the request. And there is no guidelines to select sub-contractors or for the SO rejects the sub-contractors. Generally, most will fall back to the clauses for removal of workmen. In this case, removal of workmen is probably easier than removal of sub-contractors whom actually have a binding agreement with the Contractor. In a way this clause is actually quite difficult to practice in real life.

Clause 48.0 Defects After Completion

Interviewee 1

According to Interviewee 1, defects are part of construction project and the Contractor's responsibilities are to take any necessary actions to rectify defects. Therefore, the remedies by Government when Contractor fail to carry out the remedy work can also be extended as it still the Contractor's responsibilities to do rectification works to the defects detected.

But it is noted by Interviewee 1 that types of defects in construction can vary and usually based on the point which they surfaced. It is reminded that this clause is covering defects after completion, which means after practical completion. The matters of defects has always been a difficult issue as it is connected to practical completion and liquidated damages. Hence, in the practical sense in order to certify for practical completion, the defects must be those that can be easily corrected during the defects liability period, i.e. latent defects in nature. And the Contractor must address any defects which surfaced during the defects liability period.

Diminution in the value for the works not carried out should be based on the reasonable cost of repair and the difference should the facilities already been put to used. The clause mentioned diminution in the value but not in detail and to be based on the SO's valuation.

Interviewee 2

Interviewee 2 mentioned that the right to return to site is not mentioned under the context of defects after completion clause. So with this provision, Contractor has the right to return to the site to attend to the remedial works. It is the Contractor's contractual obligations in this form to rectify defects.

However, if the Government is to get someone else to the works, he must first get the consent from the Contractor. And if the situation is if the Contractor default by not working on the defects, Contractor is in breach but Government must provide sufficient notice to prove the case that Contractor is in breach. Unfortunately, this clause is not clear about it. For the clause to be efficient, time frames must be there. Again the flexibility given here is a bad thing. There should be at least a discussion or negotiation by the parties on the time required to undertake the rectification works. The time negotiated must be reasonable and it should start upon the date of assessment of such defects.

He believed that this time frame is very important to give the clause the effectiveness. Should certain works need immediate attention, then it must be stated that to forthwith carry out the rectification works.

Interviewee 3

Interviewee 3 is not comfortable with the time frame given. In this sense, flexibility must be given to both the SO and Contractor to determine the time frame to generate the schedule of defects and for the repair or rectification of defects when appears during inspection for practical completion or over the course of the defect liability period.

Interviewee 3 reckoned that defects are to be taken seriously especially during defect liability period because end users will be affected. Unless certain guarantee are provided say by a developer, any defects after the defects liability, the house owners who is the 3rd party, has no contractual right. If 3rd party claim by Law of Tort, it may take ages.

Interviewee 4

As explained by Interviewee 4, defects can happen over the course of work, at completion and during the defects liability period. The clause is basically talking about the one at completion and during defect liability period.
He reminded that defects can arise due to poor workmanship and/or poor material. But it could also be designer's problem or wrong specification in the first place. So there are always arguments when the Contractor denies liability when designs are also at fault. But whichever it is, Contractor has to do it first and make the claim later if he thinks it is unfair. Interviewee 4 reminded it is important to think about defects even at the planning stage. Typically contracting parties sees it as a default in workmanship but really it could be specification or the design that is inadequate.
Therefore, it is true that the clause does not adequately cover the definition of defects and the various follow up actions at the completion of certain events. Say at end of the repair works, inspections should be carried out again and some components may need retesting work. The clause does not mention anything on retesting which is the most efficient way of certifying the components of works is workable but some Contractor may think retesting is an expensive exercise and refuse, stating that system testing is passed already.

Interviewee 5

Interviewee 5 stated that it is important to distinguish between patent and latent defects. Basically, during defects liability period the Contractor should deal with patent defects which is apparent before and during the defect liability period. Interviewee 5 opined that without proper guidelines for practical completion it is difficult to certify for practical completion with minor defects, which are the latent ones.

As a general rule of thumb, if there are patent defects, then the project is yet to be practically completely. So basically, defects liability period should really only deal with latent defects. But there is always a blur line between minor works and minor defects but the consequences can be serious as minor works are outstanding works which carries the risk of practical completion not issued.

Clause 50 Suspension of Works

Interviewee 1

Interviewee 1 stated that suspension of works is the sole Government's right in this form. Only the Government and/or his representative can call for stop works on part or the whole contract. The duration must be of reasonable length and the suspension must be of valid cause. However, it looks like the causes of determination listed are very much limited to when the Contractor defaulted. And whether he really defaulted is very much dependent on the judgement of the SO again. And of course the time limit of suspension period should be there.

He believed that it is actually possible to include the circumstances when Government need to suspend work, especially if the suspension is unavoidable. But if the Governement suspend the works due to some unavoidable situations, the structure of compensation should also be given. He agreed that the follow up actions after un-suspending the works is not clear.

Interview 2

Interviewee 2 reminded that the philosophy of this form is if there is a problem it is the Contractor's problem. Hence, the clause is drafted in such a way Government can suspend works when the Contractor default and the reasons of default are centred on the Contractor. However, it is noted that even though the clause state the Government's to suspend, it fails to cover the need of Government to suspend due to other reason than Contractor's default and it fails to establish on the guideline for compensation. When the suspension is over, it fails to establish the follow up guidelines.

Interviewee 3

Interviewee 3 state that in PAM if the Employer does not pay, Contractor can suspend but under PWD form, if Contractor suspends, Contractor will be in repudiation of the contract. He explains this is due to the fact that PAM form would have private Employer whom the Contractor may refuse to enter into a contract if the terms are not right. But PWD has the Government as major client who wants to make sure that it is as 'completely' protected as possible. If PWD is adapted into the private sector as it is, the results may be disastrous.

Interviewee 4

There is always a ready assumption that Government will pay. And therefore, there is no need for the Contractor to have the right to suspend the work in event of non payment. Interviewee 4 remembered a case when a Contractor has not been paid for 5 years on a single project but he continued to work for the Government who went on to give him more jobs. So yes, Government does default in payment but Contractor does not have the right to suspend the work.

He experienced a case where the Contractor stopped work because he was not paid. He did not terminate the contract but simply stop work (which is the same as suspending the work. Finally he got terminated instead for failure to carry out the work with due diligence. It is definitely not fair. The best in this sort of situation is to terminate the contract, which obviously this form does not cover as well but with the new CIPAA Acts, things may be looking up where the Contractor can terminate due to non-payment.

Interviewee 5

Unfortunately, according to Interviewee 5 the right of suspension is very much unilateral in this standard form and many others too. Basically, the contractor cannot initiate a work suspension. The only thing he can do is to slow down/curtail his works in order to manage his risks. But the catch is of course, the Contractor may be slap with a notice of not carrying out the work with due diligence and proceed to terminate the contract by the Government. That would then escalate the problems up to dispute level. And from his experience, Contractor can prevail in many of these cases.

Clause 51 Effects and Consequences of Default by the Contractor

Interviewee 1

Interviewee 1 stated that there are many reasons why termination is activated. The form covers many circumstances that required termination in the various clauses But there are essentially only two type of termination: by convenience and by default.. Termination by default is basically that if one party fails his duties and after a default notice and nothing is done, then termination is activated.

This clause is essentially termination by default of Contractor. If the Contractor fails to perform, say by making a specific progress, the Government after giving a default warning and give the opportunity for the Contractor to remedy and the Contractor still fails, he will be terminated. Interviewee 1 did not think that the grounds for the termination by default of Contractor are at all that complete but based on very subjective opinion of the SO. Consequences of termination should also be stated clearly and all the follow on procedures should be listed out. The clause simply does not have that.

Interviewee 2

According to Interviewee 2, looking at the termination clause, it is unfair because it is one sided. Even if the Contractor does not get paid, he cannot terminate but have to rely on Government to terminate him. His only route is to rely on Common Law. Obviously the concentration here is placed on the Contractor and the various definitions of how he can default.

He reminded It is a tough form for the Contractor. When being involved in this particular form in one of the KLIA project, he could see how the form is meant to squeeze the Contractor dry. But luckily the project director handled the project in a true benevolent employer spirit (which is the other facet of the form as mentioned previously). Personally, he believed that, it would be of no benefit to any parties if the Contractor is being pushed to a corner. They should be a meeting of half way so that there is not even a need to use this clause. When termination comes in, it is a start of a very bad ending.

Interviewee 3

Interviewee 3 reminded there is no provision for determination by the Contractor. Contractor does not have contractual right to terminate. The provision must be there to entitle the Contractor to terminate. Even though without the provision, it does not mean that contractor cannot determinate if there is fundamental breach. Therefore, it is unfair and risk is more to the Contractor because he has no contractual right to terminate.

In addition with the ambiguous grounds for termination stated in this form, the Contractor's risks will be higher. He also agreed that procedures after termination should be clearer and more specific.

Interviewee 4

He agreed that the title of this clause does not really reflect the actual matter here which actually is termination by default of Contractor He also agreed that termination of Contractor because of his default/s must be proven factually and not subjectively. It must be proven that there is default via various notices and warnings. It certainly is not as simple as stated here that after given an opportunity to improve and Contractor still does not comply, termination can set in. This will almost certainly bring the Government a lawsuit.

For Interviewee 4, he believed that there are many cures before making a decision to terminate by default. SO should help to see if there is anything he can do to advise and help to improve on the default and whether that default is excusable. In other words, whether the default is solid enough as in there is absolutely nothing that can be done to improve on the situation.

Also he emphasized that payment is the fundamental breach of contract which entitled the Contractor to terminate under the common law because contractually, Contractor cannot terminate the Government unless he wanted to be permanently 'deleted' from the Government's Contractor List. This unofficial practice is a known fact among parties in the construction industry.

Interviewee 5

Interviewee 5 said that termination is many times treated like a punishment and threat to the Contractor instead of a last resort. Termination is a remedial clause, which should be avoided. Because the Contractor has no right to terminate, the Employer and his representatives have the tendency to submit the Contractor to the 'threat' of termination. Hence, the phrase 'you can be terminated' will be brought up over the course of the project execution.

This is actually not very intelligent contract management. A good contract administrator should know that a contract needs to be managed according to what is written there but the intricacy here is to manage without using the remedial clauses. Besides there are really a lot steps to be taken before the actual termination can be called in. He opined that form should explore these steps in more detail.

Clause 52 Termination on National Interest

Interviewee 1

He opined such a clause is quite silly because that is basically mutual termination for convenience at the best interest of the Government. When both agreed to terminate, there is no need for such excuse.

Interviewee 2

It is an interesting way for the Government to cover all corners. With this clause, any termination does not need to be explained because when it is national interest, there cannot be explanation given.

Interviewee 3

Termination on national interest is the last resort by the Government to get out without any explanation needed.

Interviewee 4

So after all sort of protections put in for the Government in various clauses, it still placed in an ultimate escape route.

Interviewee 5

Interviewee 5 said that is the ultimate way out for the Government.

Clause 58.0 Site Agent and Assistants

Interviewee 1

Interviewee 1 found it interesting that clause specify that there should be official site agents to handle things from the Contractor's side but it does not mentioned the sanctions when no site agents are provided. He does not agreed with the use of subjective words seen in the clause and said instead a specific condition should be given, For example, instead of using suitably qualified, it can go like 'use that agent must be holding a diploma in civil engineering with at least 5 years' experience'. It would make more sense.

Interviewee 2

Interviewee 2 mentioned that this is a rather short clause without much coverage on the issues of site agent. On the matter of removal of site agent, he especially mentioned the coverage is not extensive.

Interviewee 3

Interviewee 3 mentioned and the terms used are spike with ambiguities created mainly he believed to create the flexibility for the Government side to used it either way. This clause is short according to him and that gives a lot of flexibility to the Government and SO to take it as they want it to be. The form is certainly not drafted with the contra proferentem rule which says if there are any ambiguities it will work against the party drafting the form, i.e. Government in this case.

Interviewee 4

Interviewee 4 agreed that the language used has a strong level of ambiguities that should be resolved. He stated that PWD form language is not what most layman would understand. The Contractor of course will have to take the SO's decision to remove the site agent as it is. He agreed that there should be procedures to state the execution of removal or conditions for removal but unfortunately, the contra proferentem rule certainly does not apply to this form.

Interviewee 4 also opined that it is better to have sanctions for Contractor who does not provide for site agents. He experienced Contractor who tries to pass his sub-contractor off as site agents. Contractors must take the issue of site agents very seriously as it makes a lot difference to the execution of a project with a site agent who can make decision and maintain a good relations with the SO and his representatives.

Interviewee 5

According to Interviewee 5, site agent is the main communicator between the Government and the Contractor and should be chosen wisely and with care. The list of duties and limitations of the site agent must be explicitly stated so as he knows exactly the contractual liability. It is important the site agents also understand the contract documents including the terms and conditions stated.

Clause 59 to 62 describes the engagement of Nominated Sub-contractor and nominated suppliers for the contract in detail. It is noted that Clause 59-62 are discussed together by all the interviewees.

Interviewee 1

Interviewee 1 stated that nominated subcontractor/supplier is selected by the Employer or the Designer of the project and price agreed with the Employer directly but the Contractor is to sign the sub-contract agreement with the nominated sub-contractor/supplier. Because the sub-contract agreement is with the Contractor and in this case the Government has no legal relations with the nominated sub-contractor.

Obviously this is method for the Government to mitigate any risks with respect to nominated sub-contractor's default or non-performance to the Contractor. Like it or not, the Contractor has to accept this arrangement. There are certain cases where Employer will sign directly with the nominated sub-contractor/suppliers, say in FIDIC form, but these cases are rare in Malaysia. Hence, the Contractor has the accountability for the subcontractor, notwithstanding any indemnities.

In his opinion, he wondered if it is really necessary to do nominated sub-contractor/supplier clauses. Why not just do away from the entire practice.

Interviewee 2

According to Interviewee 2, basically a nominated sub-contractor is a company employed by the Contractor but appointed by the Employer, i.e. the government to executed works as stated in the Provisional sum or items as stated in the Prime cost sum in the case of a nominated supplier.

The Contractor is held responsible for any default and issues arising from the nominated sub-contractor as he is under the management of the Contractor. It may not seem fair that the Government can pay the nominated sub-contractor/supplier directly but this is where the benevolence of the Government comes in play. It has to protect the nominated sub-contractor/supplier as he is selected by the Government.

He agreed that without properly governing and managing the nominated sub-contractor with proper terms and conditions on a back to back basis, nominated sub-contractor can get out of control when the Contractor does not hold the purse string.

Interviewee 3

Interviewee 3 stated that the clause here allow direct payment to the nominated sub-contractor which is not present in some other forms. The rationale here is the Government wants to be seen as a responsible government and it wants to make sure that everyone is protected. Guess it is to protect everyone else but the Contractor concept.

Also the Government does not want the work to stop because the Contractor is being recalcitrant in certifying work done by nominated sub-contractor/supplier or not paying him in a timely manner. Therefore, the clause put down the measures so that Government can take immediate action when the Contractor breached. It is not a bad idea but the whole idea of direct payment must be handled with care.

Interviewee 4

Interviewee 4 agreed that the clauses are not specifically clear on certification of payment to the nominated sub-contractor and what events constitute the need to pay directly including the procedures for paying directly. This mechanism allows the Government to directly negotiate with suppliers of goods or services and feed their appointment and design input into the contract after works by the main contractor have commenced. By right, the value the work of the nominated sub-contractor/supplier is separated from the main contract and the amount due is shown on interim certificates and is notified to the nominated sub-contractor. But the payment procedures here are totally unclear on these matters and instead only focus on deducting money from the Contractor, which seems to assume that he will almost certainly default in payment.

According to Interviewee 4, the contractual arrangements allowing nomination in actual fact very complicated, attempting to cover all possible eventualities both between the client and the main contractor and also between the main contractor and the nominated sub-contractor. This form is basically saying it loud and clear that Government has no legal relations with nominated sub-contractor/supplier but the Contractor has to deal with these nominated people and be responsible for failure of the nominated sub-contractor to perform. There are some exceptions to those responsibilities but the clauses are not making reference to those exceptions. For instance delays by a nominated sub-contractor/supplier might give the Contractor entitlement to an extension of time.

a) Interviewee 5

One way of looking at it is nominated sub-contractor/supplier is imposed on the main contractor. Why Interviewee 5 used the word imposed is because normally with nominated sub-contractor the Contractor has be entered into a contract and take up the responsibility for all the actions of nominated sub-contractor/supplier of which the contractor should be entitled to a mark-up and attendance costs. This is obviously not covered here. And why would a Contractor want to take up the risk associated with nominated sub-contractor/supplier, bearing all his defaults, repudiation and the hassles of managing him when he is not getting anything out of it.

In terms of fairness and risk distribution, this is definitely a form where contractor does not have much bargaining power, even though the clauses have included the main contractor to not enter into a contract with the nominated sub-contractor/supplier if he objects to the appointment and the follow on actions such as re-nomination are stated. It is true the ground for objection must be better stated.

Actually the issue of nominated sub-contractor/supplier are extensively covered in about four (4) clauses, which is vastly different from the typical writing style of this form and one would wonder why. Yet there are still miss outs.

Clause 63 Intellectual Property

Interviewee 1

According to Interviewee 1, intellectual property rights are something rather new to standard forms. It is only seen the in the recently revised form. Previously it only covers copyright to drawings and maybe patent to certain designs or components. Here the clause is trying to sweep anything and everything related into one clause.

Interviewee 2

Interviewee 2 opined that intellectual property has a wide range of variability (patent, license, copyright, etc.) and hence to simply do a clause to make an overall coverage does not seem to be appropriate.

Interviewee 3

Interviewee 3 said that this is a short clause trying to cover a huge range of issues. And he did not think is consistent with the various acts and regulations under the intellectual property protection acts in Malaysia

Interviewee 4

Interviewee 4 certainly did not think the clause cover the issues related to intellectual property sufficient. It is good to see the attempt there but it does need some more attention to the details.

Interviewee 5

According to Interviewee 5, the clause is rather messy without clear indication to what forms of intellectual property the clause really covers.

Clause 65 Arbitration

Interviewee 1

Interviewee 1 was in the opinion that this clause will not work well. This is because Engineer/Architect is seen as the agent of the employer, SO's representative. The old forms put this professional person in a quasi-adjudicator position because the design is usually his but this concept does not really stand anymore. To most industry participants, it is already non-existent and no one believes them to work 'independently', just hopefully professionally. A pretty sad case actually as credibility of an Engineer/Architect is doubted as such.

This is why the newly revised form such as PAM has started to bring in mediation and adjudication as a softer yet quite an efficient approach to resolve dispute. With the new CIPAA act, he believed the Government form would sooner or later have to catch up with the concept of adjudication.

He added that this is a strange form as it only states the Contractor's right to dispute and arbitrate but not the Government's. It does not allow Contractor to suspend or terminate but it allows him to dispute.

Interviewee 2

Interviewee 2 noted that Contractor is allowed to dispute but not suspend or terminate. So he has to wait until he is being suspended or terminated before his issues of dispute can be settle. He gave example of a case where in 1997 there is the Asian financial crisis which disrupts currencies and affects a lot material prices in this region. Based on the old form, there is no clause here to say they could get reasonable compensated, many contractors were not compensated and of course this still remains in this form. Contractors could dispute and request for compensations but what used will it be when they cannot even continue with the works on site and would have gone bankrupt already by the time the disputes procedures ended.

He opined that the clause is there because the government does not want to be label as the big bully but yet it wants to put Contractor off when contemplating to use this clause.

Interviewee 3

Even though Contractor can go to arbitration or state his differences, the risk is still more leaning toward the Contractor as these disputes cannot be settled until after the project completion. So basically Contractor can state his differences first but he has to continue working.

He did not think it is a good way of working at all. Dispute resolution is supposed to resolve problems and now the clause is saying just stake up the problems till the end. It does not have much rationale. He opined the role of the first dispute 'goalkeeper' is very important. The SO or Engineer/Architect should play an active role in resolving disputes.

Interviewee 4

Interviewee 4 stated that with so many ambiguities in the forms and all these ambiguities are not supposed to work against the Government, is it any wonder that dispute occur. Contractor and Government will tend to lean towards their own standard and that is what differences is all about. That is why disputes are there and increasing.

Interviewee 4 strongly advocate for a third person, an independent expert to play the role of the Engineer/Architect as it is in the old days and that is a fair and just administrator. He believed in the adjudicator concept to resolve dispute and in fact most newly revised form are going towards that. Disputes should not be allowed to escalate and should be resolved immediately. He again stated that dispute resolution is not a way to go. It is non-productive and in fact waste a lot resources.

Interviewee 5

Interviewee 5 said that he is not sure if adjudication may be good way forward but to stay at its current practice, the industry is definitely not moving forward. He opined the industry should give adjudication a chance.

Clause 69 Stamp Duty

Interviewee 1

Interviewee 1 did not think this is reasonable at all. Yes the form is overall not so reasonable from the Contractor's stand point and of course the so-called 'fair' form would be the Government's perception. He opined that ultimately this is not a form issued by a professional institutes but a Government based organisation, the PWD or JKR. A government form for the Government.

He again advised for correct pricing by the Contractor. Whether it is high risk or low risk, the Contractor's only consolation is he has priced for it.

Interviewee 2

Interviewee 2 says that it is very short clause to tell the Contractor to be responsible for the stamp duties and legal costs and fees. This is a Government's contract and this expectation is really an ultimate laziness on the Government's part.

Interviewee 3

Interviewee 3 opined this is probably the lousiest clause of all.

Interviewee 4

According to Interviewee 4, if certain private companies adopt this form and it happen quite a fair bit, it would probably make sense to get the Contractor to pay for the stamp duties and all that. But for a Government's contract it does not make sense at all.

Interviewee 5

Interviewee 5 did not think this is practical at all.

Clause 74 Epidemics and Medical Attendance

Interviewee 1

The last bits of the form basically deal with the legality of the contract, which is not so much seen in other forms. Generally, the form to comply with Malaysian Law, Acts, and Regulations would probably be sufficient.

Interviewee 1 agreed that this is a more sophisticated title to deal with the health and safety issue of the contract. He would have preferred to see an extensive coverage on health and safety procedures instead of this much hanging ones.

Interviewee 2

Interviewee 2 has no comments on this clause except that the Government wants to protect the site workers and personnel from bad working environment.

Interviewee 3

Interviewee 3 also did not comment on this clause. But he agreed that it does look more like an occupational health and safety clause.

Interviewee 4

Interviewee 4 definitely agreed that this is safety and health clause which should be drafted to be more related to construction and he agreed that it can definitely be covered more extensively on the issues.

Government as main employer in the construction industry should really look into improving the working environment to a cleaner and healthier one for its construction workers. It is already very difficult to get the private clients due to cost reasons to seriously set down rules and regulations for health and safety issues on site. Our health and safety measures put in by the various governmental and regulatory bodies like CIDB for so many years does not seems to be working very well. Form may not be the answer but it certainly can help by imposing on certain rules and regulations.

Interviewee 5

Interviewee 5 agreed that the clause would definitely be better if the coverage on occupational health and safety issues are established more comprehensively instead of touching on the issues under an inappropriate heading.

2. JKR Sarawak Form of Contract

Clause 3 Inspection of Site

Interviewee 1

According to Interviewee 1, clause 3 is well defined and the vocabulary use is easy to be understood. However, he agreed that in terms of fairness, the employer should give more warranty in certain information. Besides that, he also agreed the clause is incomplete as there should be proper reference for the contractor to price for the information and document as the contractor has to bear the consequence by his own risk.

Interviewee 2

In terms of clarity, Interviewee 2 disagreed that the clause is hard to understand. Based on her experience, she said the clause is well defined. On the other hand, she commented that this clause has covered the relevant issues but the clause is unfair to the contractor as he has to take the risk to accept whatever provided by the Employer. She mentioned, there should be options for the Contractor to choose when price for risks and discrepancies. Also, she agreed that there should have more procedure in terms of examining and exchanging information so as to provide a clear project management framework.

Interviewee 3

With respect to this clause, Interviewee 3 thinks that the clarity of the clause is fine and clear. However, he agreed that this clause is unfair as it is based on the client's standard. Since the Contractor has to bear the consequence at his own risk, then there should have a proper statement for the Contractor to follow and price. Besides that, he agreed the clause is incomplete as there is no warranty for the information given by the Employer. Since the Employer has carried out survey or test, the information should be reliable. But, the Employer refused to responsible. Also, since the contractor is to take the information or document at his own risk, there should be proper statement or procedures for the Contractor to price the discrepancies or risks.

Interviewee 4

According to Interviewee 4, this clause is fair to both parties. As a contractor, he should have experience to tender for project. Besides that, every project owns some risks so the Employer is unable to give warranty to the information. For example, in a piece of land, the Employer takes 4 points to do bore log. Hence, the Contractor has to take the responsibility to investigate the rest of the land. Besides that, he agreed that the sentences are long but he can understand the meaning. Other than that, he agreed that there is lack of procedure to guide the Contractor to price for the risk and hence difficult for the Contractor to do project management.

Interviewee 5

According to the Interviewee 5, the contract document is usually written in the format that only the professional in contract can totally understand the condition. However, he suggested the user who thinks the clause is too long to break the sentence into sub-clauses for, i.e. (a), (b),… so that it can be easier to read and understand.

Interviewee 5 also agreed that the form is sided towards the Employer. He said, most of the clauses have fairness issue. Hence, the study is needed to be carried out in order to produce a both side fairness conditions of contract. For the information or document given by the Employer, there are a lot of departments involving. These include the design section, survey section, planning section and etc. According to the Interviewee, no one would like to take the risk of mistakes. Hence, as a contractor, he should check and make sure that all the information or document that he received is correct.

For normal case, if the Contractor did not clarify the discrepancy before the submission of tender, any mistake inside the contract documents will be at his own risk, even for the wrong quantity that are provided by the Employer. Hence, the discrepancy shall be check and confirm before the submission of tender. He further emphasized that profit or loss is depended on the Contractor's carefulness. However, the Respondent agreed that providing a proper procedure is essential for the project management.

Clause 6 General Obligation of Contractor

Interviewee 1

According to the Interviewee, the word '*design*' is understood that it refers to the design in design and build contract. For example, the roof trusses design. However, he agreed that this clause is inter-related with Clause 30 whereby Clause 30 explains on the contractor's design of work and it is not mentioned in the form of contract here. Further discussed, the Respondent consent Clause 6.2 (b) is actually inconsistent with Clause 6.1. Besides that, the respondent agreed that the clause is unclear as no proper explanation about what constitutes the design and it is unclear as whether call for design by Contractor is an option or not.

On the other hand, Respondent 1 explained that in terms of the contractor responsibilities in Clause 6.3, it is clear that the contractor is not only responsible to his sub-contractor but also include the nominated sub-contractor. Besides that, the contractor shall indemnify the Employer against all and any loss, expense, costs, damages, liability or claim arising from such breach of contract, repudiation, default or failure by giving full responsibilities on any risk. However, he agreed that the clause does not mention how the Contractor could indemnity the Employer in such default.

Nevertheless, Interviewee 1 disagree that the term 'Contract Documents' uses in Clause 6.4 (a) is ambiguous. He explained that the Contract Document is a certified and awarded tender document which includes all the drawing and specification. He said, if there is discrepancies, say, architectural drawing which state 900mm but in engineering drawing, it says 1200mm, then the contractor needs to notify the Superintending Officer.

Besides that, the respondent agreed that instead of using words like 'due care and diligence', a standard measurement of care for the Superintending Officer to follow is needed so that the contractor can carry out his work better.

Interviewee 2

Interviewee 2 disagreed that the clause is ambiguous and incomplete in terms of 'due care and diligence' and 'to the satisfaction of the Superintending Officer' as she believed the Superintending Officer is fair in giving judgment. Besides that, she commented there is no measurement can be provided as this is a very subjective issue. It depends on the personality of the Superintending Officer and also the Contractor on how the matter is handled.

However, she agreed that this clause does not provide detail in procedure and time frame for reporting, adjusting and resolving the discrepancies. She suggested adding in another clause which provides the procedure and time frame for the Contractor to refer.

She disagreed that the clause is inconsistent as the clause is well structured and suit the sequence and flows. She also disagreed that the clause is inflexible as calling for design by Contractor is not an option. She said the design requirement will be stated in tender document. With respect to the Clause 6.4 (a), the words 'Contract Document' refers to the awarded tender document and site document is just another term in used.

On the other hand, Interviewee 2 opined that in terms of clear structured project framework it is good to have procedure or options to enhance the site administration, but if there is none provided, the clause is still clear. However, she strongly agreed that the clause is unequal in terms of the responsibility of the Contractor as detailing out the Work Method Statement by contractor should be same.

Interviewee 3

According to Interviewee 3, the clause clarity has no problem. He said that it is clear that the word 'design' in the Clause 6.1 (a) first sentence represents the design of the design and build contract. However, he agreed that the comprehensiveness and completeness of the clause is poor. He mentioned that the safety issue is not clear in this clause. Besides that, he said the clause only mentioned the need of the Contractor to pay requisite levy to CIDB but not EPF/SOSCO.

He also agreed that the clause consistency needs to be improved as Clause 6.1 supposed to be further discussed and linked to Clause 30. Besides that, the Respondent also agreed the sub-title for Clause 6.3 needs to be revised as other than the sub-contractors, the main Contractor shall responsible for the nominated sub-contractor as well.

On the other hand, Interviewee 3 explained that the Contract Document is not site document. According to him, a contract document contains site document, project quality plan, method of statement on technical issues and etc.

Other than that, he agreed that the flexibility of the clause can be improved by making the design as an option. He also agreed that the clause is unfair to the Contractor as there is no detail and procedure for the Contractor to refer and follow and hence difficult to do project management as well.

Interviewee 4

According to the Interviewee 4, the word 'design' only refers to the turn-key project. Although it is common and shall be known by the tenderer, Interviewee 4 agreed that it needs to be mentioned/ defined to help the new user understand the clause. Besides that, he explained, usually the design is not done by the Contractor. As for the consultants, they only go to site periodically. Hence, it needs to be properly defined so as not to give the Contractor opportunity to cheat. Also, the Interviewee agreed that this clause is inconsistent with Clause 30. It should have connection as both of them are inter-related.

Besides that, Interviewee 4 thinks the terms 'Contract Documents' has the same meaning as site document. However, he mentioned, the site people always confused between the site document and site diary.

In terms of fairness and risk distribution, the Interviewee is neutral with the clause as he opined that the Contractor and Employer have their own concern. However, he agreed that there should be guideline provided in terms of method that the Contractor has to responsible especially in the absence of the Professional Indemnify Insurance which covers the designers of the works.

Interviewee 5

According to Interviewee 5, the 'design' in this clause is mostly refer to the Turnkey Project, which the design and construction works are to be carried out by the Contractor. A Consultant Engineer may be appointed but the Contractor still has to responsible for everything which includes the design. Indirectly, the Interviewee also agreed that this clause is inter-related with Clause 30.

He added, the Contractor's design of work may refer to the simple design or modify that make at site in order to solve the unsatisfaction. At site, there are a lot of problems and differences, even though the information and drawing are provided, that does not mean all of them are correct. Hence, it needs to be flexible as the Contractor sometimes may make some modifications in order to suite the situation on site. Also, there is no specific time frame mentioning so as to keep the flexibility.

Besides that, Interviewee 5 commented even for the works designed by the Nominated Sub-Contractor, the responsible is still with Main Contractor as the Contract is signed by the Employer and the Main Contractor. However, the Contractor should ensure that the design by Nominated Sub-Contractor is satisfied, or else the responsible will be on the Contractor.

Interviewee 5 agreed that the clause is protecting the Employer making losses in any stated situations due to the Contractor's fault. The Contractor shall be responsible on the works carried out by the Nominated Sub-Contractor or other sub-contractors or suppliers. Once the site is handed over to the Contractor, the Contractor should be fully responsible to protect the benefit of the Employer. In order to be fair, he also agreed that words such as 'due care and diligence' should be replaced with better phrases.

Besides that, the Respondent 5 said, even for the works designed by the Nominated Sub-Contractor, the responsible is still with Main Contractor as the Contract is signed by the Employer and the Main Contractor. However, the Contractor should ensure that the design by Nominated Sub-Contractor is satisfied, or else the responsible will be on the Contractor.

Clause 7 Quality of Materials and Workmanship

Interviewee 1

In terms of the words 'quality plan', Interviewee 1 agreed that it is not finely defined. It shall have a standard for the Contractor to follow as in what is consider as a proper quality plan and from those specifications so that the contractor can price it accordingly. This is to avoid situation where the client pay extra or the project is not awarded to the contractor due to over-pricing cases. Besides that, it is to prevent the awarded 'price-too-low' contractor does not properly execute the work.

On the other hand, when issue on Clause 7.2, Interviewee 1 disagreed that the clause is lack of comprehensiveness in terms of providing specific ground by the Superintending Officer to ask for the sample testing. He said, take a building project as an example, it really depends on the situation for the Superintending Officer to ask for the

testing. There are so many possible situations that can be happened and it is impossible to list down all the grounds in this form.

Moreover, when discussing on the notification time of not less than twenty-four (24) hours, Interviewee 1 opined that it is fair to give notice within that period of time. He explained, 24 hours is reasonably adequate as it is just a notification time for the contractor to get ready. However, he agreed that there should have specific time frame given in Part 7.8 as it should provide a basic, practical time frame to demolish, reconstruct, substitute or remove any defects or defective material so as to provide a proper and effective management at site.

Other than that, the licenses, permits and other related authority's approval as mentioned in Clause 7.5 can be obtained from the respected authority which is said to be known without the need of mentioning. Besides that, the cost of test as mention in Clause 7.7 is said to be fair for both side. However, with respect to cost issue, the clause is inconsistent as no reference is provided for better detail. According to the Interviewee 1, the role distribution between both parties is equally fair. He gave load test as an example. In contract, if stated there is two load tests, any additional tests required by the Employer will be paid by his own. The additional test which needs to be tested outside the site will be paid by the Employer himself.

With respect to Clause 7.8 (a), based on the Interviewee 1's experience, he said no specific time frame given is actually better for both side as it depends on the situation, but Superintending Officer should give a time frame based on case to case basic. In Clause 7.8 (c), the Superintending Officer has warning for other contractor to rectify the defects if in the Superintending Officer's opinion that the contractor is not corporative but it would be better for him to warn the contractor first.

Besides that, the interviewee disagreed guideline or details should be provided in a quality plan as he said, depending on the type of the project, the quality plan may be different.

Interviewee 2

As mentioned by Interviewee 2, quality plan is common in every project. The criteria and requirement needed is depending on the project. Hence, there is no standard needed to do the pricing.

Other than that, Interviewee 2 opined that the comprehensiveness and fairness for this clause is good. It has catered for various problems and issues related to quality assurance issues which include the need of doing material, goods, equipment and workmanship testing and experiment. Hence it is fair for both parties.

She is neutral in terms of completeness and flexibility whereby she commented that in order to keep the flexibility of the contract, there is no guideline for quality plan is needed. But, she agreed that a clearer project management framework would be there if there is guideline provided.

Interviewee 3

According to Interviewee 3, the clause is fair as not every items need to be tested. He mentioned, there is no specific quality plan needed as the quality control is depending on the respective project. Besides that, he opined it is fair for both sides as only the doubtful work or item will need testing. For instance, if a new roofing material is introduced, it is reasonable for the Superintending Officer to request for testing. However, he agreed that the factory test requirement, role and responsibility of the Superintending Officer with respect to further testing shall be mentioned as well.

Other than that, he agreed that the clause should consider the fairness issue with respect to no warning is provided for the contractor when he fails to take action upon the instructions of the Superintending Officer.

With respect to time frame factor, he explained that 24 hours are likely to be reasonable as it is sufficient for the Superintending Officer to be prepared for the visit or witness the testing. He suggested that it would be better to have a proper method statement of material and workmanship on how the testing work can be monitor before the actual work is carried out. On the other hand, with respect to Clause 7.8, Interviewee 3 opined that no time frame to specify when to demolish/reconstruct/substitute is actually good to the contractor. He said, it would be better not to specify time frame as it keeps the flexibility depending on the project. However, he agreed that it is a bit difficult to do project management.

Interviewee 4

As mentioned by Interviewee 4, the quality of materials and workmanship is controlled according to the plan. It is checked during the site meeting. Hence, if there is any instruction, it will be given during the site meeting. Interviewee 4 added, there are some common tests which are usually requested at site, so a guideline is not

necessary. These include the strength test to test the concrete strength and quality; standard test (also known as rolling test) to test the aggregate quality. When on to say that, more crushed aggregate represent the poorer the quality of the aggregate which the limit is 30%. Moreover, he also mentioned that the quality of the earthwork shall be checked with bore log test which to check the maximum dry limit, Atterberg's limit, plastic limit, liquid limit and etc.

Interviewee 4 is neutral with the issue of quality plan as he said the Contractor shall request the expert to help if they are new to the industry. However, he agreed to provision of simple appendix in the quality plan to help the new user. In addition, he agreed that the clause is skewed to the Employer's side which he opined specific grounds to request for further testing in order to avoid the abuses of the Superintending Officer's power. The limit of the Superintending Officer on this matter is not stated and would be unfair to the Contractor.

In terms of flexibility, the Interviewee is neutral as he opined that the Contractor should be capable to price and draft the quality plan. He could also do the project management according to the quality plan that he has priced on. However, he agreed that no procedure is provided for those who fail to take action upon the instructions of Superintending Officer.

Interviewee 5

With respect to the quality plan issue, Interviewee 5 commented that the objective of the quality assurance and quality control is to ensure the construction work carried out as in accordance to the drawings and specifications. Normally at site, the Contractor has a team of QA/QC personnel including site engineer, foreman, supervisor, quantity surveyor, etc. to ensure that the works is in accordance to the proposed quality.

On the other hand, he explained the differences between a tender document and a site document. He said, a document related to pricing is a tender document, where the Contractor needs to study and put in the price according to the information they obtain. Anything put wrongly (price or quantity) will be on the responsible of the Contractor. Normally for a government project, price and quantities are taken off by the quantity surveyor team. The tender over the budget will not be considered or get negotiated for the cutting down of the tender price. The lowest tender price does not guarantee the award of the project. If the tender price that is submitted is much lower than the price that the quantity surveyor team provided, the Employer personnel will go through the tender that the tenderers submitted carefully. Last time there are a lot of cases that the Contractor unable to complete the works that they tendered due to the low price. So, nowadays, the Contractor's submitted tender price will be studied carefully first before the work is awarded. But, quality plan is not a tender document. It is a site document. Therefore, the price may not reflect the quality plan. Hence, to solve this problem, tender document can request the contractor to price quality control accordingly.

Besides that he said, quality plan is required to be submitted by the Contractor in order to ensure that the Contractor will carry out the works in accordance to the drawings and specifications, and to complete the works within the time frame. Quality plan included methods of statement, master program for whole project, etc. Methods of statement will state out all the methods and procedures to carry out the construction works, and the quality of works to be achieved. Master program is the time frame chart that is used for the Contractor to complete certain works within the stated time frame, and for the Contractor and the Employer to assume the cash flow. So, there should be a guideline of what is to be provided for a comprehensive quality plan.

In any cases, the Superintending Officer has the right to request the Contractor to submit the materials vouchers or test certificate. There is no need for specific ground for the Superintending Officer to request on such proves. Such request from the Superintending Officer is aimed to ensure all the materials are up to his reasonable satisfaction and as specified in the drawings, specification and instructions. If there is non-compliance, the Superintending Officer may order for the removal or the substitution to other materials or goods, presumably as selected by the Superintending Officer. For example, the steel bar supplied for the construction works will have a mill certificate, which proves the strength and quality of the steel bar. Reinforced concrete piles will also have the testing report for the concrete used and the design criteria to prove the load that can be supported by the pile. Hence, with respect to Clause 7.2, the Superintending Officer normally will request on such proves in order to ensure that the materials supplied is in accordance with the specification of the works.

For the immediate decision case, Interviewee 5 commented that what the Superintending Officer needs to do is to make immediate decision and solve the problem first. Then after that he will check for the source of the problem. But sometimes once the Superintending Officer is not available at the first time, the Superintending Officer's representative at site will have to make necessary decision. Some Superintending Officer of JKR needs to handle a few sites that are not in the division or location.

The Interviewee 5 explained that the notice which shall not be less than 24 hours is referred to the notice of the works that request the Superintending Officer to inspect before carry out the next step of works, such as concreting

works. The 24-hour notice is not a confirm matter as it depends on the Superintending Officer. Hence, it is better that both contractor and superintending officer agreed on certain time frame before the start of certain time frame for certain works.

With respect to the licenses and permits required by the Contractor, it means the contractor who will carry out the construction works would have to apply and obtain the necessary permits for the site. For example, if the Contractor would like to cart away the extra earth from the site, the transportation permit on road access is required. No permit means that no one can remove anything from site and transfer to the other places. All such permits are not the responsible of the Employer.

Interviewee 5 said even though this is one-sided clause, it will mean nothing if the Contractor follows the specification and quality plan to carry out the construction works. In normal case, for those site engineer like him, if the works carried out by the Contractor is in accordance with the drawings, specifications and quality plan, they will not simply ask the Contractor to carry out the test, unless they doubt that the Contractor did not carry out the works well and in quality.

On the other hand, the interviewee agreed with issue in sub-clause 7.7. In normal case, for the non-compliance works and the poor quality materials that need to be substituted, the Superintending Officer will give the written notice to the Contractor with a time frame. If not, the Contractor may not to do it until the completion of the project. Also, he agreed that the time frame issues should be included in this sub-clause, while for the actual practice; the time frame is to be included in the SO's notice given to the Contractor. He agreed that notice shall be given by the Superintending Officer before he can engage others to do it.

Interviewee 5 agreed that 'may' shall be submitted with shall. Not all the Superintending Officer will have the same attitude and working style. For example, some instructions given by the Superintending Officer, if in his opinion is not urgent, he will not give the time frame for the Contractor to carry out the rectification work, and the Contractor is to carry out the works too before the completion date and this can be confusing.

Clause 11 Superintending Officer and Superintending Officer's Representatives

Interviewee 1

First of all, Interviewee 1 disagreed that the clause is unclear. Although the clause is described in 5 parts, the language used is easy to understand. Besides that, he opined it is reasonable that no time frame is given for the issuance of instruction by the SO as it provides the flexibility to the contract.

However, the Interviewee 1 agreed that the clause is lack of consistency whereby this clause mentioned that when the representative's instruction and approval are binding between the contractor and Employer, the SO reserves the right to overturn such approval. Besides that, he also agreed that it is hard for the Contractor to do project management since there are no procedures for the contractor to disagree the variation works and hence, making the clause less flexible.

He agreed, in terms of SO's representatives and SO's representative's assistant, the roles of these two characters are confusing as there is no clear definition of the duties of such assistants. For example, he said, the SO's representative can be anyone and the assistant is referred as Clerk of Work. However, in this form of contract, it is not clearly defined.

As for the issue of seven days to be too short and unfair to the contractor to execute work, the interviewee explained that the seven (7) days is to start execute the work and not to finish the work. He agreed that it is confusing.

Interviewee 2

Interviewee 2 said that there is no issue in this clause as the SO's representative and the SO's assistant role are well differentiated. The representative has more power than the assistant. In some projects especially the mega project, the assistants are needed to help the SO's representatives. However, she agreed that the clause has to cater for more contractual issues, including the power and decision made by the representatives and the assistants.

In terms of clarity, the Interviewee 2 agreed that the clause format is a bit hard to understand especially for new user. Also, the clause is less comprehensive as words such as 'reasonable' is used instead of a proper time frame. Other than this, Interviewee 2 agreed that Part 11.3a is inter-related with Part 11.3 (d) and (e). Hence, it should not be drafted as is currently.

Interviewee 3

Interviewee 3 agreed that the clause's clarity is poor as the role of the personnel is not well defined. Supposedly, there should be clear definition between the SO's representative and the SO's assistant. This is important as their role and power is different.

On the other hand, the Interviewee is neutral with the time frame (7 days) given in Clause 11.3 (d) as too short. He said the time frame is for the Contractor to execute for instructions not to finish the works.

However, he agreed with the need to provide procedure which to instruct the Contractor of what to do if he disagrees with the SO's instruction. In this case, it is unfair to the contractor as there is no room to negotiate. It is also unfair to the contractor if he is not notified but asked to pay any price to other contractor to do his part.

Interviewee 4

According to the Interviewee 4, he agreed that it is confusing to have Superintending Officer's Representative and the SO's assistant in government project. He mentioned, the SO's assistant is usually represented by the Clerk of Work (C.O.W). He said the SO's assistant whom represents by the C.O.W. can also be known as the Inspector of Work. However, it depends on the project.

With respect to the Clause 11.3 (d), Interviewee 4 disagreed with flexibility issue whereby he commented that to give a written notice within 7 days is too short as those 7 days is only for the Contractor to respond. He said that there is inadequate procedure and the clause 11.3 (b) and 11.3 (b) (i) is inconsistent. Also, with respect to the matter of variation, the coverage is limited to Part 11.3 (b) and (c) with no definition of variations and conditions. He agreed the project management framework is affected as well due to inadequate procedures.

Interviewee 5

Based on the experience of the Interviewee 5, duties of a SO and SO's representative and duties are well distributed. According to him, SO has the right to appoint the SO's Representative as an inspector to inspect all the works carried out at construction site. For some mega projects when the SO's Representative unable to carry out his duty effectively, the Superintending Office's Representative may request to appoint SO Representative's assistant in order to assist him in certain parts of works, such as M&E works, piling works and so on. SO Representative's assistant should report to the SO Representative on the works that have been carried out under his inspection. SO Representative then should report to the SO on the works carried out at site. He did not think that it is necessary to elaborate the duty.

If the SO's Representative fails to carry out his duty and approved the unsatisfied works, the SO has the right to make the right decision which is against the SO Representative's decision. In other words, the SO has the ultimate power in a project.

Responding to issue in Sub-clause 11.3, the Interviewee 5 said 7 days in contract form is just a reference whereby in actual practice it is shorter. Usually, contractor has within a few days to receive and start compliance. For some urgent works such as inspection before concreting, any unsatisfied works are to be rectified within 3 days.

It is a good point to add in the procedure for the Contractor when he disagrees with the SO's decision. In normal practice, the Contractor is to reply the SO in writing and explain the unsatisfied works. He can also explain if he disagrees with the SO's decision. However, the final decision is depended on the SO. It is one-sided clause as the SO has the ultimate power for final decision.

Clause 12 Contractor's Representatives

Interviewee 1

By referring to Clause 12 (a), Interviewee 1 said the Superintending Officer need not to know both language but the contractor's representative need to know as the Superintending Officer has his representative to translate and inform him the issue. Hence, the interviewee commented that it is actually not good for the Superintending Officer's representative who only knows one language.

According to the Interviewee 1, the clause is one sided as the Superintending Officer has ultimate power in giving instruction. He cannot be challenged hence make the clause comprehensiveness, flexibility and fairness are rated as poor. There is also no procedure for the disagreement by the Contractor when his representative is asked to leave. Hence, the interviewee advised to improve the clause.

Interviewee 2

According to Interviewee 2, the ambiguous word is not an important issue as depending on personal judgment, those words like 'unreasonably' and 'vexatiously' are subjected to the Superintending Officer decision. However, she agreed that it would be better if there is third party to resolve the problem if there is really a disagreement.

Interviewee 2 agreed to rate 6 for all the problematic parameter. In her opinion; this clause is fairly good but need improvement. A contractor's representative has to be replaced if his performance is disappointing. But of course, she mentioned, warning or advice must be given before the replacement. According to the Interviewee 2, this clause is hinging on the representative's personality. More procedures may help even though problems may not be fully eliminated.

Other than that, she suggested that the clause should be further improved by mentioning the contractor's responsibility of attending the site meeting together with the representative.

Interviewee 3

With respect to the issue of the language that supposed to be known by the Superintending Officer, Interviewee 3 opined that it gives no effect to the contract and also project since the Contractor's representative can understand either one of the language. However, he agreed that the clause is one sided whereby the Contractor has limited guideline to advice him what he can do if he disagree with the removal of his representative.

Other than this, Interviewee 3 agreed that the clarity of the clause can be improved by adding more explanation or definition on the representative's responsibilities, power and limits.

Interviewee 4

According to the Interviewee 4, language that can be understood by the Superintending Officer is less important as he has representatives. But, the Interviewee 4 agreed that a neutral third party can help to solve the conflict between the Superintending Officer and the Contractor if there is disagreement of removal.

In terms of the word 'forthwith' whereby the time frame given by the Superintending Officer to remove the Contractor's representative is rigid. The Interviewee agreed that removal time frame can be arguable by both party. Hence, it is better to include condition and time frame for removal.

Interviewee 5

According to the Interviewee 5, it is a normal practice that the Superintending Officer's representative of a government project to know BM and English in order to communicate with both of the Employer, the Consultant and the Contractor. But, he said it is advisable to be clear in this matter.

On the other hand, Interviewee 5 agreed that the Superintending Officer's request on removal of Contractor's personnel is very subjective. He commented, the words 'unreasonably' and 'vexatiously' are arguable. Even though normally when the Superintending Officer request on the removal, he needs to have a strong prove to show the fault of the Contractor's personnel, it is better to have specific condition for removal. There is a case in a government project that the Contractor's representative is requested by the Superintending Officer to be removed from the site as the Contractor's representative do not meet the stated minimum requirement that he must have a recognized degree. The decision of the Superintending Officer cannot be objected by the Contractor since it is the Contractor's own fault that he appoints a non-qualified person as his representative on site.

Furthermore, he said, if the Contractor's Representative is removed from site, the Contractor should arrange the works by themselves or appoint the other Contractor's Representative as soon as possible. Any delay in works will be the Contractor's responsibility. The Contractor cannot blame that the works cannot be carried out effectively because of the removal of the Contractor's Representative as the project is tendered and accepted by the Contractor himself. Besides that, the Contractor's Representative is just appointed by the Contractor to help him in the operation on site.

The time frame to appoint a new Contractor's Representative is not necessary. If the Contractor thinks that he can handle the construction work by himself, he even not needs to appoint the new Contractor's Representative. If he thinks that is urgent, he will appoint a new one as soon as possible.

Clause 13 Possession of Site and Commencement of Work

Interviewee 1

According to Interviewee 1, he agreed that this clause does not have enough coverage on sectional possession. Also, the referencing of the clause could be less complicated whereby sometimes he needs to re-read the clause again and again by referring several time on the respective clause. This mean the comprehensiveness and consistency of the clause is very poor.

Other than that, he agreed that the contractor should submit the work programme and followed the work method accordingly. In terms of fairness, he agreed that the clause shall include the claims for loss and expenses as well. However, he opined that to possess the site specifically four weeks from the date of Letter of Acceptance is reasonable and flexible as this is depending on the project.

Interviewee 2

Based on the second Interviewee's experience, she agreed that the fairness of the clause could be improved if the clause includes the claims for losses and expenses. Besides that, the clause referencing is poor which the sub-clauses are confusing. She can hardly understand the language when she has just started using the form.

Also, the comprehensiveness of the clause is poor as there are too many layering in referencing. Anyway, she is neutral with the flexibility of the clause and also the project management issue as she did not discuss on this.

Interviewee 3

According to the Interviewee, this clause is drafted in a complicated manner. This makes the comprehensiveness and consistency of the clause less ideal. In order to improve it, Interviewee 3 suggested that it could be break into paragraphs with short sentences. However, he is neutral with other attributes as he has no comment on them. He said, other especially the Contractor may have problem but as long as they are experienced enough, those matters are less important.

Interviewee 4

Interviewee 4 strongly agreed that the clause is unfair and lack of comprehensiveness whereby there is only ground for extension of time specified in the clause but there is no condition to claim for loss and expenses. He is also confused with the referencing whereby it has so many sub-parts which cause the consistency of the clause to be rated as poor.

He opined that the flexibility of the clause is fairly good as four weeks is reasonable for the majority of the project. He also commented that the contractor to provide work programme followed by work method statement with related quality and safety plan in order to improve their management on site.

Interviewee 5

According to Interviewee 5, definition should be given to the term such as 'letter of Acceptance'. He also agreed that the clause is unfair as the issue with respect to claims of loss and expenses are not mentioned and he opined that there should have more details on the possession of site issue.

However, he disagreed the clause is drafted in a confusing reference method. He agreed that the time frame given needs to be adjusted in order to increase the flexibility of the clause. Followed by that, he agreed the project management framework can be improved by preparing work programme, quality plan and site diary.

Clause 16 Removal of Workmen and Other Personnel

Interviewee 1

Similar to what has been mentioned in Clause 12, Interviewee 1 agreed with the issue in this clause which the contractor shall remove his workmen as soon as the Superintending Officer gives notice and delay cause by such issue is not entitled for any claim of expenses or extension of time. Interviewee 1 also agreed that on the unfairness and incompleteness of the clause especially without procedure and right to the removal.

The used of words such as 'good character', 'skilled' and 'incompetent' is very subjective as it depends on the Superintending Officer to judge. According to the Interviewee 1, time frame to removal would be applicable in order to have better site synergy.

Interviewee 2

Similar with Clause 12, Interviewee 2 agreed that the Superintending Officer's instruction shall be followed as in removed the workmen as soon as receiving the Superintending Officer's instructions. But, she is in the opinion that, it could be unfair to the contractor as no loss or claim can be made under this reason. She opined that the Contractor should be able to claim for loss or damage due to removal of his workmen whereby the removal is due to Superintending Officer's personal desire.

Interviewee 3

Concerning the issue of 'misconduct/ incompetent' which cause the removal of contractor's workmen, Interviewee 3 agreed that the comprehensiveness is poor. He said, the clause's comprehensiveness can be improved by providing more detail. On reasons of removal, he suggested a few examples to support his answer. Firstly, he said, based on his experience, there is case whereby the contractor's workman fought with the consultant. The worker was asked to leave the site, immediately. However, for second case which involves a suspicion on thefts, the worker was not removed. Hence, he opined that it is fair for the Superintending Officer to remove workmen based on good reason, explanation and proof.

Interviewee 4

In terms of 'misconduct and incompetent', Interviewee 4 replied it depends on the personality of the Superintending Officer as how he judges these two reasons. However, he agreed that there should have specific reasons to remove the workmen so as not to cause work delay. Interviewee 4 also commented that no claim can be made due to removal of workmen whereby the Contractor shall responsible to find for new workers.

Interviewee 5

Interviewee 5 is neutral with the issue of providing time frame for removal as he may or may not increase the efficiency of doing project management. He agreed that the Superintending Officer should not have ultimate power whereby he can ask for removal of workmen without specific ground. He commented that the removal must have specific reasons otherwise the Superintending Officer is unreasonably to find fault with the Contractor. If the Contractor's workmen are found guilty and ask to remove from site, no claim shall be made under this reason. But he did not touch on the issue of Extension of Time.

Clause 18 Unfixed Materials, Goods and Equipment

Interviewee 1

According to the Interviewee 1, this clause is fair whereby any loss or damage which is not due to the contractor fault such as flood can be claimed from the insurance company. In fact, no materials, goods and equipments are likely to be removed from site as Contractor needs to pay for the manpower and transport to make removal. However, Interviewee 1 agreed that the clause is lack of comprehensiveness as the Government may only have the possession but not the legal title of the materials and goods.

Interviewee 2

For unfixed material, goods and equipment, Interviewee 2 agreed comprehensiveness got problem whereby she mentioned that any losses such as flash flood, burnt, and etc is under covered by insurance. Hence, in this situation, the responsibility that mentioned in the clause is actually referred to the responsibility of claiming insurance. Hence, Interviewee 2 is in the opinion that there is no risk distribution issue. To cover the issue of late payment of the materials and goods supplied by the suppliers. She also agreed with the legal title of ownership for the materials and goods are not with the employer. Hence, it does not cover employer as it seems. For example, if the material and good supply by supplier are not paid by contractor, employee essentially still does not own the material after it has been paid.

Interviewee 3

According to the Interviewee 3, not all materials can be removed once they are delivered. For instance, the numbers of steel bars used and the remaining can be counted but items like sand and stone is difficult to be

accountable for. How many steel bars used and how many remained can be count but for some items like sand and stone which is uncountable, it is hard for the contractor to refund. There are issues such as materials and goods supplied by others and payment has not been made. It did happen previously when supplier wants to take back their material. He also agreed that the legal issues regarding ownership of the materials and goods are not covered in this clause. Interviewee 3 also commented that the Contractor should responsible for the loss and damage of the materials as he owns the site. But, it fails in terms of how he can be responsible.

Interviewee 4

Interviewee 4 commented that the Contractor shall provide proper security and insurance to protect the material and site. The clause may be or should be clearer on method of insurance or other method for contractor to responsible. Interviewee 4 agreed that the Employer should be given the legal title of the ownership or gets the Contractor to sign some declaration. Interviewee 4 agreed that of the materials and goods, the clause should provide details that Contractor to pay his supplier accordingly so that issue such as supplier pulling back their goods will be eliminated.

Interviewee 5

According to Interviewee 5, it is the Contractor's responsibility to buy All Risk Insurance before the works can be started. Once the unfixed materials are included to the payment certificate and pay to the Contractor, in any cases it will be the Contractor's responsibility. He agreed that the clause should make references to the matter insurance on how the contractor will be penalized if there is loss and damage.

He suggested that the clause to add in the situation where the Superintending Officer can request of the removal of the said things. When the unfixed materials are ordered more than the actual quantity and the materials are no longer be used, the Superintending Officer can give instruction to remove the said materials.

Clause 23 Assignment and Sub-Contracting/ Sub-Letting

Interviewee 1

Interviewee 1 agreed that the clause should cover the matter with respect to conditions precedent to employment of sub-contractor and payment issue as the sub-contractor are not paid will create problems on site such as delaying the progress of work.

Interviewee 2

With respect to the assignment and sub-letting of the project, Interviewee 2 agreed that the clause title is incomplete and ambiguous. It is difficult to manage project assignment or sub-letting. She said the contractor should not tender for the project if he is not capable to do the project. She suggested that the Government should enforce law to avoid the total sub contract culture. Although it is illegal to sub contract out the project, this culture is still exist in the industry as there is non-strict law enforcement to penalize those who go against it.

Besides that, she encountered problems of the sub-contractor not being paid and there are some cases of sub-contractors who do not get a proper and legal assistant or sub-contracting contract even though employer and Superintending Officer can not take out the responsibility. It has caused many problems. Employer can black list the Contractor but it is too late for the problems. In such case, the Superintending Officer will refuse to responsible if the main contractor refuses to pay.

According to the Interviewee 2, she is neutral with the issue of consistency. She said this maybe a drafting style even though Employer and Superintending Officer can take out the responsibility as it has caused many problems.

Interviewee 3

In terms of the clarity, Interviewee 3 rated the Clause 23 as poor. He said that the clause especially 'void assignment' is too legalistic. Interviewee 3 said that although assign part or whole of the project to another person except for banks and insurance is illegal, yet it is still in practice in the industry. Besides that, Interviewee 3 agreed with the assignment of full or part of the works will create difficulties for good project management.

With respect to Interviewee 3, more explanation and procedure is needed. For example, if there is a delay case by sub-contractor, contractor will take the responsibility.

Interviewee 4

Based on Interviewee 4's experienced, sub-contracting culture or also known as the 'alibaba culture' is unavoidable. There will be much to be arguing when something happened on site. Hence, the Superintending Officer and Employer should be responsible to check the Contractor's background before awarding the project. He suggested to blacklist those practicing this culture.

He said that the clause is poor in terms of defining the words sub-letting and sub-contracting. Initially, it is said that sub-letting of the project is illegal. But now the involvement of sub-contractor is allowed. This is confusing and can cause difficulties in managing a project. Hence, he opined that the clause is inconsistent in this manner. He agreed the clause should cover on the responsibility and payment for sub-contractors.

Interviewee 5

According to the Interviewee 5, even though the main contractor assigns or sub-let the contract to the others, he is still to be responsible to the Employer as the contract is signed and accepted by the main contractor. He should be responsible for everything, including time, cost, quality and safety. Even though the main contractor sub-let certain part of works to the others, the main contractor should ensure the works carried out by others are in accordance with the contract document.

On the other hand, Interviewee 5 explained that the problems come when the work is assign or sub letting of the work as 'assign or sub-letting without the prior written consent of the Employer'. Some contractors who get the government tender will do total assign the others to carry out the works and they earn certain percentage of profit in between. Even though the works are carried out by others, the Employer or the Superintending Officer will still go after the main Contractor. If the main contractor become irresponsible, thing will become complicated. Hence, he agreed that full sub-contracting is difficult to manage.

The interviewee 5 agreed that the Clause 23.2 is too legalistic and it can be improved by simplified the language. In Clause 23.4, the further conditions should be linked with 23.3 and 23.1.

Clause 24 Indemnity for Injury to Persons and Property Damage

Interviewee 1

First of all, Interviewee 1 disagreed that the clause is incomplete and lack of comprehensiveness as Part 24.6 has the methods and procedures of how the Contractor to indemnify the Employer. Hence, he said the flexibility of the form is not an issue as well.

He agreed that Part 24.7 should mention the requirement to be referred to the respective authorities. Besides that, he also agreed that the clause is generally focused on the Contractor's side and the clause is sided towards Employer whereby Contractor still responsible even though injury is caused by the Superintending Officer or Employer agent.

Interviewee 2

According to Interviewee 2, she agreed that the clause should be equally fair to every party which she opined that the clause should cover the responsibility of the Employer representative default. She agreed also that the sub-clause 24.7 should be linked to involved external authorities.

She disagreed that the risk and role distributions are unequal. She mentioned that everyone at site is protected under insurance. Hence, it is unnecessary to claim who is responsibility to the injury, loss or damage. With respect to the clause comprehensiveness and completeness, the respondent's comment is neutral. She said it is common for the Contractor to know the procedures or method of indemnify or otherwise the Employer will instruct him. Hence, it is unnecessary to state it clearly.

Interviewee 3

Other than comprehensiveness, consistency, fairness and risk distribution issue, Interviewee 3 is neutral with other attributes. According to him, the clause is very unfair. He gave an example that the Employer is not liable except the accident or injury from the default of the Employer. But if the Employer requests the Contractor's workmen to place material at certain place and this caused injury, it is unclear of who is responsible here. It is arguable as the one who gives instruction is Employer but the Site belongs to the Contractor.

Interviewee 4

Based on the Interviewee 4's experience, the procedure to indemnify the Employer is common. Hence, it is not necessary to provide for specific methods. Besides that, he disagreed that the clause should make reference with the external requirements. This is to keep the flexibility of the project as external requirements necessary depends on the project types. However, he agreed that the Part 24.1 and 24.4 do not cover the default by Employer. He also agreed that fairness problem is an arguable issue here.

Interviewee 5

Interviewee 5 said that the procedure to indemnify the Employer should be clear by every Contractor but he agreed that providing procedure is no harm as it is easier for the contractor to follow. Same thing goes to the further reference for Environment Protection. Besides that, he opined that both party should be responsible to their own workmen's default. Employer can claim the same insurance but they can be a reduction of the premium paid by the contractor.

Clause 26 Nominated Sub-Contractor

Interviewee 1

First of all, the Interviewee 1 agreed with there is confusion in Part 26.2 (c) (i) referencing. In Clause 26.5, it is mentioned that the Contractor shall pay the nominated sub-contractor within fourteen (14) days after they receive the payment form the Employer. As explained by the Interviewee 1, the contractor can ask for payment and it takes some times for the Superintending Officer to issue payment certificate. After the payment certificate is given, the contractor can receive payment within 30 days and within the 14 days after receive payment, the contractor has to pay the nominated sub-contractor. However, Interviewee 1 agreed that the clause fails to give procedure to advice the nominated sub-contractor who fails to claim payment.

Interviewee 1 agreed that conditions and reasons of why the Employer is to pay the nominated sub-contractor must be clear and justified, otherwise it will become difficult to manage the nominated sub-contractor.

With respect to the consistency issue, Interviewee 1 agreed with the typo error and that it is unfair and unclear but he explained that the clause is drafted to give more authority and power to the Employer as it is a government form first and foremost.

However, Interviewee 1 disagreed that providing the attendance services are too specific and reduce the flexibility as he said it is to protect the Contractor.

Interviewee 2

According to Interviewee 2, she agreed that Clause 26.2 (c) (i) is supposed to be further referred to Clause 26.2 (a) and not Clause 26.2 (b). With respect to Clause 26.5, the payment shall be made within the 14 days after the Contractor received payment from the client. She further added that if the nominated sub-contractor's work is below satisfactory level, he may not be able to ask for payment as the approval of the Contractor is needed. Hence, it is true that direct payment to nominated sub-contractor must be properly controlled.

On the other hand, the issue of Limitations of Superintending Officer and 'complete disposal' to nominate any nominated sub-contractor is inconsistent and it shows the clause is sided to the Superintending Officer. She agreed that flexibility is poor and that it is the responsibilities of the Contractor to provide list of attendance services to the nominated sub-contractor.

Interviewee 3

Based on Interviewee 3 understanding, he agreed that Clause 26.2 (b) mentioning in Clause 26.2 (c) (i) should be change to Clause 26.2 (a).

He emphasized that the payment made to Nominated Sub-Contractor supposed to be within 14 days after the Contactor received interim certificate from the Employer. And it should be changed to upon receiving payment from Employer. He agreed that there should have listed some grounds before the nominated sub-contractors are able to ask direct payment from the employer as it is unfair to the Contractor as it is override the contractor's authorities.

The comprehensiveness and completeness of the clause need to be improved especially with respect to direct payment. Interviewee 3 also opined that the consistency is poor whereby it is stated that Superintending Officer can appointed any persons to be nominated sub-contractor but his power in this matter is limited in clause 11.

Interviewee 4

First of all, Interviewee 4 agreed with the mistake in Clause 26.2 (c) (i). Followed on that, Interviewee 4 explained that the contractor is to pay the nominated sub-contractor within 14 days after received payment from the Employer not received of payment certificates. He agreed that the clause did not mention the conditions which the nominated subcontractor can ask for direct payment from the Employer. For him, this is important otherwise the main Contractor may have problems in managing his sub-contractors.

In this clause, the subject matter is Nominated Sub-contractor and does not include the sub-contractor. He said that there is no law protecting the privately engaged sub-contractor. Unlike nominated sub-contractors, the sub-contractors have no right to claim money from the Employer. Hence, he suggested that the Construction Industry Payment and Adjudication Act (CIPAA) to play its role that protect the sub-contractors.

Other than that, he explained the words 'joint instruction' as a written agreement between both parties which agreed on certain things. The Employer can withhold the money until both parties achieved the agreement which is fair as it shows that the Employer is not sided to any parties. And, he is neutral with the flexibility issue.

Interviewee 5

First of all, Interviewee 5 agreed with the reference confusion whereby clause 26.2(b) shall be referred to Sub-clause 26.2(a). Besides that, he said the remedies or actions should be clearly specified before the fully termination to the Nominated Sub-Contractor in the event of non conformance or non compliance. For example, extension of time should be given to the Contractor due to nominated sub-contractor default. Any loss should be claimed from the Employer or deduct from any amount payable to the Nominated Sub-Contractor before the fully termination.

He further explained on the time frame of 14 days for the payment to the Nominated Sub-Contractor after receipt of the payment certificate of the Nominated Sub-Contractor is unreasonable. It should be changed to within 7 or 14 days after the Contractor received the payment from the Employer. In case of the Employer delay the payment to the Contractor, it is not logical that the Contractor should pay the amount to the Nominated Sub-Contractor first before the Employer pays to the Contractor, as the Nominated Sub-Contractor is normally appointed by the Employer.

With respect to the clarity problem, the issue of clause too long and use of too many 'any' should be changed so that it will be easier to understand and not easy to get confuse. Besides that, the sub-clause should be clearly specified that which sub-clause should be referred to so that not confusing the users, i.e. Clause 26.6(b).

On the other hand, for direct payment to the Nominated Sub-Contractor by the Employer, it is not reasonable as the Nominated Sub-Contractor is the sub-contractor of the Contractor although he is nominated, the payment shall go to the Contractor first before payable to the Nominated Sub-Contractor. If in any case the Nominated Sub-Contractor can directly get the payment from the Employer, it will be difficult for the Contractor in management. For example, if the Nominated Sub-Contractor does not carry out their works in accordance to the specification or drawings and the Contractor would like to retain certain amount of payment so that the Nominated Sub-Contractor will carry out the remedies to repair, it will be not meaningful as the Nominated Sub-Contractor can claim the payment directly from the Employer and the Nominated Sub-Contractor will not carry out any remedies that may cost him extra.

Besides that, Interviewee 5 commented the sentence: 'Sub-Contractor has satisfactorily indemnified the Contractor' as very subjective. He said that this is not clear.

Clause 27 Nominated Suppliers

Interviewee 1

Comments can be further referred to Clause 26.

Interviewee 2

Similar comments are applicable for both Clause 26 and 27.

Interviewee 3

Interviewee 3 has commented the same as shown in Clause 26.

Interviewee 4

Both the issue in clause 26 and 27 are similar. Hence, the Interviewee's comment can be referred to previous clause which is Clause 26.

Interviewee 5

Comments are similar with Clause 26.

Clause 30 Contractor's Design of Work

Interviewee 1

Interviewee 1 agreed that the conditions which require the contractor to design should be in place to avoid arguments. He also agreed that the clause incomplete without the specific coverage on issue with respect to Professional Indemnity Insurance. He said it is true that the contractor actually cannot give that level of indemnification. Hence, if the Employer thinks that it got them all protected, then he may be in for a surprise. The risk is still there. Overall, he is not satisfied with this clause.

Interviewee 2

According to Interviewee 2, in a turnkey project, the contractor is required to design and build. However, the contractor can get the design from a professional design consultant. Hence, there is no need for procedure or condition for this clause. But, Interviewee 2 agreed that it is true that the form did not specify this clause as an option to change the form to be used for a turnkey project. She also agreed that there is fairness problem regard to the Superintending Officer's responsibility in endorsing design only. The Superintending Officer is to endorse the design but no need to be liable for it. As the design is to combine or fit into his design then simply endorsing it, is not sufficient and it may be good to increase the Superintending Officer's sense of responsibility.

Interviewee 3

Interviewee 3 agreed that the clause is incomplete and lack of comprehensiveness whereby there is no method or procedures stating the Contractor's responsibility in the design works done by him. Also, the clause is unfair as the Superintending Officer does not need to be responsible with the design that he has endorsed.

Interviewee 4

Interviewee 4 agreed that it is difficult to manage the project when there is this flexibility to request the contractor to design when there are not proper safeguards in place of who is really responsible for the design. In many projects, contractors are asked to proposed small alternative designs, when necessary. But to leave a big portion of design to Contractor, unless it is specified that the work is done by a certified designer, it is risky. Interviewee 4 opined that the clause must be more specific on this matter. As a designer himself, Interviewee 4 believed that the Superintending Officer who is to endorse the design should hold some responsibilities as he should know what he is approved or disapproving and not to take endorsement lightly. Hence, Interviewee 4 opined that the clause is not very well done and seems out of place.

Interviewee 5

Interviewee 5 is neutral with most of the issues. He did not much comment on the procedures precedent to the Professional Indemnity Insurance issue. He said if the Contractor does not have the Professional Indemnify Insurance, he can get a professional Consultant to design but the clause should specify this. However, he agreed with the unequal risk distribution whereby the one who endorse the design is said no need to be liable if there is mistake. It creates confusion and it is arguable.

Clause 31 Independent Contractor

Interviewee 1

With respect to Clause 31.2, it mentions that the contractor shall inspect and promptly report to the Superintending Officer. However, issue arises as how the contractor inspects since he himself may not expert in that particular field/s.

Based on Interviewee 1's experience, he opined that this could be a problem for some projects. He suggested some works such as scaffolding instead of Employer engaging independent contractor/s but get the Contractor to sub-contract it to other contractor so that contractor can have a better control and Employer can have one point of reference. Of course there may be cases when works are to be in segments and given to various independent contractors. In cases as such, Interviewee 1 emphasized that Superintending Officer or someone appointed must take charge of coordination works.

Interviewee 2

For this clause, Interviewee 2 commented that the risk of having independent contractors on site engaged by the Employer seems to be amplified and borne by the main contractor. Interviewee 2 questioned whether or not the contractor is allowed to ask for profit and attendance charges due for providing the assistance and cooperation to the independent contractors.

Interviewee 3

With respect to the responsibility of inspecting the works done by others, Interviewee 3 mentioned that it depends on the situation. He said that there should have some procedure for joint inspection, instead of leaving it completely to the main contractor. For cases whereby the main contractor not specialized in, the Employer through the Superintending Officer should take the responsibility to inspect the other contractor/s' works.

Interviewee 4

Interviewee 4 did not comment much on this clause as he had not had significant problems with it. However, he agreed that the clause be improved to make as suggested by the grading of the clause.

Interviewee 5

According to Interviewee 5, the Contractor here means the main contractor that signed and got the contract from the Employer. For normal practice on site, the work by the other contractors that are employed by the Employer should be inspected by the Superintending Officer. The Superintending Officer should coordinate the works among the Contractor and the other contractors. The Superintending Officer should not put away his responsibilities for coordination and inspection of the works to the Contractor.

Clause 32 Valuation of Variation

Interviewee 1

As stated in Clause 32, no work shall be done if variation is not approved by the Superintending Officer. According to Interviewee 1, in a lump sum contract, variation cannot be done without instruction. However, he said it varies from cases to cases. For emergency cases, exceptional is given. So Interviewee 1 agreed that definition of variations must be clearer to have a better coverage.

Also, for provisional quantity, any increase or decrease of quantity need not the instruction from the Superintending Officer as it allows in the contract. For example, number of piles is kept blank for future fill in as the number of piles needed is not known. However, the rate will be stated clearly in the contract.

As for valuation, he mentioned that it is common practice for Superintending Officer to decide on the valuation and let the contractor know about the valuation. Some Superintending Officer may seek agreement from the Contractor. But because of the way the clause is written, some may not see it as necessary to seek for the agreement. Hence, it is true the clause is open ended in this matter.

Interviewee 2

As mentioned by Interviewee 2, no variation shall be done with verbal instruction. Even if there is emergency case which need immediate decision making, there should be a proper statement in site record. Although late notification from the Superintending Officer cannot be used as a reason to claim for extension of time, the record of requesting variation is there. It is good site practice to use the site records consistently.

Interviewee 2 agreed that if the contractor deemed the instructions given as a variation, he must inform and the Superintending officer must reply within a stated time. For good site practice, this must be done. She agreed the clause is not complete in this sense.

Interviewee 3

With respect to the issue in clause 32.1 (b) whereby variation issue causes work delay, Interviewee 3 explains that the Contractor is eligible to claim for extension of time which depends on the Superintending Officer to decide the time.

Other than that, he mentioned there should be notice which approved the variation. Otherwise, no work shall be done. He also agreed that even though it varies from cases to cases, to proceed with variation without valuation is of disadvantage to the contractor and to overcome this, especially in the non urgent cases, valuation should be completed before proceeding with works. He said that most form is drafted in such a way that valuation comes later which gives the Superintending Officer more time to work on it.

Interviewee 4

With respect to Clause 32.2 (b), Interviewee 4 suggested pilling as an example whereby he said no instruction is needed for such work. Pilling is considered as provisional items. Hence, the increase or decrease of the number is varied depending on the situation. So, there is no instruction needed for such variations. Definition of variation is not clear here especially it is also lump together with provisional quantities.

Also, he mentioned, if the work is pending for the Superintending Officer to give instruction, then the Employer will have to responsible for the delay. He agreed that contractor should really wait for formal instructions before proceeding with works unless there is a deep mutual trust between the Superintending Officer and Contractor. As valuation will come even later, there is no way to know whether the Contractor will be agreeable to the valuation. So it is better to wait and discuss on the matter before committing his time and resources to it unless the matter is really urgent.

Interviewee 4 also discussed on the matter of cardinal changes. He mentioned that most contracts has contingency sum so it is not easy to go beyond that. But, he agreed that contractor should be given the rights to disagree if the scope is really beyond the original contract. It is must be reasonable. He had in his past experience seen contractor writing in his reasoning for not taking up extra works that is too big. But with government contracts, it is difficult for the contractor to say no.

Interviewee 5

According to Interviewee 5, Clause 32.1 can be said to incomplete and unclear as it does not stated that what constitutes a variation and it does not provide the guidelines as to the role and actions of the contracting parties for the execution of the variation clause. Interviewee 5 explained, issue with respect to increase/ decrease in any stated provisional quantity will not need instruction. He gave an example; if the quantity or rates for certain works have been included in the contract and the variation of these works only involve the change of quantity, the Contractor can carry out the work without further special instruction from the Superintending Officer, just give written notice to the Superintending Officer to inform him on the said variation.

If any delay caused by the variation and no instruction from the Superintending Officer for further work, the Contractor actually can claim for extension of time. But since the clause does not state clearly on this circumstance, it will create difficulties for the Contractor to make relevant claim on extension of time or loss. This clause should be improved.

If the Contractor carries out the works that deem as a variation without the instruction from the Superintending Officer, all the responsibilities will be on the Contractor. If the Employer refuses to pay the variation, nothing can be done. Hence, the Superintending Officer's instruction is important for the Contractor to carry out the variation works. It is unfair to the Contractor. Improvement on this clause should be done. On the other hand, time frame should also be included for the instruction and approval so that no work will be delay in such cases.

As stated, the Superintending Officer is to value the variation work carried out by the Contractor. It is ambiguous as there is no stated standard or circumstances as the guideline for the Superintending Officer to make valuation. If the valuation is not made according to the market value, no procedures are stated that the Contractor has the right to not to accept the valuation and request on re-valuation.

Clause 33 Interim Certificates and Payment to Contractor

Interviewee 1

Interviewee 1 agreed that the clause needs to be refers to other clauses, say footnote can provided. This is to make the form clearer and more user-friendly.

Other than that, for new user, Clause 33.2 is hard to understand as the payment procedure is very complicated. However, the interviewee said this clause is probably easy for Quantity Surveyor to understand as they are the one who administer the clause.

He also mentioned that as this the Government form, it is assumed that Government will always pay. He agreed that without contractor's right in delay payment, to use this form in the private sector does not cover the contractor.

Interviewee 2

In terms of interim certificate and payment to the contractor, Interviewee 2 doubts that whether or not the Superintending Officer can proceed with the issue of payment certificate when the amount of work done is less than the minimum, merely to assist/facilitate the contractor's cash flow.

Besides that, she agreed by giving a score of 4 in this clause in terms of flexibility. Besides that fact that delay in payment is not considered a breach, she added that the payment for materials on site and provisional quantities item that made up to only 75% may affect the contractor's cash flow. Especially if the certification of other works such as piling works might also take some time. Furthermore, sometimes it is difficult for the contractors to attach the proof of payment via invoices and receipts with their payment claims as most of them enjoy credit facilities from the suppliers.

Other than that, Interviewee 2 mentioned that the fluctuation of foreign exchange rate for payment made for imported materials or payment made in foreign exchange to foreign contractor are not mentioned.

In terms completeness, Interviewee 2 added that if the Liquidated and Ascertained Damages (LAD) amount had actually exceeded the monthly progress work done, no payment certificates need to be issued should be included under the condition of no need to prepare for certificates.

Interviewee 3

When issuing the interim certificates and payment to contractor, there should be some guideline or formula to calculate the amount due for payment in Clause 33.2.

Interviewee 3 agreed that this clause is not complete as even though it is stated as fourteen (14) days for Superintending Officer to do the interim certificates, what would happen if he needs additional information. Will it take another fourteen (14) for the certification and he found the procedures for requesting more information lacking as well.

Interviewee 4

Interviewee 4 agreed the clause is unfair and one sided. It is not good to not have coverage on delayed payment as it is also very possible that Government can delay payments. Delayed payments are very bad for contractor's cash flow and contracting parties should understand that. However, it has been practiced and acceptable by the industry that delay due to late payment from the Employer will unarguably lead to a request for extension of time. Of course, other remedies are not mentioned such as suspension works.

On the other hand, he agreed that those linking clauses shall have footnote attached as for reference purpose.

Interviewee 5

Interviewee 5 agreed that only clause number stated but not the clause name will make difficult to the cross reference. Also, he agreed that this clause is incomplete, lack of comprehensiveness and consistency for late

payment issue whereby there is no inclusion of remedies for the Contractor, and time frame which constitutes extreme delays and remedies for that. Hence, it is unfair as well.

Besides that, Interviewee 5 also agreed Sub-clause 33.2(b)(i) is not reasonable. According to him, the circumstance that the Employer is to request the Contractor to show proves of payment made to suppliers is interfering with the management of the Contractor, which are not his general obligations to do so. If in the case of the supplier makes complaint to the Employer on the non-payment of the Contractor, the Employer may make deduct from the amount payable to the Contractor by the condition that the Employer should seek the agreement from the Contractor on the said circumstance first and the Contractor allows the Employer to make the relevant deduction from his payment.

Clause 34 Completion of Works

Interviewee 1

According to Interviewee 1, the clause structure is poor whereby 'inspection of work' here does not refer to testing and commissioning works as per the specification or other contract documents. It is unsure of how the Superintending officer to judge whether the work is done or not.

He has in past seen situations when the contractor disagreed with what the Superintending Officer see as uncompleted and refuses to give Certificate of Practical Completion. Hence, the role distribution is unequal and unfair, also lack of comprehensiveness.

Interviewee 2

Interviewee 2 deemed the clause to give potential problems on the matter of issuance of Certificate of Practical Completion. Certificate of Practical Completion has always been 'sensitive' issue on site. Hence, the clause needs to be written and treated with care to avoid disputes.

She believed that if the first round the Superintending Officer refuse to issue Certificate of practical completion, he must state the reasons very clearly and issued a list of non completed works. That way contractor really knows what to do. And he must give the contractor deadline to carry out the non completed works. She agreed that guidelines or conditions for completed works should be provided so that the Superintending Officer is not being unreasonable with his request.

Interviewee 3

According to Interviewee 3, it is the Superintending Officer's decision whether to issue Certificate of Practical completion and to call for work inspections. Hence, if he wants to do inspection of work, he will instruct the Contractor on what to be tested and inspect. So, he thinks the clause is fair and complete without ambiguity.

Interviewee 4

Interviewee 4 said, the inspection of work is different from project to project, and hence no specific guidelines can be provided. Although he also mentioned that there are few definitions can be used such as 'fit for intended purpose', 'put to efficient use' and so forth to help to improve the clause.

However, inspecting the work done is the responsibility of both parties. The procedures can be determined when the Superintending Officer when he issues a work inspection request or the Contractor can request for checklist for him to make the relevant preparation. All these can be done as to prevent disputes. It is a matter of taking more initiatives during site management.

He also finds the clause lack of reference to penultimate claim and how that should be treated as what follows a certificate of practical completion will be claim.

Interviewee 5

Based on the experience of Interviewee 5, in terms of completeness and project management framework, he is in the opinion that the clause is fairly good. But he said that the comprehensiveness of the clause can be improved by introducing the testing and inspection of work procedures to avoid dispute over the matter.

Clause 36 Partial Occupation by Employer

Interviewee 1

According to Interviewee 1, if the project is partially occupied by the Client, the Contractor will not be responsible to the occupant/user. But in actual case, it may be hard to define the liability. If something happens, it could be due to the contractor's works but it can also be due to the action of occupants/users.

Besides that, within the project completion period, the Contractor may claim for the damage which cause by the occupant/users. Also, he is eligible to claim for extension of time if the occupant has caused work delay. However, the unhand-over part of the building is still under the contractor responsibility which is covered by the insurance. This is all in practice but in contract especially this form; there is no detail in these matters.

Interviewee 2

Based on Interviewee 2's comments, if the Client is to take out the finished part of the project, then he will have to responsible to those occupants/users. Also, he has to responsible for the damages which cause by the occupants/users. Taking road project as an example, a two way road construction might be delay due to one of the road is opened for usage and the work progress is interrupt by the road users. In this situation, the Contractor is allowed to claim extension of time.

Again Interviewee 2 agreed that the clause is not clear on these aspects.

Interviewee 3

For the case of partial occupation by the Employer, Interviewee 3 gave positive comment on it whereby he thinks the clause is flexible. For example, road work for two way two lanes and it is allowed to let vehicle pass through one road while the other one is under construction. If such action causes delay, the Contractor can ask for extension of time for his uncompleted works. However, it is not mentioned in the clause. He also agreed that the Employer can take over the work with or without the consent of contractor.

Interviewee 4

Interviewee 4 commented that once the Employer is to take up a section or portion of the project, the Contractor will not responsible to that particular section and it is no longer insure under his insurance.

However, if no proper safety signage provided, the Employer can still ask the Contractor to responsible and provide accordingly. Interviewee 4 commented that the Contractor is eligible to request for extension of time whereby the work delayed is due to the existence of the occupants.

Interviewee 4 was concern on partial occupation with respect to authorities' permit such as the occupation permit. If the occupation permit is not issued by the councils, even with partial occupation, the occupants cannot move into the buildings. So, the Employer should treat this matter with care and really plan for it.

Interviewee 5

According to Interviewee 5, insurance coverage for the end-users and occupiers would not be the same as insurances during construction. Unless the Employer stated in the contract that the work will be partially occupied at the beginning before the project started, it is worthwhile to look into the various issues of the effects of partial occupation.

In most cases, if the original submission does not include sectional completion and hand over, certain authorities may refuse to issue the occupation permits for a partially completed site. There are a lot of risks that should be considered by the Contractor and the Employer for the partial occupation of a project, i.e. safety precautions, disturbance, defect liability, etc.

Clause 37 Defects after Completion

Interviewee 1

In terms of clarity, Interviewee 1 agreed that the clause is long and difficult to read.

He agreed the clause is lack of comprehensiveness whereby the time frame is not given for the Superintending Officer to issue certificate of making good defects and schedule for defects are not mentioned. He opined that standard time frames to be included is applicable. He had experienced with schedule of defects not being issued six (6) months into Defects liability period. He also agreed that it is not right he cost of remedying the defects is not being put forward to the contractor before the Employer get someone else to do it. This is bad site management according to him.

Besides, Interviewee 1 agreed that the clause is sided towards the Employer whereby the Superintending Officer has ultimate power in determine whether the defects are properly rectified or not.

Interviewee 2

On the clarity issue, Interviewee 2 commented that the Clause is too wordy and the ultimate power lies in the hand of the Superintending Officer which makes the clause uneven in terms of risk and role.

However, Interviewee 2 disagreed that there should be more procedures to improve the clause. Clause will be even wordier if all procedures are included. She said that there is no need for procedure for return of performance security bond and retention monies as it is a common thing that a Superintending Officer must do but she opined that time frame may be helpful to improve efficiency to expedite the closing of the project. She also agreed that there should be coverage on emergency defects and treatment of that.

Interviewee 3

Interviewee 3 found the clause difficult to read compared to other contract form he had dealt with on this issue. He agreed that the use of the word normal defects is not very clear. He opined that there is no coverage on other types of defects such as emergency defects that emerge during defect liability period. He was in the opinion that there may be some drafting problem in Part 37.5 that create the confusion.

Also, he commented that the ultimate power given to Superintending Officer is really unreasonable whereby he can make any approval and give instructions without a standard as a basis. However, he is neutral with the comprehensiveness issue which he thinks it is unnecessary to specify the procedures and time frames.

Interviewee 4

The Interviewee disagreed that the clause is unfair to the contractor. As a Superintending Officer, he has the right to ask for defects checking after the contractor claim that the defects rectifications have been done. It is to protect himself as the Employer's representative.

Besides that, he disagreed the clause is lack of comprehensiveness whereby he thinks the procedures and time frame is redundant. As a Contractor, one should know the procedures very well. Even he is not, he can request for advice. He said the clause is drafted without mentioning the detail is in order to keep it open ended so that it is easy to manage on a case by case basis.

Interviewee 5

Interviewee 5 has given neutral opinions in the most of the issues of this clause. He said he can understand the clause and procedures or time frame issues as they are not much affecting him. However, he agreed with the fairness issue which the Superintending Officer has been given too much authority to decide and some Superintending Officer may abuse his power.

Clause 39 Final Certificate

Interviewee 1

Interviewee 1 agreed that the clause is incomplete and lack of comprehensiveness in terms of procedures provided. He said that there is no reference with respect to dispute resolution or final account issues. He also mentioned that

the clause is unfair as it does not mention the right for Contractor to disagree with final account which makes the flexibility of the clause needs to be improved. However, he is neutral with the management framework as he has not much commented on it.

Interviewee 2

The Interviewee is strongly agreed that the clause is unfair as it does not mention the right for Contractor to disagree with the final account. Besides that, she commented there should have proper procedure regarding Penultimate claim, certificate and payment. According to her, lack of procedures has caused the confusion whereby Contractor is asked to submit final claim instead of the Penultimate Claim.

Interviewee 3

Basically, the Interviewee 3 is neutral with the issues as he mentioned that so far he does not faced any problems with respect to the final account or payment issues. However, he agreed that the clause can be improved by providing suitable procedures.

Interviewee 4

Interviewee 4 is strongly agreed with the clause in terms of the comprehensiveness and completeness issues whereby he mentioned that lack of procedures has caused some difficulties in managing the project and also confusion. He said it might be unfair for the Contractor as he has no right to point out his disagreement on the issue of final account. He also agreed that there is no clause mentioning work suspension.

Interviewee 5

In terms of clear structured project management framework issue, Interviewee 5 agreed that it needs to be improved. He commented that the clause could be unfair as the final certificate does not mention or include the payment with respect to retention sum or performance bond. There is no reference regarding the dispute resolution as well.

Clause 43 Claims, Disputes and Dispute Resolution

Interviewee 1

Interviewee 1 agreed that the clause is confusing as it is drafted with so many layers of sub-clauses. It can be broken down into different clauses so that readers can better understand the form.

He also noticed that suspension clause is not mentioning in this form, which is due to the fact that this is a government and assume to be used only in government project. This is rather standard practice for government form to be siding towards the government. It looks like there is a long way to go in terms of a fairer and practicable form.

He agreed that there are other dispute resolution methods other than arbitration. Softer approaches can be used first before jumping into arbitration. Besides the form is drafted in such a way that contractor will not be pay once arbitration procedures start.

Interviewee 2

According to the Interviewee 2, words like ‘as soon as practicable’ are flexible but should be applicable towards both parties not just the Superintending Officer or the Employer. It is there for the Superintending Officer to decide on the time frame that is best for both parties. However, it could be unfair. She agreed that the sub-clauses here referencing is complicated.

Interviewee 3

With respect to Clause 43, Interviewee 3 is neutral with the issue of time frame. But he did mention that adjudication may be a good way forward instead of arbitration. However, he is strongly agreed with the fairness problem in this form as it is a government form after all.

Interviewee 3 agreed that the clause does not cover that contractor may have suspended work due to dispute especially over non-payment and the procedures here does not address these issues. He also agreed that the clause is not clear in terms of the layering of sub-clause.

Interviewee 4

Interviewee 4 opined that if disputes were to go to arbitration, there are not many things the parties can agree upon. As a good Superintending Officer, he must help to prevent that. But there are situations when Superintending Officer also could not solve and sometimes be called biased, so getting expert opinions or adjudicators may help before the situation escalates further.

Since this is a government form, there are normally no allowances for suspension of works by contractor due to non payment. If the contractor suspends works and go into dispute with Government, he will be blacklisted. But with the new adjudication act, this may not protect the Employer anymore. So the drafting bodies may want to consider improving the form in terms of its role and risk distribution.

Interviewee 5

Interviewee 5 agreed that the clause should not draft with too many layering as it is confusing and hard to understand. Also, Part 43.3 (b) should include the suspended work due to dispute. Further added, there should be another clause which mentioning the suspended work. He also agreed that the term 'as soon as practicable' if possible should be replaced with a min and max timeframe to enhance management of the contract. There are certain circumstances when it is difficult to specify time but in this case, time is even more important especially when in disputes, work progress would already be affected badly.

Clause 44 Determination of Contractor's Employment

Interviewee 1

In terms of determination of the contractor's employment, Interviewee 1 agreed that it is unfair to the contractor as the ground covered is very subjective. For example, if the client pays 3 months late, the contractor will have no choice but slow the work progress which then causes delay, then the Employer may take it as an excuse based on the grounds here to terminate the employment.

He suggested that there should have some proper procedure to follow before the determination. He also suggested that the clause should mention the procedure with respect to claim after termination. He agreed that the words 'regularly and diligently' in Clause 44.1(b) is very subjective and arguable as it depends on the Superintending Officer's judgment.

For Clause 44.3 (e), however, he found that the clause is too long and can be sub-divided it into sub-clause.

Interviewee 2

According to the Interviewee 2, in determination of contractor's employment, the mechanism to trigger the determination is not detailed. For instance, should the Superintending Officer start issuing reminder when the project delays beyond 20% or at which point should exactly should he start issuing reminder. Interviewee 2 opined that this clause is too surface and does not cover many issues.

She experienced a prolong delay with land issues. In Sarawak, Native Customary Rights (NCR) land issue can be a big issue which cause 'endless' delay. Hence, the clause should provide some space which state the Contractor's right to suspend the works such as blockade problems by the local indigenous people and hence cannot access the site.

Interviewee 3

Interviewee 3 agreed that this clause is unclear as the words 'regularly' and 'diligently' are both arguable and hence ambiguous. Also, the limit of authority and procedures for determination is not clearly stated.

Interviewee 4

Interviewee 4 reminded that determination is a big issue and it usually means the project is ailing and failing. To take this step, Employer and Superintending Officer both had to be very careful. The clause really does not cover procedures especially reminders to contractor. If not handle properly, court cases will follow.

Interviewee 4 explained the clause must only be activated when there is a real breach of the contract with specific reasons. He said that there are several genuine reasons which include a pro long delay of work caused by the Contractor, late payment made and the Contractor has no money to proceed with the work, etc. According to this

form, the Contractor shall still proceed with the work regularly even the Employer pay him late. Besides that, the Contractor cannot suspend the work with any reason.

The clause he mentioned purely state on Employer's right to determine. Contractor's right to determine is not covered in this form. Thing may changed but for now, that is the way it is for contractor who entered into contract with the government. He agreed that if this form is used in the private sector, abuses may be more serious.

Interviewee 5

For the case of underpaid during determination to the Contractor's contract, proper procedures for the circumstances after determination should be stated clearly in the conditions of contract. Proper estimation for work done, unfixed materials, equipment, and temporary works carried out by the Contractor before removals should be included in the conditions of contract.

According to Interviewee 5, in the case of late payment from the Employer, the Contractor should follow the right procedure to write to the Employer requesting the payment according to the conditions of contract. If the Contractor slow down or does not carry out the works, he is in fault and the Employer or the Superintending Officer has the right to give the Contractor warning notice first before termination of contract.

It is true that this clause does not cover the procedure where the Contractor disagrees with the termination of contract. The clause uses the words 'reasonable', 'diligently', 'regularly' in the absence of better words is rather ambiguous.

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Clause 1 Contractor's Obligations

Interviewee 1:

Interviewee 1 agreed on the clause amplifies the duties of the Contractor to search and report on discrepancies but fail to state the time frame for informing the Architect on discrepancy found in the contract and the Architect to give further instruction on the discrepancy. As time frame is an important element in managing the site, not having time frames and procedures for informing on discrepancies and issuance of further instructions can create arguments.

In the opinion of Interviewee 1, Architect and Contractor should both have the responsibility to search and report on the discrepancy and it should not be left on one party only. The clause can specify a range of time frame for the Contractor to inform the Architect and vice versa if discrepancies are found.

According to him, the contract form does not cover the obligations of Architect and Employer and it is really no harm if that is properly added to the form. However, Interviewee 1 disagreed on the problem on fairness and risk distribution. Design here to him is generally alternative design. Contractor is giving that flexibility if he finds something not practical or buildable. As Contractor is treated as a professional builder, Contractor should bear the liability if he proposed alternative design. Contractor should know the pros and cons of the current design and alternative proposed design, liability should be borne by Contractor if an alternative design is proposed by him. Therefore, Architect shall bear no responsibility on the alternative proposed design by the Contractor.

Interviewee 2:

Interviewee 2 agreed that the clause should be more comprehensive and complete on the time frame and procedure for informing the discrepancy found in the contact by Contractor. The standard form should also include the obligation of Employer and Engineer in it. If the obligations of Employer and Architect is not covered in the form especially the limitations of their powers, then the management of this form is highly dependent on the Architect's experience, skills and integrity.

Interviewee 2 also agreed that the Architect should be more active in searching and checking his design and the related documents from time to time, instead of assuming it to be flawless and leave the responsibility solely to the Contractor to check and report on any discrepancy found in the contract documents. Generally stating the time frame in the form will help to increase the efficiency of the contracting parties' actions in resolving the problems. He believed the form is drafted in such a way it does not want to limit the parties because projects are different and time frames are different. But it is also acceptable if both Architect and Contractor can agree on a range at the beginning of the project.

Interviewee 2 thought that risk distribution and fairness is not a problem for this clause as Contractor is guaranteeing the work and therefore the liability should be borne by the contractor. The Architect should not have any liability on alternative design as it is proposed by the Contractor. The review of alternative by Architect is only to ensure that the alternative design will not affect the overall progress of the project. Interviewee 2 highlighted that Contractor should have borne all the responsibilities on the alternative design proposed.

Interviewee 3:

Interviewee 3 agreed that the standard form should also include the obligation of Employer and Architect. The clause is rather brief if not at all on the procedure and time frame for informing the discrepancy in the contract to the Architect. Time frame for informing the Architect on discrepancy should be specified for better site management. Architect and Contractor should find and check if there are any discrepancies in the contract in a cooperative manner. It is not about putting blame but about making the project works.

For example, Contractor may found something but refuse to report it so that he can later use that as an excuse to claim form extension of time or loss. If the Architect has been more pro-active, then the problems may have been detected earlier. Hence, if the design and documents are checked by Architect and Contractor more diligently, it will protect the interests of both parties.

The acceptance of alternative design should not relieve the liability of Contractor completely and it is only right the Architect also borne part of the liability. It is true that Contractor proposal of alternative design is based solely on his previous experience of what works and not been put through any design calculation. For alternative design, it is also not possible for Contractor to employ a Professional Designer to do it and hence, it is really not covered under any Professional Indemnity Insurance. Architect to verify and endorse the alternative design not only require the Architect to accept but for him to seriously check whether it will really worked and fit into his original design. If it is an engineering design, Architect can refer to his Engineering counterpart to provide a professional judgment.

Interviewee 4:

Interviewee 4 agreed that this standard form does not include any obligations of Employer and Architect. In fact it does not also cover the obligations of Quantity Surveyor and Engineer who also plays a role in this contract form.

He agreed the clause should specify the time for informing the Architect on discrepancy so that it will not disturb the flow and progress of work. But more importantly, the Architect must response in a timely manner. Time frame and procedures are guidelines to work within. If certain time frame for the particular projects is too tight, it can always be changed. But by not having at all, there is nothing to modify upon. Say if the Architect does not issue an instruction to rectify the discrepancies and that particular discrepancy is part of the critical works, delay will follow. Then it becomes difficult for Contractor to claim for Extension of Time because there is no basis for such delay.

Interviewee 4 also agreed that Architect should also do more rigorous checking on contract documents and take up joint liability for alternative design he has checked and verified and accepted. Otherwise, if he opined that the scope is too big, he could request the Contractor to provide a design that is done by a professional designer. Then, the process becomes an endorsement only and he does not need to be liable for another professional's design.

Interviewee 5:

Interviewee 5 agreed that the standard form should also include the obligation of Employer and Architect. The contract needs to list out the obligations of Employer and Architect. A good contractor should be equal about rights and obligations, not just one party rights and the other parties' obligation.

Interviewee 5 also thought that the clause is not comprehensive and complete on the procedures and time frame for informing the discrepancy in the contract to the Architect. There should be a time frame given to the Contractor for informing the discrepancy and Architect to issue instructions/acknowledgement on the matter. But he opined that it should be decided on a case by case basis instead of stated specifically in the form. He suggested including this in the Appendix where the Employer can fill up before signing the contract documents with the Contractor.

Interviewee 5 also believed that there should be a procedure for Architect to inform on discrepancy should he found it. On the acceptance of alternative design, Interviewee 5 agreed that Architect can take up some liability, especially if the design is done by the Contractor only without the help of a professional designer. He also mentioned that usually the purpose of alternative design is for cost saving, and maybe shorter construction time or alternative material in the absence of the originally proposed one. The scopes are generally small. The clause is

here to provide some flexibility to the Contractor and Employer for minor changes. Hence, taking a joint liability is not a problem at all.

He suggested that the Architect can have a separate arrangement with the Client for additional fees and charges to be fair for taking up additional responsibilities when he is requested to do so. Anyway, legally, the entire design is the Architect's and if something goes wrong, like it or not, he has to take up his professional responsibilities for the design with his engineering counterparts.

Clause 2 Architect's Instruction AI

Interviewee 1:

Interviewee 1 agreed that Clause 2 should have covered the procedures where emergency instruction from Architect is needed. In common practice, in the matter of emergency, Architect will have to give verbal instruction followed by written instruction later as record. However, verbal instruction is not enforced in the clause because only written instructions in recognized. The procedures for emergency instructions should be there to enhance site communications.

In the opinion of Interviewee 1, Engineer's instruction is issued by the consultant engineer of the project and maybe there should be a link with Architect's Instruction so that Engineer's Instruction and Architect's Instruction are consistent with one another. Engineer's instructions are usually related with technical design issues, and hence, the clause can be more specific when dealing with Architect's Instructions which is related with Engineer's instruction.

Interviewee 1 mentioned that the Architect is the one who designed the building and he knows how he wanted it to be. Architect will have the ultimate say on the project so that the outcome will not deviate from his original design. Contractor is employed to build as what the architect required so Contractor cannot disagree with the instruction given by the architect. If the Contractor disagreed with Architect's Instruction, much time will be spent in resolving the dispute and hence, causing delay in overall progress of the project.

Besides, Interviewee 1 thought that the time given for the Contractor to comply with instruction is sufficient, if the time frame given is longer, it might delay the progress of work. The time frame given is fair. Compliance should be as soon as possible so that the Contractor will complete the work as instructed by the Architect without any delay.

Interviewee 2:

Interviewee 2 agreed that protocol of handling emergency issues should be included in the clause so that the contractor will have the direction in solving emergency issues at site. On some sites, when there is emergency issue, the Contractor does not seem to know the procedures in handling the situation and remain doubtful of the instructions. It could be due to lacking of experience. Hence, if there is an emergency instruction protocol mentioned in the clause, the instructions are better enforced and the Contractor can follow the instructions without any hesitations.

Interviewee 2 thought that the Architect's Instruction should not be challenged or disagreed upon in order to ensure the work goes smoothly. If the instructions are not followed and challenged by the contractor frequently, it will get very troublesome and difficult to resolve anything on site. Therefore, it is more straightforward for the Contractor to follow the instruction and complete the task as instructed.

According to Interviewee 2, the form should cover the instructions from Engineer and its definition and procedures. It should be clearly empower the instruction from Engineer so that the instruction will be followed and executed. Without a standard procedure for the enforcement on Engineer's Instruction, it may be confused with the Architect's Instruction. Besides, Interviewee 2 thought that the time given for compliance of Architect's Instruction is sufficient, if the time frame given is longer, it might not be as efficient. Besides, it is a time frame for the Contractor to start doing something about it, not to complete it.

Interviewee 3:

Interviewee 3 agreed that emergency instruction procedures should be included. Emergency usually requires the work to be done first or a problem to be solved first before discussing on the matter of costs and time. The instructions should be given without delay and to be executed without delay as well. There is really no room to negotiate in this matter. And if a procedure is in place, both parties will just have to follow instead of seeing the need to negotiate before any actions to be taken.

Interviewee 3 agreed that the Contractor should follow the instruction from Architect. The clause should not give any flexibility in disagreement of Architect Instruction. Architect is having the ultimate say in the project, it should not be challenged.

But Interviewee 3 agreed that the time compliance with instruction to be more flexible, considering the form is to be used in projects ranging from small to big scale. It is unfair to the Contractor to follow strictly that when the project is big. Besides Interviewee 3 also touched on the issue of providing notice/s of default to the Contractor when Architect found Contractor not doing or making effort to comply within the given time frame. It is legally not correct to get someone else to come in and do the job before sufficient notice is served.

Interviewee 4:

Interviewee 4 agreed that compliance with instructions does have effects such as change in working method and working program which subsequently causes loss and damage or delays. The clause does not cover this matter. In this sense, it is incomplete and incomprehensive. However, this is because the form is drafted without too much detail so that it gives the flexibility to Architect to decide on what is the best for the project. Hence, flexibility should not be given for any disagreement of Architect instructions; the instructions should be followed and executed.

Interviewee 4 agreed that the power of Engineer should not be neglected as many technical issues are referred to the Engineer. In fact many emergency situations are technical situations which require the Engineer's attention and not so much of the Architect's. Therefore, Interviewee 4 agreed that the clause should link Architect's Instruction and Engineer's Instruction so that it is clear whose instructions it is; there is consistency in compliance; and have a fix point of reference for all instructions. The clause should make sure that there will not be any conflict between the Architect's and Engineer's instructions.

Interviewee 4 also opined that by having a fix seven (7) days for compliance to instructions may reduce the flexibility of the clause as there are some projects of big size that needed more time to comply with instructions as the contractor might need more time in resource planning before confirming the instructions.

Interviewee 5:

Interviewee 5 mentioned this clause is not drafted with a lot of details as opposed to the other clauses which appears 2nd half of the form onwards. It is true that it does not cover or refer to effects of compliance and emergency situations and how to deal with them.

In most cases of emergency situation, Architect needs to bring in the Engineer especially if it is structures and foundation issues. Hence, there may be confusion as to whether Architect's Instructions covered Engineer's Instruction as well or to treat Engineer's Instruction separately; and whether the Contractor is to take the Engineer's instruction and verify them with the Architect. In these sense the clause is not clear as there is completely no coverage of Engineer's instructions.

In terms of disagreement over Architect's Instructions, Interviewee 5 conceded that sometimes architect can be wrong as well and if there is good contractor on site, he may see the pitfalls of instructions and refuse to comply. Thus, it is good to add the right to disagree but grounds for disagreement and method of resolving such as employing a separate, independent expert to must be imposed. And Architect's decision to be final should also be given in the clause.

Interviewee 5 thought that time frame for complying with Architect's Instruction can be issued based on the situation. Certain situation may need longer time to comply while others can be and have to be done almost immediately. So fixing seven (7) days may not practicable.

Clause 4 Statutory Obligations, Notices, Fees and Charges

Interviewee 1

Interviewee 1 agreed that the clause should have included both fees and charges by the Contractor and Employer as some fees are covered the Employer. If the Employer default in payment of those fees, the Contractor either cannot hand over the site or the authorities may refuse to issue permit for occupation. Therefore the clause should cover such situations when Contractor delay or not progressing due to Employer default in payment of charges and fees. It should also cover sanction if the Contractor defaults in his part of the payment to the relevant authorities such as a paying for taxes for some equipment, materials or goods, requests for authorities to witness testing and inspection, application for water meters for the site and so forth. Interviewee 1 added that with assistance of Employer's representative to liaise with the authorities do help to improve obtaining certain permits more

efficiently. Normally, Architect will not refuse such requests to help with smoothening out the process of dealing with authorities.

According to Interviewee 1, checking on the inconsistency of contract with external law and regulation is more a part of the Contractor's obligation as compared to previous form. However, Contractor only have to identify the inconsistencies and Architect will have to propose the remedies. Therefore, it is fair that the task for checking inconsistency and providing remedy is distributed among the Contractor and the Architect.

Interviewee 2

Interviewee 2 mentioned that in the case when Employer defaults in payment in statutory requirement over the period of contract, not only the Employer has to be responsible for those penalties and charges, the Contractor should be allow to claim of loss and damage should the failure on the Employer's part to comply will lead to delay or work not being able to progress on site. On the other hand, if the Contractor defaults, he should cover the penalties and the loss and damage of the Employer. He agreed that the clause focused on the Contractor's responsibilities and is uneven in that sense.

It is quite common for the Architect to provide help to the Contractor when necessary when dealing with authorities. As the Superintending Officer of the project, the Architect would try to provide as much help as he could. Interviewee 2 agreed that if there is a statement on the matter, the Architect and Employer's representatives would be able to recognize this as their specific duties.

However, inconsistency in the contract should be checked by Contractor, as once Contractor identified the inconsistency, it is the Architect's duties to propose the remedy. Interviewee 2 believed the task is shared in that sense.

Interviewee 3

Interviewee 3 agreed that the Employer's responsibility in obtaining approval and provision of related documents to the Contractor should be listed down in the clause. Regarding specific charges or fees of the project that is payable by the Employer, the clause should also cover that. Interviewee 3 agreed that the sanctions if either party fails to do their duties in this aspect are not properly and fully covered in this clause.

Interviewee 3 also mentioned that the Contractor and Architect should share the obligation in checking for inconsistencies in the contract documents with the external law and regulations as all the parties involved in the contract. Both parties should work together and not to depend completely on one party to check. It is true that Contractor is on the ground and hence, would be easier for him to detect any inconsistencies but the design belongs to Architect and therefore, he is supposedly fluent and aware of the various law and regulations of the building he has designed.

Interviewee 3 confirmed that the form is drafted to not limit the Architect and have the knowledge and integrity to determine many things for the Employer. Hence, limitations of Architect power are not shown and many of his duties are left without mentioning.

Interviewee 4

Interviewee 4 agreed that the clause should mention on the Employer's responsibility in obtaining approval and provided a list of related charges and fees to the contractor. He agreed that it is important that the clause should also list down fees and charges that is payable by Employer, for example capital contribution, fees for planning and zoning before the commencement of the work.

Interviewee 4 mentioned that in the case when Employer defaults in payment in statutory requirement, the Employer must be responsible for such default and the form should be clear on this matter. Besides, Interviewee 4 thought that Contractor should not be the only one who checks for inconsistencies as all the parties in the contract has the obligation to identify the inconsistency together and inform each other on the matter. He believed that good synergy on site among the team will help to smoothen any problems on site. He also mentioned that reporting system must be clear as well and so is Architect's treatment of such report of inconsistencies must be in place.

Interviewee 5

Interviewee 5 opined that the clause is lack of the coverage of fees and charges required for specific event in the contract payable by Employer such as planning and zoning fees. Should the Employer defaults and it affects the progress of works on site,

Contractor should be entitled to claim for monetary and time losses from the Employer. It is also important to include Architect serving notice to the Contractor should he defaults in payment of such fees and charges. If Contractor persistently ignores the Architect's notice, payment can be deducted from his payment account to cover for such fees and charges and penalties.

Interviewee 5 also agreed that the Contractor should not be the one who check for inconsistency with the external regulations, all the parties in the contract has the obligation to identify the inconsistencies together and this include the Employer. A Contractor with experience will know that certain items are against authorities' requirement or the regulation of the country (say use of local products) and hence, he should report if he detects the inconsistencies. Architects are trained to be good with the building ordinances and various regulations, to be well informed with the latest changes in law and regulations and as the design is his, it will not be difficult to pinpoint any inconsistencies. So the responsibilities should be both ways. Interviewee 5 added that he is not quite sure about the subsequent actions after finding the inconsistencies especially the rights and duties of the parties involved. He finds the clause quite brief on this matter.

Clause 5 Levels and Setting Out of the Works

Interviewee 1

Interviewee 1 agreed that the clause should cover more extensively the various sources of errors in setting out. As there can be various reasons of causing the errors in setting out and not necessarily by carelessness of contractor, Interviewee 1 opined that it can be divided into Contractor's, Employer's or Architect's. Follow on the groupings, the clause can specify who is to be responsible for the errors and rectification work and the cost and consequences of rectifying.

However, Interviewee 1 also pointed out that as the design layout can change from time to time; Architect can only give near accurate drawings to the Contractor during the early stage of project. Even though it is ideal to have the measurement given to be accurate, in real practice, the measurement will have little deviation. So how the clause treat this matter must be looked into separately.

Interviewee 2

Interviewee 2 said that even though it is stated that Contractor is to rectify and pay for setting out including the setting out that has problems, it is common practice that the Contractor will do the rectification work and entitled to claim for variation if the fault is not his. He did not think it really matters to be specifically clear on this matter in the clause.

Moreover, according to Interviewee 2, it is very difficult for Architect to provide accurate information for the setting out due to reasons such as the coordination of structural and mechanical/electrical works. But of course, it is not very fair if the Contractor has to bear the cost of rectification work if the source of error is not caused by the contractor. Maybe the clause can be improved with add-ons in this sense.

Interviewee 3

Interviewee 3 mentioned the Contractor is carrying out the setting work according to the measurement give and in whatever circumstances, if there is an error in setting out, the Contractor must rectify. There is no argument in that. But the cost of rectifications works can be discussed and agreed upon. Normally, if the error is not caused by the Contractor, he would not bear the responsibility for the cost of rectification work.

He agreed that Architect should provide as much details and information on setting out so that the chances of having error in setting out will be lower. Good and accurate setting out in building construction is seen to be more critical compared to that of the civil engineering works. When a more accurate measurement is provided, the chances of having error is lower and it will reduce the problems of reworking later or affect the integrity of the end product.

Interviewee 4

Interviewee 4 agreed that the clause could have covered the source of errors in setting out and the remedies for them. As there can be various ways of causing the errors in setting out (say errors in preliminary information obtained from Land and Survey), and not necessarily is caused by carelessness of Contractor. It is not always the contractor's fault in setting out errors. Similar to Interviewee 3, Interviewee 4 also mentioned that rectification works will be carried out by the Contractor but the cost of rectification should be allocated more precisely in the form.

Interviewee 5

Interviewee 5 emphasized that good setting out is important in building and architectural works. Architect would do whatever they can to provide for information for Contractor to work on. And Contractor will make regular reference to this original information. If the Contractor is to find anything unusual on site, he is to report to the Architect as soon as he can to request for instructions. If the procedures are followed through there should be minimum problem. Besides early detection of problems (i.e. prevention) is all the more important in building construction (say high rise) rather than the rectification works (i.e. cure).

Contract form definitely can be improved according to Interviewee5 with respect to sources of errors and their treatment, especially in terms of costs. Clear procedures are definitely helpful for everyone to work within.

Clause 6 Materials, Goods And Workmanship To Conform To Description, Testing and Inspection

Interviewee 1

Interviewee 1 agreed that the clause should treat testing and inspection of material and workmanship separately. With material, testing is done in various was to ensure that the materials and goods are up to required standard. And Interview 1 agreed that some testing cannot be done on the location and has be carried out elsewhere and there must be coverage and procedures on this matter as it is an unavoidable element of the project.

With inspection, Interviewee 1 agreed that opening up of works is a big issue. Architect has the power to order that and usually he would when he has reasonable doubt that material and/or workmanship is not up to the stated standard. And he should be given such power. But of course, to be fair to the Contractor, procedures and grounds for calling for opening up of works should be clear and comprehensive. Otherwise, disputes will ensue.

Besides, Interviewee 1 agreed that if there is a quality plan submitted by the Contractor with Architect's or Engineer's endorsement it certainly help to reduce disagreement and both parties have the same standard to follow in producing quality workmanship. Quality plan can ensure the workmanship up to certain required standard and rectification work can be minimized.

Interviewee 2

Interviewee 2 agreed that the clause is not comprehensive on the requirement for testing, especially external testing; and procedures for opening up especially under inspection. Interviewee 2 mentioned that Quality plan and work method statement must be submitted by the Contractor and checked and endorsed by the Engineer and Architect. Once confirmed, there is no argument on the standard to follow on site. Both Contractor and Architect should understand each other and it is through these documents that meeting of minds can occur. With the quality plan in place the Contractor will have to make sure the work is up to the requirements.

In the opinion of Interviewee 2, since materials are managed by the Contractor, the liability is under the contractor. If the Employer share the liability, that will create a room for Contractor and/or Supplier to retrieve the materials after payment or send the material to the site prematurely to claim payment in advance. Besides, material and goods are covered under insurance. The Contractor will have to proceed with claims if there is damage or loss.

Interviewee 2 also agreed that notice has to be given prior to getting others to rectify works or material. Procedures must be strictly in place and most experience Architect will understand that.

Interviewee 3

Interviewee 3 was specific about the legality of the clause. He mentioned that plenty of notice must be provided before employer or Architect can get others to do the work of the Contractor. Procedurally it must be there. The consent from the contractor is necessary, especially his agreement on the cost, before the employer could employ someone else to carry out the work.

And on the issue of passing the warranty or guarantee to the Employer, this is actually norm but if the Contractor did not hand over the warranty or did not procure such warranty, even though it is stated he should be liable but how is he to be liable. In other words, sanction is not clear. Interviewee 3 is more concern on the issue of titles for material and goods that is delivered to site. His comments will be covered later on it Clause 14.

Interviewee 3 agreed that having quality plan will be beneficial for project and site management. The endorsement from Architect will ensure that the workmanship has achieved certain standard. On the procedures on opening up, he agreed that there the clause does not touch on it and this can be a problem as many structural works are in fact

covered up with architectural works. He opined that remedies for material and goods on site not up to standard can be further extended.

Interviewee 4

Interviewee 4 agreed that having a quality plan is certainly beneficial to project management. But to do a good quality plan which are properly linked with other components such as work method statement and working program is not easy and require details from the contractor. Architect normally leaves that to the Contractor as they do not want to interfere with the Contractor's work flow and management.

Interviewee 4 also agreed that if the clause is split into testing and inspection as two separate sections, it will achieve a better comprehensiveness for each section. On the matter of testing and opening up of works, Interviewee 4 agreed that certain provisions/conditions must be provided for. Interviewee 4 emphasized that opening of works are serious actions to be taken. For example, if the Architect or his representatives are not around during cover up when he is supposed to be there, then costs of opening up especially if items found are of good standards have to be borne by the Employer. Therefore, these steps of calling for opening up and conditions to call for one should be taken with care.

Interviewee 5

Interviewee 5 agreed that the condition and requirement for testing should be more comprehensive and to include also external testing requirement. There are circumstances when laboratories stated in the contract does not have certain facilities and require to be tested elsewhere or testing to be done at workshops and factories.

Interviewee 5 thought that consent from the Contractor is important before the Employer employ someone else to carry out the unsatisfied work. If the work is carried out without the consent from the Contractor, problems might arise when money matters set in. Contractor may not agree to the price of the other contractor as he may have priced it differently in the project.

In the opinion of Interviewee 5, having a quality plan endorsed by the Architect is very important and will improve the quality of the project. With a proper quality plan, Contractor will have a guide for the works and will reduce the chances for rectification work. Interviewee 5 said that the Contractor has to submit the warranty and guarantee from the manufacturer or provider to the Employer. This is a matter of protecting himself as to show that the items purchased are under certain warranties and it definitely show the genuine-ness of the items.

Many construction items nowadays can be faked and passed off as the original items and there are of course Contractors trying to mix up real and fake items. So, if the Architect is doubtful he should ask for samples for testing, especially if there are inconsistencies in the documents. This reinstates that conditions for testing and inspections must be firmly in place before executing such rights as stated in the clause.

Clause 8 Site Agent

Interviewee 1

Interviewee 1 agreed that the reasons of removing site agent should be listed in the clause to avoid the site agent being removed due to having personal issue such as previous conflict of interests with the Architect. For removal, the reasoning most be solid and beyond doubts. Interviewee 1 agreed that the clause had failed to mention on the procedures if the site agent is not employed or absence for a long period.

According to Interviewee 1, the clause can include the procedure if the Contractor disagrees with the removal of site agent, but the final decision should stays with Architect. As the Architect has to make sure the project complete on time, problematic site agent affect site management and progress of works. Architect should have the power to remove the site agent he thinks is incapable. Interviewee 1 added that Architect has to be given such the power of removing the site agent. Else the incompetency of site agent will become a real problem on site. There is no issue with fairness.

Interviewee 2

Interviewee 2 agreed that time frame for substitution of site agent should be given in the clause so that the Contractor will replace a site agent as soon as he can to avoid any delay in the project. Site agent plays an important role as a coordinator at site, it is very inconvenient when there is absence of site agent. From his experience, if it is stated that the site agent is needed, then the contractor will and have to provide for one. He has never come across a site not having site agent. But he did had to be careful when Contractor tried to pass his sub-

contractor off as site agent and that is not allowed. Therefore, to add to the form on this specific matter can be helpful.

Interviewee 2 thought that there should be a procedure for the Contractor to object the decision of Architect for removing the site agent to avoid abuse of power,

However, the final decision shall fall still be with Architect and his decision should be final. Architect has undergone professional training before given such extended power. Site agent incompetency will cause delay in overall progress, therefore Architect has to have the ultimate say on removal of site agent.

Interviewee 3

Interviewee 3 agreed that the events that enable the Architect to remove the site agent should be listed in the clause. If the condition for removing site agent is not stated, there may be abuse of power, not necessary by the Architect. There are cases when the employer's representative is not happy with the site agent and request the Architect to find excuse to get rid of site agent. Architect is then being put into a difficult position. Hence, procedure of contractor disagreement with the removal of site agent should also be there in the clause so that the Contractor has a chance to defend his site agent's competency.

Interviewee 4

Interviewee 4 thought that site agent should not be removed unreasonably, the reasons should be clear and convincing, and reasons for removing the site agent should be covered in the clause to avoid abuse of Architect's power. As arbitrator, he had come across such cases. There is a chance of the site agent is removed due to personal issue with Architect. Therefore, the evidence has to be strong. He agreed that criteria or conditions that enable the Architect remove the site agent should be in the clause to make the process fair and transparent.
Interviewee 3 mentioned that site agent replacement time frame should be included in the clause so ensure that the absence of site agent will not be too long. If the absence of site agent is too long, the site management work will become problematic as most of the mater on site needs the coordination of site agent. Besides, site agent removal has to get the permission of Employer and not based solely on the Architect's instruction.

Interviewee 5
Interviewee 5 thought that site agent should be removed with complete and concrete evidence of wrong doings, not just depending on Architect's opinion. The events that allow the Architect to remove the site agent should be written in the clause. The clause should state under what condition the Architect can remove the site agent. The Contractor should have the chance to object and defend the site agent that he appointed as sometimes the site agent got removed without solid reasons.

Reasons should be based on his competency or any wrong doings. Interviewee 5 believed in giving a fair warning before execution of the clause. Any incompetency found on site agent should be settled internally by the Contractor first. Without a fair amount of notice, it is difficult to prove the site agent's wrong doing and request for immediate removal. In some cases, the site agent is being put to run more than one projects for the Contractor and hence, it is almost impossible to locate him. But if formal warnings have been given repeatedly before removal, then Contractor really cannot disagree as the case has already been built up.

Interviewee 5 also agreed that if the offence is not of criminal status, a time frame for substituting the site agent should be given so that the contractor can find a replacement within the time frame given.

Clause 11 Variations, Provisional And Prime Cost Sums

Interviewee 1

Interviewee 1 disagreed that Clause 11 has problems with clarity. In his opinion, the clause is very clear, as the variation work is subjected to Architect's decision. Architect has the say in deciding variation, and therefore he may or may not ordered variation/s, which is clearly stated.

Interviewee 1 mentioned that the quantity measurement is done by the Quantity Surveyor, and for this form the PAM 2006 with quantities, Quantity Surveyor is the person doing measurement. In practice, the professionalism of quantity surveyor is trusted and he is best person to do the job.

He opined that the clause is fairly complete except for a few points. The clause could be more comprehensive on the method for the measurement of quantity and time frame for the Architect to process and issue a variation should be stated or some indicated so as to enable the contractor can make arrangement accordingly. In terms of

improving site management, the procedure of recording emergency issues that involved a variation is vital. If there is a case that needed variation urgently, there should be procedure for the Contractor that serves as guideline.

Lastly, Interviewee 1 maintained that issuance of variation is under the power of architect and the price and rates will follow the Bill of Quantities, and for the efficiency of the project, the Contractor should not disagree with it. Giving the Contractor such allowance will definitely spark more issues. Hence, according to him there are no fairness and risk distribution problems.

Interviewee 2

Interviewee 2 agreed that Clause 11 is not exactly comprehensive. For persons who frequently used the form, the issues here can be minor which requires some touching up. And most Architects who are licensed have to study the form well. Hence the form is drafted in such a way that assumes the Architect is in the know. And hence, rights and procedures for disagreement are not provided for.

In view of same principle that Architect have the knowledge to decide, Interviewee 2 thought that Architect is to decide on issuing a variation as the Architect can be certain if the project needs variation or not, and the rates will be that of the Bill of Quantities. Therefore fairness and risk distribution problems do not exist. Contractor will only have to follow the instructions by the Architect and execute the work accordingly.

However, he agreed that time frame can be put in for Architect to issue and process the variation. And that is beneficial to all. He mentioned that the clause can include the measurement method and procedures as well, which is norm in other forms and all the more important in a building contract. On top of that, Interviewee 2 agreed that the duties and responsibility of Architect and Quantity Surveyor can be included in the clause to ensure that Architect and Quantity Surveyor knows their role and is responsible for things they should be responsible of.

Interviewee 2 agreed that a systematic documentation record helps in improving site management. It would be good if the clause stated down the procedure of recording the emergency issues that need variation. If the procedure for emergency issues that involved a variation is there, all parties have will have a clear guide and dispute could have avoided, especially those on valuation.

Interviewee 3

Interviewee 3 thought this new form is way an improvement compared with its predecessor. Even so, he agreed with the usage of the word ‘May’ can be replaced with ‘Shall’. Although the power of issuing variation is under the Architect and the clause attempts to give definition and variation and such situations which warrant a variation, it can be further improved with time frame for Architect to process and issues a variation. There are cases where variation orders are only served all at the end of a project when most variation works are already completed, which can create a hordes of disputes over claims and valuation.

Interviewee 3 agreed that the duties and responsibilities of Architect and Quantity Surveyor can be separately listed down and be included in the clause to ensure that Architect and Quantity Surveyor. Both Architect and Quantity Surveyor are clear on the roles but Contractor when communicating may have confusion as to whom to approach.

Besides, Interviewee 3 thought that proper documentation is needed in recording emergency issues that need variation and this can be better tied in with the treating of instructions. Interviewee 3 agreed that the clause should cover the procedure in case there is a need for emergency variation that which involves life and damage to works. Disputes on price and rate could be avoided if the procedures and details are mentioned in the clause.

Interviewee 4

Interviewee 4 thought that the clause is generally clear and covering many aspects in the matters of variation. He agreed that provisional sum and prime cost items should be covered in a separate clause to give them a better coverage as they deserved. The clause can include the time frame for process and approval of variation from the architect to be followed up by valuation of variation by the Quantity Surveyor. Interviewee 4 mentioned the reason it is not there is to provide flexibility to the Architect, which actually is not necessary as before a variation is issued, there would generally be an intense discussion prior to that. Hence, issuance is just a formality. The clause should also mention of the measurement procedures for quantity measurement so that issue such as any parties not attending measurement, disagreement over measurement can be better anticipated.

Interviewee 4 mentioned that Architect’s and Quantity Surveyor duties and responsibilities can be listed down but it is not necessary as both know their duties well. Interviewee 4 agreed that having a systematic record helps in improving site management, it would be good if the clause stated down the procedure of recording the emergency

issues that need variation. A complete and clear documentation record is very important to serve as evidence in the case of any dispute on the site later.

Interviewee 5:

Interviewee 5 insisted that the clause is ambiguous with the usage of the term 'May'. As a contractor, he cannot proceed with variation unless the Architect has issued him an order in writing. He insisted on procedures for disagreement as well because variation work can range from changing a few minor items to building a new building. Some standards are mentioned instead of just basing on Quantity Surveyor valuation. In some project, the amount of variation is so big until it should have a separate contract for the work ordered by the Architect. Hence, there must be a proper agreement from the Contractor and a procedure of appeal against instructions from Architect.

As for valuation of rate, he also opined that it may be better if Contractor is allowed to discuss with Architect on rate and price for the variation. He suggested the clause to put up a specific standard to be referred to. The clause should also cover the method of measurement for quantity measurement so that the Contractor will know how the quantity is being taken off and able to double check the measurement given. The clause should also include the time frame of processing and approving variation so that Contractor can have better site planning. The emergency protocol for variation should be included to protect the Contractor from doing the work and not getting paid for it later. This is because situations as such written instruction from the Architect will come later and thus the special protocol is all the more needed. Interviewee 5 thought that the Architect is too powerful, it is unfair to the contractor, and there should be a procedure of appeal against instructions from Architect.

Interviewee 5 thought that the Architect has too much power on variation, obtaining employer's consent should be included as part of the requirement to limit the power of Architect.

Clause 14 Materials and Goods

Interviewee 1

Interviewee 1 thought that the Contractor should be responsible on material which has been delivered to site even though the payment has been made to him. The main reason is that the Contractor has taken up an insurance coverage to cover for any loss and damage. In addition the site is given by the Employer to the Contractor, within the Contract period and therefore, the site is fully under the control of the Contractor.

Interviewee 1 agreed that the method of sanctioning the Contractor beside the claim of insurance should be more explicitly included. Usually the Contractor is required to replace the lost goods and materials to the Employer, but it is not enforced by the clause and causing problems when the Contractor refused to be responsible for the losses and damages. Interviewee 1 agreed that the clause does not cover on issue of titles of material and goods.

Interviewee 2

Interviewee 2 agreed that Clause 14 is good but a minor touching up is required in terms of the procedure of sanctioning the Contractor when there is any loss and damage of goods and materials. It is always assumed that the Contractor is covered by the insurance and hence, being responsible, generally means he has to make the relevant claims. Therefore, even though the part of how the Contractor is going to responsible in the case of any loss and damage of goods and materials is not covered in the clause, the Employer is protected by insurance.

Interviewee 2 opined that with warranty given by contractor on the title of material and good being free from encumbrances is to some good extent covering the Employer.

Interviewee 3

Interviewee 3 was also in the view that material and goods should be delivered and taken care of onsite by the Contractor who essentially possessed the site. He does not think that this clause has too much problem. The drafting team had added also on the Contractor to give warranty that the title is free from encumbrances, which certainly tighten up the clause to a good extent

But Interviewee 3 continued to be concerned on the issue of title. Even though the title is free from encumbrances, when material and goods are delivered to site, the titles of those are strictly still with the Contractor. Contractor could still sell them off. The problem here in clause is if he really sells it off, they are no specific method for penalizing the Contractor. One solution has been to let the Employer holds the title but that itself is still under much discussion.

Interviewee 4

Interviewee 4 had the opinion that legally the goods and material does not owned the material and goods unless full amount has been made to it, which essentially means the material and goods had been turned to works (as in part of the project). The issue is precisely that payment cannot be made full because Employer would not want the Contractor to bring goods and material prematurely to site just to claim for payment. Hence it is standard practice to pay up to certain percentage for material on site. Therefore the clause can be further improved on the matters of ownership of material and good.

Interviewee 5:

Interviewee 5 thought that the form can introduce payment for material in the Contractor's premises. This would help Contractor with cash flow and also restraint the Contractor from premature delivery just to claim payments. Interviewee 5 did not think that Contractor would want to bring all the unfixed material and goods to the job site and then after claiming payment, take them away again. He conceded it happens to some other projects but he is in the view that it is actually more expensive in terms of transportation to bring the material in and out of site. And sending all the material to site requires good effort on inventory on site and extra costs if adjacent land or properties need to be rented to store the material.

Interviewee 5 said that all Contractors know that they have to be responsible for material and goods delivered on site and most would try to take good care of them to prevent loss and damage. He was more concerned with the loss and damage occurring due to Employer and his representative being careless and/or gives instructions, which causes such damage. It clause does not cover those issue.

Besides, Interviewee 5 suggested that both Contractor and Architect can agree on a security plan for goods and materials. The Contractor should submit a security plan for storage and handling of goods and materials with the endorsement from the Architect. If there should be any specific cost on security, it can be shared between the Contractor and the Employer.

Clause 15 Practical Completion and Defect Liability

Interviewee 1

Interviewee 1 strongly opined that Architect is acting as Superintending Officer for the project and he is solely in charge of the progress and quality of project and hence, for him to issue certificate of practical completion based on with his own professional judgment whether the works is finished or not is fair and adequate. Architects are trained adequately to certify and give a professional opinion on the works. Also the site inspection is a joint one. Whatever the Architect is certifying or not certifying would have already been conveyed to the Contractor. If there is an issue, the Contractor can always approach the Architect for further advice.

Interviewee 1 was generally more concerned on the issue of authority requirements. If the Architect were to certify for practical completion and authority refuses to issue permits, what will the remedies be as the certificate has already been issued. The clause does not have enough coverage in this area. Interviewee 1 also agreed that the clause does not cover the definition of defects and minor defect and other defects. And after the certificate of making good is issued, the wrappings up procedures are not specified in the clause.

Interviewee 2

Interviewee 2 mentioned that generally this clause is a lot more complete and comprehensive than many other forms. He agreed that the term defect, minor defect, urgent defects and emergency defects are not clearly covered. These need better definitions and guidelines to effective execute the clause.

Interviewee 2 also agreed that various definitions of what constitutes practical completion should be specific and to be inclusive of authority requirements on the issues. The clause can include the authority requirements to be complied with before issuing the Certificate of Practical Completion by the Architect. Interviewee 2 believed that this will improve the certification process of practical completion and reduced arguments. However, Interviewee 2 reminded that Architect has undergone professional training and it is reasonable to let the Architect to decide if the building works is practically completed or not. Additional steps are recommended so as to improve the process of certification of practical completion.

Furthermore, Interviewee 2 mentioned that the clause is incomplete as it does not cover on issues after the certificate of making good. The clause is also unclear as to whether the Contractor is to be liable for works, which the Employer had given to others with the consent of the Contractor.

Interviewee 3

Interviewee 3 stated that this new PAM form actually attempt to be have better coverage on various issues but he also agreed that the details may not be fully covered. There are definitely things to work on but it is a good start. He agreed that if the Contractor fails to carry out the rectification works for the defects, the method of sanctioning the Contractor is not extensive. And even though the Employer reserves the right to get others to do the work, the process is not completed. Architect should serve notices of defaults and records all discussions with Contractor on the matter and most importantly the consent of Contractor must be obtained especially on the costs involved. Interviewee 3 also emphasized that the clause is not specific of the Contractor's responsibility and whether he is relieved from the liability after the defect work is done by external party employed by the Employer.

Besides, Interviewee 3 agreed that the time frame should be stated there for emergency rectification and urgent rectification. With emergency, the parties should be looking at immediately within the same working day and urgent would mean up to three (3) days. Rest of the defects can be included under minor defects, which falls under the twenty eight (28) days' time frame.

Interviewee 4

Interviewee 4 thought that the term defect and minor defect should be defined clearly to avoid any confusion. The terms in standard form should not be ambiguous. The terms and definitions use should be taken into consideration before being used in the form.

Besides, requirements for practical completion should be listed in the clause so that the evaluation by the Architect is accounted for. Compliance with authority requirements is very important before the issuance of practical completion, so the clause should state the external authority requirements.

Interviewee 4 also reminded that it is important to provide sufficient notification to the Contractor that Employer intends to get another parties to do rectify the defects and obtain his consent of the cost of work to be done by others, should the Contractor default in carrying out the remedying works listed. It is also important the schedule of defects to be delivered to the Contractor in a specific time frame so that the Contractor can act on it in a timely manner.

Interviewee 4 maintained that Architect does have the power to determine practical completion but various measures as previously mentioned should be in place to better execution of the rights and obligations of the contracting parties.

Interviewee 5

Interviewee 5 agreed that the clause should limit the power of Architect and that practical completion should be decided by predetermined criteria and not only in the opinion of Architect. If the clause gives the Architect such extend of power, there are bound to be accusations of Architect's abusing of power. Interviewee 5 opined that should the Contractor and Architect cannot see eye to eye on issues, a separate committee or panel can be set up to provide professional opinion.

Interviewee 5 agreed that the term defect and minor defect should be better defined. And the requirements for accessing practical completion should be listed down so that it is clear to the Contractor on the aspects of the building being evaluated. He insisted that time frame for issuing of schedule of defects or certificate of non-completion must be timely. He had previous experience of Architect not issue the list of works not completed three (3) months after the site inspection. He agreed that certification of practical completion should include authority certification and issuance of permits and in fact that should be the first priority. If the authorities already issued permits, there are no reasons why Architect cannot issue certificate of practical completion and schedule of defects.

Clause 16 Partial Possession by Employer

Interviewee 1

In the opinion of Interviewee 1, the clause is very much as complete as it can get. He does not have too much problem with this clause except that insurance coverage should somehow be extended into that of end users and occupiers. Most of the time, partial occupation is arranged on a project specific basis and hence, there will be prior agreement to deal with most of the issues mentioned. So it is assumed that the issues will be settled. It is interesting that a specific insurance is mentioned here as it may be a good idea to implement such procedures especially the construction is actually still in progress with the other parts of the site. Usually the practice now is the Employer will have a specific arrangement on these with the end-users or occupiers.

Besides, Interviewee 1 totally agreed that the clause should include submission of plans such as working program, safety precaution plan and a new work method statement to draft out the unfinished parts of the works. Architect would appreciate this as it would help him to manage the site and all necessary works. The last thing he would wish to see is delay to unfinished parts due to partial occupation.

Interviewee 2

Interviewee 2 agreed that the clause is lack of the part mentioning Contractor's work program for partial occupation for the unfinished portion of the works. The clause should give the flexibility to the Contractor to make amendment on his original work program due to partial occupation as partial occupation will affect the overall work schedule and resources planning of Contractor.

Besides, Interviewee 2 also agreed that there is a need to have a specific safety precaution plan for the end users and occupiers as usually with partial occupation, other parts of the works will still under construction.

Interviewee 2 agreed that the clause does not cover some contractual issues like performance bond, insurance and defects liability commitment for both the occupied and unfinished portion.

Interviewee 3

Interviewee 3 mentioned that partial occupation will definitely cause disturbance to the Contractor's work progress. Hence, contractually, if the Contractor can prove that he has delay due to partial occupation, it is unclear whether he can claim of Extension of Time. This is certainly not covered under the Delays and Extension clause. If this ground is allowed, the procedure and condition for claiming Extension of Time for delay should be included. He agreed that in order to properly manage the site; it is a good idea for Contractor to submit a new working program and work method statement to cater for changes in sequence of works.

Interviewee 3 opined in terms of performance bond and insurance, it is an implied term that performance bond will not be according to the portion occupied and insurance is extended into works for the unfinished part. He was however more concerned on the authority requirement for partial occupation which requires earlier planning and submission. Legally, if the project is approved as whole, Employer and Architect cannot hand over portion of the site authority for acceptance and maintenance. Authority will not take over the occupied portion unless special application is forwarded. Meanwhile, authority before issuing permit does not have a duty to care for the occupiers/end-users.

Interviewee 4

Interviewee 4 thought that the Contractor's work program should be covered in the clause to direct the Contractor to amend work program accordingly as the result of partial occupation. Work method of statement should be amended as well especially with respect to the issue of safety of the end-users/occupiers.

According to Interviewee 4, there are many reasons why partial occupation is called for. If the reason is that the Employer needs to use the facilities before the completion date, then he would usually need the Contractor's consent to take over the portion of the site. If the works are delayed and the Employer and Contractor wanted Partial Occupation to minimize the damages, he can take over the completed portion with or without the Contractor's consent. Both situations have to be treated different. Interviewee 4 did not think that the clause cover the situations well and treat the situations separately. Issue of insurance and delays and Extension of Time warrants specific attention for the two different situations. Performance bond is normally only released upon the full handing over of the site.

Interviewee 5

Interviewee 5 agreed that the clause is not comprehensive and complete as it does not cover the various issues as the results of partial occupation. First and foremost, he believed that if there is a need of earlier occupation, Architect's submission and planning must have already considered such issue. Otherwise, ad-hoc, and not-planned-for partial occupation will only be rejected by the authorities.

In addition, it is noted that Contractor's work will be generally affected if the site is occupied. Say if work is on-going for the last third floors of the high rise building and the first few floors are already occupied, the transportation of material, safety procedures and work flow will definitely be affected as now instead of a clear site, the Contractor is working on a premises that is occupied with people who live their lives in and out of the building. This is not including issues of defects and defects liability period for common areas and facilities such as elevators and car parks. If earlier planning is done, the Contractor could have and will price for the partial occupation. Again if it is ad-hoc not planned for, then contractor will likely to face delay and damages.

In his opinion, partial occupation will caused disturbance to the Contractor's progress. Contractor should be entitled for Extension of Time if the delay is caused by partial occupation as the progress might be delayed.

Clause 21 Date of Commencement, Postponement and Completion Date

Interviewee 1

Interviewee 1 agreed that the clause is poor in dealing with the issue of suspension of works due to pro-long postponement in the handing over of the site. It is also unclear as what if the period of delay of site handing over has exceeded the allowable period. If the site is resume back after a pro-long delay in handing over the site and contract was suspended, the follow on procedures are not stated as well.

Besides, Interviewee 1 thought that the date of possession of site and date of commencement can be different to allow for some flexibility. But possession of site is not necessary the date of commencement of work. He opined that clause does not fully cover the various possibilities for these dates and hence, very much lacking in this aspect.

Interviewee 1 also opined that the clause is very brief in covering for issue of postponement in site possession issue. Overall, he suggested that the clause need serious improvements.

Interviewee 2

Interviewee 2 thought that Contractor is entitled to claim extension of time if the possession of site is delayed but he cannot claim for loss and damages will be somewhat inconsistent. In some cases, if the site cannot be possessed and Contractor cannot start work, there will be procedures to follow. One of such remedies is suspension. Suspension can only be activated after a pro-long period of delay which is over the allowable period (which is stated in the appendix of this form). Interviewee 2 agreed that there is no coverage of such matters.

Interviewee 2 also agreed that the clause does not make possession of site a condition precedent to commencement of works. To have the commencement of works on the same date as possession of site is common and hence, he has no problem with that. In fact, he opined that it is better as such as the Contractor knows for sure works can be started. And there would not be issued whether contract period starts on possession of site or commencement of works (after confirmation by notification by Architect).

Interviewee 2 also noted that sectional completion does not tie in with partial occupation. The section completed may not be occupied but in the event that it may be (which is common), there should be some references made.

Interviewee 3

Interviewee 3 mentioned that it is important to understand that possession of site is a condition for commencement of works. No contract is valid if the work is to commenced first without a full/partial possession of site. It may be true to say that with the Letter of Award, the commencement of works will be valid. If that is condition, then the clause can cover that. The reason for drafting as such is so that the form can do away with such complication. And hence, state that date of possession of site will be same as date of commencement.

He agreed that the clause should clearly have better define suspension due to pro-longed delay in site possession. It definitely can be improved with respect to procedures to resume works after suspension, conditions for suspension. The clause could have also clearly mentioned the follow actions should the period of delay of possession of sites exceeded the stated allowable period. If the suspension is pro-longed, Interviewee 3 did not see any reason why the Contractor should not be entitled the claim on loss and expenses due to late possession of site, provided that he is to agree to extend the validity of the contract.

Interviewee 4

Interviewee 4 mentioned that in the case where the delay of possession of sites has exceeded the allowable period of delay should be clearly elaborated in the clause. If delay has happened, the Contractor will be allowed for only Extension of Time. But if there is a pro-longed delay, the remedy for the Contractor and Employer is not clearly stated.

Besides, the term suspension in the clause should be defined clearly to avoid any confusion as suspension of contract which has not started and suspension of works due to other reasons are two completely different matters that required different treatment. Interviewee 4 thought that the clause is very brief and bare on these important matters.

Interviewee 5

Interviewee 5 totally agreed that the clause is unclear and incomplete. It does not state that possession of site is a condition precedent to commencement of works and what are the consequential effects if possession of site cannot be given on time.

He was in the opinion that if there is a pro-long delay in handing over of site, the Contractor can opt to pull out, i.e. to determinate the contract or suspend the works with the consent of the Employer. This is because validity of the pricing may not be able to stand after a pro-longed delay in commencement of works on top of facing losses in opportunity and need to have additional cost when managing the resources when the site is delay in possession. To be fair, if the Contractor cannot start works after given possession of site and notice to start work, method of sanctioning and/or determination of Contractor should also be in place. He agreed that the clause should explain on the issue of claiming for loss and expenses by both parties due to delay in possession of site.

Clause 29 Works by Craftsmen, Tradesmen Or Other Contractor Employed or engaged by Employer

Interviewee 1

Interviewee 1 agreed that time frame of informing the discrepancies of work done by others should be mentioned in the clause. Normally, the Contractor who detects the discrepancies needs to inform the Architect on these matters especially if the discrepancies were to affect his workflow and progress of works.

Interviewee 1 mentioned that should there be any discrepancy, the Contractor will to inform and further instructions will be given by Architect. He opined that it may not be necessary to give a specific time frame in the clause as the discrepancies vary among cases but it will be appropriate if the clause provide for Architect shall give a time frame.

Interviewee 1 agreed as well that Architect's role in coordinating the parties between the parties employed by the Employer can be stated in that clause although it is already an understood fact in practice. Architect would normally have the overall working program and drawings for the different parts of the work to do such coordination works unless the specific works are under the control of the Employer himself without involving the Architect.

Interviewee 2

Interviewee 2 agreed that the responsibility of the Contractor in checking for any discrepancy in the works done by others should be stated as to avoid any arguments. It should be the responsibility of the Contractor to check for the works and whether it fits in with his works, methods and program and report to the Architect or the Employer, depending on who is in charge for the works. Other following procedures of instructions, Extension of Time and claims for losses can include the procedures in other relevant clauses in the form and hence, there is no need to be specific here but just make reference to those clauses.

Interviewee 2 also agreed that the Architect should take up the responsibility of coordinating the parties on the site to enhance good project management on site, unless the works done by others are under the Employer's control, which often is the case. If it is such a case, there will usually be a specific project manager to run the coordination of the works. The Contractor will hence have to report to the Project Manager. He agreed that the clause can specifically mentioned on this matter as it is a specific matter, not a general one

Interviewee 3

According to Interviewee 3 the reason why the clause is simple and brief because the drafters do not see the need to state the common practice. It is general practice that Contractor has to look for discrepancies and that can be treated in the same manner as the previous clauses. The part on Architect to issue instructions on the matter can be treated with the same clause on AI and variation. Interviewee 3 believed there is really no need to reinstate that in this clause. However, he agreed that references to the relevant clauses can be stated.

Interviewee 3 agreed that there should also be coverage on Extension of Time and claim for losses by the Contractor should the discrepancy of work done by a party employed by the Employer is proven to have caused losses and delays. This can be added as grounds for Extension of Time and claims, which is not specifically stated in the delays and extension clauses and claims for loss and damage clauses. Procedures wise the parties still have to follow these related clauses.

Interviewee 4

Interviewee 4 thought that the Contractor's responsibility of checking discrepancies in works done by others should be included in the clause. In the case where the discrepancies of work have caused any delay in overall progress and if the clause does not clearly state the responsibility of checking discrepancy, the Contractor might not want to be responsible for that.

Interviewee 4 thought that the time frame for informing discrepancy by the Contractor should be stated in the clause. Besides, Interviewee 4 agreed that the time frame for Architect's instructions can also be included as well. In standard form, time frame is an important element to ensure the things runs smoothly and accordingly to govern the actions of the all the parties involved

Interviewee 4 thought that claims for losses and damages are not necessary while claims for time is more appropriate and can better quantify. It is easier to calculate time losses should repair and rectification works is needed. Since any rectification works will be paid for accordingly, there is really no losses and damages. However, Contractor still can claim if he believes that the delay in time will cause some loss and damage according to his rights stated in other clauses. Contractor should be entitled to claim for Extension of Time or payment set off to cover the loss suffered by the Contractor.

Interviewee 5

Interviewee 5 agreed that the clause does not cover the responsibility of the Contractor in reporting discrepancies in the works done other party employed by the Employer. He also opined that discrepancies of works by others should also be responsible by those on site such as Architect. He believed a point of reference is required if there are such need for others to come in to some parts of the works. This is mainly for coordination purpose. It would seem unfair if the Contractor were to become project coordinator for the whole projects. Interviewee 5 agreed that Architect or an Employer's representative should be responsible for coordination work between the Contractor and the external party employed by the Employer to enhance the project management works on site.

Interviewee 5 also mentioned in the event that there are losses and damages due to delay in works done by others or the need to repair the works by others; he would make the relevant claims. He may not get the indirect losses but the direct ones such as material and labour for rectification works will be considered. However, he agreed that it is better to have these rights stated in the form.

Clause 30 Certificates and Payment

Interviewee 1

Interviewee 1 agreed that Clause 30 is rather long. In other forms, it would have been broken into at least two clauses. He agreed that if a clause in standard form is too long, the users will find it difficult to understand and read. There is really a movement for simple language and structure in form drafting in recent years. In fact this form has adopted the same principles.

Interviewee 1 thought that it would be better if the types of documents and particulars required are listed in the Appendix for the Contractor to make his application for payments. This will eliminate any problem with insufficiency of documents during processing of claims and preparation of interim certificates.

He is in opinion that the coverage of this clause is already good and take into various account of the issues related to the payment and certificates. He believed that minor touching up is called for but really nothing major.

Interviewee 2

Interviewee 2 agreed that the usage of word 'May' in the clause is ambiguous and will cause confusion to the user. Instead, of 'May the term 'Shall' can be used, as retention sum will definitely be deducted from the interim payment. He also agreed that the clause is long and have long sentences. Interviewee 2 thought that the 'Stage Payment' is not common anymore and has an element of installments to it and normally the term used is 'interim payment'. Interviewee 2 also favored the idea of using formulae to present the amount due in each payment certificate.

In the opinion of Interviewee 2, if the types of documents and particulars required are listed in the Appendix in the Contractor's application, it may be too rigid. Instead it may be helpful if the clause specify that Architect to provide a guideline for application of payments. He also agreed that Statutory Declaration pertaining to payment of all contributions and wages to workmen, etc to be made as a common condition precedent to the issue of final payment certificate.

Interviewee 3

Interviewee 3 mentioned that the clause attempt to cover all relevant issues with payment under on clause 30 to reduce the number of clauses in to the form. He agreed that some users may find it lengthy. There are also many users who think that this can be broken up into few clauses. He is in the opinion that as long as the clause is clear, it does not really matter how many sections/sub-clauses or clauses there are.

Interviewee 3 agreed that the term stage payment is quite traditional, which basically also covered should the Employer need to pay up in a few stages due to cash flow problems. As with some government projects especially towards the ending of the financial year, funds may not be enough and money will come in the budget for the following year.

Interviewee 3 also explained that the form called for earlier submission of final claims so that Contractor and Architect can look into it while everyone is still there on site. And Architect will normally tie up the last bits of the claims dealing with defects and any outstanding works. However, he agreed that the time frame can still be looked into. He reckoned that there is no perfection in form drafting. Revisions are needed from time to time to suit the latest climate of contracting in the industry.

Interviewee 4

Interviewee 4 thought that the clause is too lengthy as well. It is a long clause covering the A-Z of issues related to payment. Interviewee 4 opined that if this clause can be broken into two to three clauses, it could enhance the details in each section. He mentioned that he had no problem understanding as all Architects should be familiar with the form. The problem may lie with the Contractor who is not specifically trained to use the form. Even if the Architect has no problem implementing clause, it will not be any good if the Contractor does not how to go about at it. He agreed that clauses in forms should be simple, clear and comprehensive so that it is easier for the users to understand them.

He also agreed that form users may not be sure about the sequence in using the clause as the flow goes from final account to penultimate and back to final account. Generally, he opined that this revised form for PAM is very much assuming that all the parties are fluent with it and trying to state some of the 'obvious' items. Again he was more concerned that the Contractor side is the problem. For example, if the clause is more procedural in the submission claims by Contractor and include the types of documents and particulars required in a guideline, Contractor will be able to submit a right claim in a right format with the right documents attached. Then the Architect's job will be made easier as he only need to process the claim and verify it and not check for mistakes and problems. Sometimes, Contractor misunderstood that Architect as being difficult by getting them to redo the claims when in the first place, it is of the wrong format or information is insufficient.

Interviewee 4 thought the ground for suspension of work can be more comprehensive. It recommendable that clause includes suspension of works due to non-payment by Employer. Many Contractors would appreciate this. However, other grounds for suspension by Employer and Contractor can also be covered and the follow on procedures can be added on especially upon resuming of work. The clause required some tying in with determination clauses as well.

Interviewee 5

Interviewee 5 mentioned that he has always wonder why the final account claim need to be submitted as earlier as after the certificate of practical completion. He had always followed that procedures but he is not clear as to why. He agreed that there is still issue of defects pending. And it may be more appropriate to submit detail for final account no later than three (3) months before the end of defect liability period. Interviewee 5 was also unsure of the sequence of claims here as he had not really taken a serious look at it but instead had always followed the common practice. Normally, certificate of practical completion and start of defects liability period will come first, followed by Schedule of Defects and Certificate of Making Good Defects and at the same time preparation of penultimate certificate and payment, and lastly final account, final certificates and final payment.

Interviewee 5 also agreed with the inappropriateness of using the word 'May' as it means that Employer can choose not to deduct money for retention sum. Based on his experience, he had not met an Employer that not deducted money for retention sum.

He agreed that to cover the issue of suspension of works under the same clause is somewhat inappropriate. He also agreed that the clause is not complete in covering the related issues for suspension of work. Grounds for suspension are not complete and procedures for suspension are unclear. Suspension of works can be both ways and both required a different procedures and treatment.

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Clause 2.0 Duties of Engineer and Engineer's Representatives

Interviewee 1

According to Interviewee 1, the various duties of the Engineer as the administrator of the contract should be listed in the form such as Appendix or the duties can be summarized from the other clauses to make sure he completes his duties within a specific guideline. It is true that the form does not give the limitations of Engineer's power in this form.

Interviewee 1 also commented that it is normal for Engineer to reserve right to disapprove certain issues when he found problems with it and his representative did not disapprove in the first place. This is because the Engineer's representative should have always refer and seek for approval from him before giving instructions to Contractor. But he agreed that if this is not managed properly, it may cause confusion especially when the work was already proceeding too far ahead after the representative's approval.

Interviewee 2

Interviewee 2 stated that the duties for Engineer should be covered in more details to protect the Contractor's right since the title of the clause is Engineer and his representatives' duties. Interviewee 2 also agreed that there is no statement on the Engineer's limitation in this form. Traditionally such power is given to the Engineer as a professional person but construction industry nowadays have evolved and Contractor and Employer are all knowledgeable in practicing their rights as well. So there is more challenges for the Engineer.

It is true to say that the confusion will occur if the Engineer reserve the power to disapprove issues that instructed by his representative at the first place. As a result, the Contractor will experience unfair situation as he might need to redo his task if there is any changes. However, he emphasized that the Engineer or his representative's instruction should be taken as final decision. Without giving Engineer such power will not move things on site. We cannot have an un-decisive Engineer for decision making.

Interviewee 3

According to Interviewee 3, the state of duties of Engineer and Engineer's representative should be separated and further elaborated in order to make this clause more complete.

He furthered that it may sound unfair but it is necessary to give the Engineer power to disapprove any instruction given by his representative at any time after that to make sure all the works done in accordance to the required standard. This is because the Engineer is appointed from professional body and any of his decisions should be taken into account seriously.

Interviewee 4

Interviewee 4 stated that he is not sure about listing out all the duties of Engineer and his representatives and to cover them under this clause because there are really many of them. But he agreed that there must be some of limitations to his power.

He also suggested that the Engineer's instruction should be the final decision made by him only. The Engineer's representative should only play his role to deliver the Engineer's instruction to Contractor instead of making his own decision. He added that there should a statement mentioning the Contractor to have his discussion with Engineer whenever he thinks that the Engineer's instruction is inappropriate based on his experience to promote a culture of discussing rather than adversarial as it is in the past.

Interviewee 5

According to Interviewee 5, the duties of Engineer are not necessary to be explained in further details. In his opinion, the regular form users will seldom experience such problem as the duties of Engineer and his representatives are generally clear and obvious.

Besides, there is no any issue in term of fairness for him at all. He further explained that the Engineer should always have the right to disapprove any instructions made by his representative when he thinks it is not appropriate. But as a professional Engineer, he reasoning must be good and specific as the Contractor can always challenge such decisions. In practice, Contractor can and will disagree. In contrast, the Contactor should always be

prepared for changes and instructions given by the Engineer or his representatives and of course, writing to the Engineer to seek confirmation may be a good way forward or pricing for changes and mistakes is another way to ensure the sufficiency of the contract sum.

Clause 3.0 Scope of Contract

Interviewee 1

According to Interviewee 1, the sentences used in this clause are simple and easy to understand. However, he also point out that the first sentence of the clause is too lengthy and there should be a breakage within the sentence. In his opinion, the scope of contract under this clause can be further elaborated in order to make the clause more comprehensive.

Interviewee 2

Interviewee 2 stated that the content of this clause is not complete and comprehensive. He pointed out that the clause has discussed more on the Contractor's obligations instead of the scope of work. According to Interviewee 2, he did not found any problems with the grammar and language used for the sentences under this clause.

Interviewee 3

According to Interviewee 3, after he goes through the clause, there is no any major problem with the sentences of the clause except the first sentence. He suggested that the first sentence is too long and should be divided into two or three sentences. For the content of the clause, he has no comment on that.

Interviewee 4

Interviewee 4 stated that he has no problem in reading through the sentences of the clause. It is easy to understand without any doubt. He also found out that the clause discuss more on the Contractor's obligations instead of the scope of work. He furthers, the clause should focus more on the issue of scope of work.

Interviewee 5

According to Interviewee 5, the first sentence of the clause is too long and some of the readers will find difficulty in reading whole sentence without any breakage. He suggested there should be some improvement on the structure of the clause. He added the clause is complete and comprehensive to him even though the title may be confusing to some.

Clause 4.0 Work to be the satisfactory of Engineer

Interviewee 1

According to Interviewee 1, the sentences used in this clause are simple and easy to understand. He added that the Contractor should comply with all the instructions given by the Engineer and to complete the works to his satisfaction of him as well. He also explained that the existence of this clause is to avoid Contractor shirking from his responsibility to carry out the work done properly.

Interviewee 2

Interviewee 2 stated that the clause is clearly unfair against Contractor. He further explained that it is true that the Contractor should follow the instruction given by the Engineer and works must be to the satisfaction of the Engineer but there should be some minimum guideline included for the Engineer to follow. Most Engineers would say that they are governed by Board of Engineer's and the Engineer's Act. But those are not project specific guidelines.

According to him, the project related guideline for contractual duties from Engineer is similar from project to project and therefore can be drafted and used to prevent the Engineer from misusing his power of having things to his satisfaction in those areas not related to works of the contract. As a Contractor, he had has such experience and believed that Contractor's right can be better protected as well if there are such guidelines.

Interviewee 3

Interviewee 3 commented on the title heading of the clause is 'Work to be to satisfaction of Engineer'. He stated that the usage of such term as 'to satisfaction of Engineer' is not appropriate. This can cause conflict as to what exactly is his satisfaction and create a phenomenon where the Engineer holds unlimited power in the contract to make decisions over the Contractor's work and act on behalf of the Employer. In his suggestion, the verb 'to satisfaction of Engineer' can be replaced by 'in accordance with contract'. This will make the clause more complete and some unfair situations can be resolved.

Interviewee 4

Interviewee 4 stated that it is important that there is a point of reference in the project. It is important that Contractor to comply with the instructions given by the Engineer and seek the Engineer's opinion in any decision making process on site.

But it is also important to remember that many Engineers appointed to administer the contract are young and may lack experience. In the past, it is without a doubt that the Engineer is the most capable person to give comment on the satisfaction of the work completed by the Contractor. But now, Engineer, who does not state the reason for rejecting certain works or simply say things are not to his satisfaction, may find himself being challenged. He believed in both parties being able to discuss and come to some agreement instead of using heavy handed terms like 'to the Engineer's satisfaction'. It may not be so effective anymore.

Interviewee 5

According to Interviewee 5, this clause is easy to understand as it mainly focus on the work completed by the Contractor should be to the satisfaction of the Engineer. He said that the Engineer's judgment is professional and he has no doubt about that. In order to make sure the work completed by the Contractor is in good manner, the Engineer should have such power to give direction and instruction to the Contractor. He opined that the clause is complete and comprehensive.

Clause 5.0 Engineer's Instruction

Interviewee 1

According to Interviewee 1, although the sentences of the clause are lengthy, but it is understandable for him as consultant or arbitrator who is familiar with the contract form. However he suggested that the structure of this clause should be revised to improve the form users' satisfaction. Interviewee 1 commented that the complexity of the structure of the clause is because IEM form is the combination and evolvement of many of the older contract forms such as PWD form. Besides, the drafters of IEM form have not make revisions and checking on the arrangement of the clause for a while already. It is a 1989 form after all.

He also stated that he had some Contractors who did complained to him that seven (7) days period for them to comply with the instruction is not really practical as they may need to make some big repair works during construction. But the clause can also be understood as complying not completing the instructions. He suggested that the 'seven (7) days' period can still remain in the clause but to be subjected to changes according to the project. According to him, it is not wrong for the Engineer to give instruction on this matter when based on his professional judgment it is difficult for Contractor comply within the contractual time frame.

On the issue of emergency instructions, Interviewee 1 agreed that there should be coverage in the clause. He personally experienced such situation in a slope stability case and when he ordered for rectification works, the Contractor's representative was not cooperative as there is issue of costs and issuance of instructions involved.

Interviewee 2

Interviewee 2 agreed that the clause should cover emergency situations. With such situations now the Contractor need to take the Engineer's word that he will issued instructions later. He believed many Contractors worried that if the problem is the original design which caused situations like emergency failures, the Engineer may not be willing to issue black and white instructions as he may not want the Employer to see the problem as design. With such cases the Contractor has no way of claiming loss and damage or extension of time. Interviewee 2 suggested that Contractor to keep really good record in the site diary since the form is not having such coverage.

He also stated Contractor should be given the right to disagree with instructions given but such elements must to be carefully studied before implementation in the form. He added that the time frame of seven (7) days for a Contractor to comply with the Engineer's instruction is tight.

And once again the clause amplifies the Contractor's responsibility to write to Engineer if a verbal instruction is provided by the Engineer. The clause does not protect the Contractor's right. According to him, guidelines for instructions should be revised to have better coverage and any abuse of power which is already unlimited for the Engineer.

Interviewee 3

Interviewee 3 commented on the structure of the sentences under this clause. He said the clause looks messy because there have not been much revisions made to this form. In order to improve the clarity of the form, simple language should be adopted.

He agreed that there is a contradiction within this clause as the Contractor is asked to give notice in writing of his intension to claim for such loss or expense within 30 days. However the clause also stated that the Contractor's claim should always subjected to Clause 48 which the period given is within three (3) months. He opined that this is common of this form, which again is due to minimal revision made to it since its introduction.

He also agreed that to be fair Contractor's right to disagree with instructions should be provided for. It is common for the Contractor to disagree anyway, so why not put procedures down in the form so that all the parties have a guideline to work within.

Interviewee 4

Interviewee 4 said that even though it is always the responsibility of the Contractor to comply with the Engineer's instruction, he should also have the right to say no when the instructions itself is flawed inherently or it deals with an extreme change of work. Therefore he agreed that the ground for giving instructions and how the Contractor can disagree must be there. There should not be an absolute power in one party's hand as that does not encourage communication on site. Situations will become 'u should do whatever I say' and that is not appropriate as Contractor is a professional builder as well. He further emphasized that the Contractor should be treated in a fairer manner.

According to him, the sentences of this clause are too long and took him some times to understand the clause well. He said the structure of the clause should have been revised and improved. And to say that the Contractor is to comply with the Engineer's instruction within seven (7) days is rigid and agreed that there should be a coverage of instructions for emergency situations on site.

Interviewee 5

Interviewee 5 said the clause is not too difficult to understand as all the details of the Engineer's instruction have been pointed out clearly. He furthered that although the sentences of this clause are a bit too long, but it is still acceptable for him.

According to Interviewee 5, it is always the responsibility of the Contractor to comply with the Engineer's construction. He mentioned that the seven (7) days period for a Contractor to comply with the Engineer's instruction seems reasonable and fair. The period given is for Contractor to start working on the instructions. Engineer will not expect the Contractor to complete the entire scope of the instructions within seven (7) days.

Clause 8.0 Sufficiency of Contract Documents

Interviewee 1

According to Interviewee 1, this clause is short and clear. However, the contract documents under this clause have not been defined properly. He suggested that the contract documents should be listed somewhere in the form such as appendix to avoid any confusion.

He agreed that the clause fail to cover extensively on the matter of discrepancies in contract documents. Interviewee 1 further mentioned that the term 'immediately' used to describe the time frame for contactor to write a notice specifying the discrepancy or divergence between the contract documents is not appropriate.

Interviewee 2

Interviewee 2 stated that he is unsure about content of this clause. He said the clause did not explain the term 'contract documents' properly. Besides that, there is no other procedure or guideline provided if the Contractor cannot reach Engineer 'immediately' regarding the notification of discrepancy or divergence between the contract

documents and if he needs further instructions to proceed. How the Engineer should response is not provided for too.

Interviewee 3

Interviewee 3 pointed out that the clause is lack of further explanation of contract documents. According to him, the contract documents such as Letter of Acceptance, Articles of Agreement, Conditions of Contract, Drawings, Bill of Quantities and others should be listed in the clause, usually in the first few clauses or Appendix of the form. Besides, he also suggested some of the long sentences should include a breakage to avoid any confusion.

Interviewee 3 opined that the clause is not complete in terms of discrepancies. There are no procedures for Contractor to formally report and the Engineer to response. The clause amplifies the duties of Contractor and water down the duties of Engineer as he does not even need to response unless there is an additional sum involved. Interviewee 3 really did not find such clause acceptable.

Interviewee 4

According to Interviewee 4, the clause is easy to understand but there totally brief in many aspects. There should be at least a short definition describing the term of contract documents. And there should be at least more coverage on the issue of discrepancies. He stated that the clause did not provide a full guideline especially time frame as to the Engineer responding to the discrepancies. In the event, say, the contract drawings differ from site drawings and Contractor need to start working on the particular aspects, it will be totally up to the Engineer's professionalism to response according because it is not stated in the contract form.

Moreover, the clause did not cover that the Engineer has to diligently check the contract documents too and effects if the Engineer need time to confirm and/or rectify the discrepancies.

Interviewee 5

Interviewee 5 stated that the clause is fair. If the Contractor has found any discrepancy or divergence between any two or more of the contract documents, it is his responsibility to notify the Engineer immediately. He explained that there is a need for Contractor to give the Engineer a written notice as far as possible so that the Engineer can take action quickly. However, Interviewee 5 also agreed that Clause does not fully cover on the Engineer's response.

Clause 9.0 Material and Workmanship

Interviewee 1

Interviewee 1 stated that the Contractor should provide Engineer with vouchers and/or manufacturer's test certificates to show that the material and goods are in good condition and as per the standard required. He does not think that this clause is unfair in that sense. It is a normal procedure for Contractor. According to Interviewee 1, certain material stated in the specification has to go through standard operation procedure (SOD) testing after which the testing reports has to be send to the Engineer.

And Engineer can request for further testing when there is reasonable doubts, especially when test reports can be unreliable. For instance, the foundation used for the building that he has designed more than ten years ago was timber piles. Although the timber piles came with SIRIM certificates, he was really unsure of the coating on the piles. So as an Engineer for the project, he insisted Contractor provided for samples random chosen from the batch delivered to be sent for further checking and testing. The result did show that most of the timber piles had coating that did not comply with the standard.

According to Interviewee 1, although the sentences of the clause are lengthy, but it is understandable for him as a consultant or arbitrator who has used this form many times. However he suggested that the structure of this clause should be revised to improve for other form users.

Interviewee 2

Interviewee 2 insisted that the clause is unfair towards the Contractor. He explained the coverage of opening up here is minimal whereas this is a big issue on site. As a Contractor, he has to inform the Engineer earlier regarding works that need inspection before covering up. The notice must be ample and he would try to accommodate that. However, there is no coverage on the Engineer or his representative not showing up. It would be a total waste of time for him and his team and then there will be a decision to cover up or not.

Hence, there must be a guideline provided for the Engineer to follow before he can instruct for opening up and testing (retesting or test that is not called for in the contract specification). He added, the sentence under part 9 b) is relatively too long and difficult to understand.

Interviewee 3

Interviewee 3 commented on the structure of the sentences under this clause. He said the clause looks messy which is due to the fact that the form was drafted based on other forms such as the PWD ones. Therefore, there is an element of pick sentences from other forms and combining them. In order to improve the clarity of the form, Interviewee 3 is really for short and simple sentences to be used in forms.

According to him, it is common to combine the issues of materials and workmanship under one clause. However, both the issues should be elaborated separately to make the clause more complete. He agreed that the clause is brief and barely addressing the necessary issues with respect to testing and inspection. These issues really required extensive and detail coverage and it is possible to fully achieve better coverage.

For example, with material testing, there must be coverage on material that must be tested and the cost of testing and the follow on procedures if failed; material that can be tested and reasons why Engineer request for testing; retesting of some material and the cost of testing an follow on procedures if failed; the format of the records of test results must be approved by the Engineer; and so on. The procedures can be clear. Interviewee 3 totally agreed with the importance of work method statement and quality plan and insisted that should be part of the requirements in the form.

Interviewee 4

According to Interviewee 4, submission of certificates and vouchers are normal for most projects and Contractor would generally comply with the stated tests given in the specifications. However, there are situations when such tests are not doable or practical for the project or the tests have to be carried in the third party workshops. He pointed out that there is no coverage on such cases. There should be a reminder stating that the Contractor and Engineer to discuss and work out their differences so that the project environment is more conducive.

It is undeniably the Engineer should have such power to order for testing and opening up to ensure the quality of materials and workmanship complies with the standard. However, Interviewee 4 stated that this form does not have much limitation to the power of Engineer and therefore the conditions to call for further testing or testing outside the scope or opening up must be in place. He further suggested that Engineer to endorse the quality plan and work method statement by the Contractor on the works and used that as part of the basis to call for such actions.

Interviewee 5

According to Interviewee 5, the clause is fair and complete. Contractor must submit test certificates and vouchers to ensure that goods and material delivered are up to standard and also real items from the specific manufacturers. There are cases of Contractor bringing in non-tested material manufactured in non-certified factory environment.

The Engineer must really keep a watchful eye on this matter. Therefore, if the Engineer found or suspect any problems regarding to the quality of materials and goods, he should always have the right to give instruction to the Contractor for inspection of work, retesting and opening up. He added that it is reasonable for the Contractor to bear the cost of opening up and testing of work if works or material is found faulty. But according to Interviewee 5, the request has to be made with good solid reason based on his professional judgment and not just a simple instruction of testing and opening up.

He commented on the length of the sentence of this clause. The clause should not have such long sentence especially in part 9 b).

Clause 10.0 Unfixed Materials and Goods

Interviewee 1

According to Interviewee 1, this clause seems generally complete where it covers for matters on unfixed materials and goods. However, if the clause is being studied in more depth, it is clear that Employer is trying to protect himself from Contractor delivering the material and goods prematurely, claim for payment and take them elsewhere. It also insists on the Contractor to look after the material and goods delivered and are liable for the damages of such items. These are the obligations of Contractor and should remain as such.

But Interviewee 1 reminded that the clause did not deal with issues on ownership of such material and good. Titles material, goods and equipment are all under the Contractor. He has seen cases of suppliers coming in to remove the material as the Contractor has not been paying them. Therefore, the Employer really has to be careful with making the payment/s to the Contractor, which has been set normally at 75% of the material worth. Either that or the clause has to be tightened up.

Interviewee 2

Interviewee 2 stated it is always better to practice delivery of material and goods when necessary, because bringing them to site in large quantity and being left too long on site, he will to rent or build storage space and be exposing his material and goods to thefts, damages and weather elements. However, there is always a consideration about claiming material on site which will improve his cash flow. Therefore, he must try to manage this and find the right balance.

Materials on site are under insurance coverage and therefore, Contractor is usually the party responsible for it. There are of course other methods such as payment deduction, replacements and so forth should the Contractor got careless with the material or the material and damage by other factors as sometimes the losses are not that big and claiming insurance will incur a large premium. The clause probably can further stipulate these remedies to make it more complete.

Interviewee 2 also agreed that the clause should cover material supplied by others such as sub-Contractors, suppliers, nominated sub-Contractor and suppliers. He did not have much opinion on the ownership of material matters as he believed a good Contractor will not play such a trick as he will want continuous jobs from the Employer especially if the Employer is a good pay master.

Interviewee 3

Interviewee 3 stated that the details covered within this clause are incomplete. It does not refer or fully elaborated on the issues including payment, transfer ownership of the unfixed materials and goods, reference to insurance clauses.

Interviewee 4

According to Interviewee 4, the Contractor is the one responsible for all the loss or damage of the unfixed materials and goods because it is a must that Contractor to take up insurances. Without submission of insurance cover notes, the project cannot commence in most cases. Interviewee 4 also stated that it is true that if the clause did not mention on how the Contractor is to be penalized should there be damage and loss to the material. But he also noted that the clause does not cover loss and damage caused by the Employer and the Engineer and their representatives and whether there is a reduction in liability.

Interviewee 4 also agreed that the clause should cover material supplied by others such as sub-Contractors, suppliers, nominated sub-Contractor and suppliers. Contractor must make due payment to his suppliers and sub-Contractors so to avoid any problems with removal of material on site. Interviewee 4 believed in a good working relationship with the suppliers and sub-Contractors and also with the Employer and the Engineer's team. But he conceded that better guidelines and procedures to be in place to cover for all parties involved in the project.

Interviewee 5

Interviewee 5 commented that this clause is seems as complete but it is in fact not. Usually only 75% of the material worth are paid for and hence, there is no way the Employer can own the material legally. And besides, it is true that even Contractor does not own the material if the payment has not been made to his suppliers and sub-Contractor.

According to him, the Contractor should always responsible for loss and damage of the unfixed materials and goods that he supplied. This is important so that the Contractor can be more alert and responsible for the happening on his site. Should there be an external factor that causes the damage and loss, it is usually covered with insurances. Contractor can always try claiming for such damage and loss that is not of his fault. This matter is not clearly provided for in the contract.

Clause 11.0 Statutory Obligations

Interviewee 1

Interviewee 1 agreed that this clause fails to cover the consequences or remedies if the Contractor failed to comply with payment of the required fees and charges. For example, the Employer can hold Contractor's payment or deduct the payment from the Contractor for the amount he is accountable for. However, he did not think this is a big issue because in practice, the Employer does have the authority to deduct payment of the Contractor.

He agreed that in terms of coordination it is appropriate to lend help to the Contractor to liaise with the relevant authority, when necessary. As long as the design is his, he has to take such responsibility to get approval even on the matter of commencement of works. He also agreed that Part 11 a) and b) should merge together instead of separating to make the clause more complete in term of content.

Interviewee 2

According to Interviewee 2, all the cost incurred by the Contractor in relation to fees and charges for the installation of permanent connections to public sewers and permanent water and electricity supply shall be borne by the Employer. But the clause did not cover fees and charges related to planning such as capital contribution and zoning fees. There are instances that Contractor cannot start his work on site because certain authorities require a submission of forms stating commencement of works and without payment of such fees by Employer, his application will be rejected and hence, delayed in starting work. The clause certainly does not cover for such situations. And there is no procedure or guideline provided for Employer who failed to pay.

Interestingly he noted that if the Contractor also fails to pay certain charges and fees, his penalty is not mentioned as well. This is indeed a clause that needs to be improved.

Interviewee 3

Interviewee 3 stated that the clause covers most categories of the fees and charges borne by the relevant parties of the contract but there are some such as capital contributions, which are not covered. He further agreed that there is no any consequence or action that can be if the Contractor or Employer fails to pay their portion of the fees and charges.

Interviewee 4

According to Interviewee 4, this clause is very clear in term of content. All the fees and charges required by different parties especially Contractor and Employer have been stated completely under this clause.

However, he elaborated that he had come across circumstances when his application to start work to the authorities such as councils are rejected because they required applications from the Engineer who design the works. Hence, it is appropriate that Engineer must take note of this matter and provided the necessary assistance when necessary.

Interviewee 5

Interviewee 5 agreed that this clause does not cover any procedures where the Contractor or Employer or both defaults in payment of fees and charges. The effects or consequences of none payment are actually more difficult to handle as compared to the matter of interest and penalties of none payment. Non payments could lead to problems like delays, claim for extension of time, disputes over claims and so forth. He did hope to see improvements to be made to this clause.

Clause 12.0 Patent Rights and Royalties

Interviewee 1

Interviewee 1 agreed that the clause should make some reference to the specific acts, regulations and law relating to patent rights and royalties. Both are actually very different issue and it can help both Engineer and Contractor to be more aware of the issues involved. With patent rights and royalties, contracting parties only really start looking at it when there is a problem. Interviewee 1 also suggested that the Employer's representative to help to remind the Contractor on this matter so as not to overlook it.

Interviewee 1 acknowledged the lack of procedures of the method to indemnify the Employer by the Contractor in the clause.

Interviewee 2

As mentioned by Interviewee 2 who agreed that this clause does not provide for the method/s to indemnifying the Employer by Contractor against such penalties and claims. This is actually not good for the Contractor as well because the remedies can then be ad hoc and the Contractor is not prepared for it. Besides, this is usually not covered under the normal insurances coverage.

Interviewee 2 further commented that the claiming procedures are not clear as well. It is unsure once the Employer or the Contractor received a claim/penalty, the follow actions are not stated in the clause. He opined that it is better to have procedures properly in place with such clauses.

Interviewee 3

Interviewee 3 commented on the structure of this clause. He suggested that the issues of patent rights and royalties can be separated into two parts instead of one part under an individual clause. He added, both the issues can be explained in further details. For instance, the definition of royalties and reference to the specific regulations should be stated more clearly to protect all the parties involved.

Interviewee 4

According to Interviewee 4, this clause is complete and comprehensive in general. However, the question arises whether the Contractor should responsible if the infringement of any patent rights is a consequence of the Contractor's execution of the works in accordance with the contract or in complying with an instruction of the Engineer. He wondered whether this is a ground where the Contractor can discuss with the Employer on the amount he has to be responsible in view of the infringement.

In his point of view, it is unfair for the Contractor to pay for any penalties that arise as he is just trying to complete his work in accordance to contract or to comply with the instruction of the Engineer.

Interviewee 5

Interviewee 5 agreed that the Contractor should responsible and indemnifies the Employer from and against all claims and proceedings for or on account of infringement of any patent rights and royalties as stated in the clause. He furthered that the contactor should be aware of where he obtained his material such as sand and gravels from and the usage of his machineries with specific parts and components. The clause really serves as a warning to the Contractor. However, he agreed that specific acts, law and regulations must be included or mentioned so that all parties are more aware of any potential infringement.

Clause 14.0 Inspection of Site

Interviewee 1

According to Interviewee 1, although this clause is compiled into two long sentences only, but it is understandable for him. However, he suggested that the structure of this clause should be revised in future form revision as it may be difficult for first timers. Once again, Interviewee 1 commented that the complexity of the structure of the clause stems from the fact that IEM form evolved from other forms. Other forms such a PWD form and JCT form had gone through various revisions while this form is still as it is.

He had previously experienced some Contractors who had problems with the inaccuracy or insufficiency of the information or document given by the Employer. In his opinion, the Contractor actually shall take the information or document given at his own risk because it is assumed that the Contractor must inspect and examine the site and its surrounding entirely at his own cost before submitting his tender. Contractor should not take this responsibility lightly.

However, he mentioned, it is true that some information cannot be verified with just site visits but with tests. And it is of course not reasonable for Contractor to carry out any testing works as he has not won the job yet. Hence, it may be good if the clause can improved based on information that can be verified and information that cannot be verified to achieve better comprehensiveness.

Interviewee 2

Interviewee 2 stated that this clause clearly amplifies the Contractor's role in checking on the information. Firstly, he strongly disagreed with the statement that the Employer does not give any warranty for the information or

document either as to accuracy or sufficiency. In contrast, the Employer should always notify the Contractor regarding to any updates of the information or document provided by him.

Secondly, he agreed that this clause can be improved by providing a complete list of procedures regarding the examination and exchange of the information by various parties who have to responsible for.

Finally, as a responsible Contractor, site visits and checking are part of his duties, but the clause does not provide for procedures to inform or request the client for further information should he has doubt on the information provided especially during the pricing stage.

Interviewee 3

Interviewee 3 stated that the Contractor should complete the inspection and examination of site entirely by himself. All the information and document provided by Employer is only to assist the Contractor.

However, according to him, this clause is really brief on the matter of inspection of site. It really lacks many aspects. It really should be more comprehensive in listing down emphasis of Employer to provide to as accurate as possible information; Contractor to check and price for those information including site visits; and remedies when the information is inaccurate. He also commented on the structure of the sentences under this clause which not only is brief but also messy without addressing the issues..

Interviewee 4

According to Interviewee 4, he does not appreciate that the Employer gives no warranty at all for the information or document in terms of accuracy and sufficiency. For a good site environment, everyone should assist and support one another. There must be room for open discussion and communication. But clauses like this really do not give any room to communicate because it already says employer will not take any responsibility. Then as a Contractor who is pricing for the project, should he price higher to cover for mistakes or not. As a Contractor who is already contracting, when he comes across situation like this on site, he will have no choice but challenged the Employer if the cost involved is too big. For example, the bore log shown by the information provided says good grounds but 20 feet away, he hits rocky ground, which requires blasting and that could be huge costs. This sort of issues will really drag on if Employer insists that he is not to be responsible.

He also stated that the sentences of this clause are too long and he takes long time to understand the clause.

Interviewee 5

Interviewee 5 mentioned that the role of the Engineer here is to help check the correctness of the information. If the Contractor comes across inaccurate information, normally Engineer will help to verify whether it is due to the Contractor's own carelessness he did not checked or it is impossible for him to check. According to him, the Contractor should always inspect and examine the site properly because this is his task and responsibility as well. But if it is verified that he could not possibly have found the errors, then he would advise the Employer accordingly. These roles of Engineer obviously are not stated in the clause.

He also stated that although the sentences of this clause are lengthy, but the language used is simple and easy to understand by all the form users.

Clause 18.0 Contractor's Superintendence

Interviewee 1

Interviewee 1 commented Contractor must provide superintendence means that Contractor must provide supervision on site, which also means that there must be representative/s of the Contractor on site who can act on and receive information on his behalf. He agreed that clause does not cover if the Contractor did not provide any site agents, which he found to be quite rare.

In his opinion, it is normal for Engineer to reserve right to require the Contractor to remove any of his authorized agent at any time. However he agreed that if this is not managed properly, it may cause dispute on site especially if the reason for removal is not strong.

Interviewee 1 had no problem with the term as soon as practicable because depending on projects' needs and requirement, such flexibility is allowed so that the Engineer can specify the time. If the offence is about site agent

not attending to his work, then 7-14 days may be reasonable. If the offence is about stealing or fighting on site, forthwith removal may be issued

Interviewee 2

Interviewee 2 is in the opinion that there is a lack of procedures that describes how the Engineer can withdraw the original approval of the Contractor's agent any time. He furthered that this really give a lot of power to the Engineer. He believed the Contractor should have the right to disagree especially if the reason for removal is not valid. If the agent is not competent as the Contractor, he would also want to him removed. However, as the employer of the site agent, he need to go through relevant procedures such as giving warning and notices to his staff before removing him. Hence, the Engineer should also allocate similar courtesy to Contractor.

He also mentioned that the word "superintendence" is rarely used and can be replaced by more common words like agent, representatives, supervision.

Interviewee 3

According to Interviewee 3, the word "agent or representative" used in the very beginning sentence of this clause should be more consistent. Instead of agent or representative, either one of the word can be used throughout the form. He explained that the word "agent" used may be mistaken as sub-Contractors.

He agreed that withdraw of the approval of site agent has to be better drafted with conditions of removal being put in place. It is just not so simple to remove site agent without a good reason. He also suggested that a guideline to be provided under this clause for the Engineer to refer to before making the request for withdrawal.

Interviewee 4

According to interviewee 4, the clause aims to amply the Engineer's authority stating that he can withdraw (at any time) his approval of the site agent. It is obvious that the Contractor and his authorized agent's rights are not protected.

There are situations when the site agent is really not doing his work or found having bad behavior like gambling or getting drunk on site. There are also instances that Contractor is short of manpower and allocated more than one site to the site agent to manage and hence, the Engineer cannot locate the site agent when necessary. These situations shows the problems and faults of the Contractor and he agreed that the Engineer should have such power extent to him that to make withdrawal of his initial approval of the site agent, especially if Contractor or his agent did not fulfill his duties and did not follow the Engineer's instruction. He noted that the clause does not cover if the Contractor did not provide a site agent and what could the Employer or Engineer do.

On the other hand, there are situations that are subjective to the Engineer's opinion. Engineer may not think the site agent as 'clever' enough and hence, he did not perform well. In other words, he agreed that grounds and conditions for removal of site agent must be written clearly and executed reasonably. Contractor should have the right to protect his own people if he thinks that any withdrawal made by the Engineer is inappropriate. And hence the procedure of disagreement can be provided under this clause.

Interviewee 5

Interviewee 5 mentioned that the first proposal of Contractor's agent will generally be approved based on the criteria set and the bio-data attached, unless previously the Engineer had worked with the agent before and had unpleasant experience. Otherwise, the proposed person will be the Contractor's agent or representative, designated as the "site manager" to manage and supervise the project on the Contractor's behalf.

He found the clause to be reasonable as the Engineer reserves the right to withdraw his initial approval of the Contractor's agent who did not perform well based on his professional judgment. And Engineer needs to protect the Employer's rights as well. He has had cases when Contractor appointed his sub-Contractor as site agent. And the Engineer, he believed does not withdraw approval and request for removal of site agent at his whim. It is a tedious process.

Referring to Table 4.35, clause 18.0 has been strongly validated with comprehensiveness, completeness, flexibility, clear structured framework for project management, fairness or role distribution and risk distribution problem as agreed by four (4) or five (5) interviewees. Clause 18.0 has also been validated with clarity problem as agreed by three (3) interviewees.

Clause 21.0 Removal of Workmen

Interviewee 1

According to interviewee 1, this clause is similar with the previous clause on Contractor's agent. Both are dealing with Contractor's personnel. Therefore similar to previous clause, it is normal for Engineer to reserve right to require the Contractor to remove any his workmen any time. However, he agreed that if this is not managed properly, it may cause dispute on site especially if the reason for removal is not strong.

Besides, he also thinks that the usage of word such as "good character" can be ambiguous and lead to confusion of the readers. He strongly recommended negligence and reckless should be some of the category of reasons for removal of workmen. In this clause, it clearly states that the Engineer can remove the person who has caused delayed or is incompetent from the site.

Interviewee 2

Interviewee 2 viewed this clause as inconsiderate to the Contractor. In the recent past years, it has been getting increasingly difficult to find skilled workers and without good grounds for removing his workmen, he would seriously run into difficulties of finding skilled laborer to work on the project. He opined that there should be a ground of disagreement provided for the Contractor to discuss and work out with the Engineer about the issue of removal of his workmen He opined that the Engineer should really leave it to Contractor to manage and control his on the ground workforce. Removal should only be executed when the offence is serious.

Interviewee 3

Interviewee 3 opined that the terms such as "has caused delays" warrant clarifications. He further that although it is a standard and common for the removal of person who "has caused delays" but the term can interpret as person who have physically obstructed the smooth execution of the works. Terms like 'efficient' and 'good character' are really subjective and this can vary from Engineer to Engineer. He found the clause to be emphasizing on the power of Engineer especially with the terms like 'in his sole opinion'. He mentioned that this form of contract form drafting is very much outdated.

Interviewee 4

According to interviewee 4, he agreed that the Engineer can be given power to remove person who has caused problems, delays or is incompetent in work performance based on his professional judgment. However he also thinks that there should be a procedure of disagreement provided in this clause for all the parties to follow closely. For instance, there is a case when the Engineer asked the labour/workman why he was carrying out the work in such manner and the workman could not fully answered that and the Engineer started having opinion that the workman is not adequate.

He furthered that Contractor and his agent really have their hands full dealing with workmen and most of whom are uneducated and some who are not so committed. If the Engineer were to take this up with the Contractor and start to request for removal of workmen, his work will be become even more difficult. He reckoned the Engineer should discuss any issues he has regarding workmen with the site agent or Contractor and should not make decision based on the workmen alone.

The Engineer really does not need to weld so much power in these matters.

Interviewee 5

Interviewee 5 stated that the usage of description words such as "efficient" and "good character" used to describe the employed workmen should be avoided. He also suggested that the replacement words should be more technically relevant. Other than that in his opinion, the clause seems fine as the procedure for removal of workmen has been provided clearly.

Clause 23.0 Variations

Interviewee 1

Interviewee 1 stated that it is without a doubt variation has to be issued in writing. There is really no such thing as verbal instructions on variation. If there is a variation, then Engineer must put in writing and present it to the Contractor. Further action can be submission of proposed of cost for variation. Unless the situation is urgent,

negotiation should complete before execution of work. As an arbitrator, he had really had many cases of parties not following the right procedures. This is to avoid any conflict that can occur between the Contractor and the Engineer as well.

He agreed that verbal instructions which involved variation are sometimes necessary. Therefore there must be a specific way or guideline in dealing verbal instructions which involved a variation. And that has to be synchronized with the issue of verbal instructions and the valuation clauses.

Interviewee 2

Interviewee 2 agreed that the matter dealing with variation has to be treated with care. Variations usually mean a change in scope of works, design and contract sum. These are certainly 'big' issues. As a Contractor, it is actually not pleasant to deal with variation. Sometimes variation comes at the end of the project, say an additional component. To some, it may mean extra works and thus extra income. But if there is another job lining up, to have to dispense manpower and machinery to work on a variation order is really not worth the effort. There are also situations that the rates for certain works are too low and Employer wanted to make use of such case to add extra items for the project. Doing such variations would mean no profit but lost. He agreed that there must be a guideline in ordering variation orders. Scope for variation orders must be reasonable and it cannot be issued towards the end of the project.

And he reckoned that Contractor's proposal also required a good assessment. If the variation involves a better working method or cost savings or better material, Engineer should make an assessment and provide an adequate response.

And he agreed that it is definitely better to have variation instructed in writing. It is almost impossible to get Contractor to work on a variation based on verbal instructions.

Interviewee 3

According to Interviewee 3, it is stated that no variations is to be made by Contractor without an order in writing. Clause subsequently allows for verbal instructions if Engineer deemed desirable and Contractor to comply with such order. Verbal instructions can be confirmed with written instruction before or after the execution of work and will be deemed as written instruction. He agreed that there is some contradiction. He did not particularly agreed with usage of the term 'desirable' which is too subjective.

He firmly stated that all variations must be in writing including any emergency cases, which can be put down in the site diary record. If a verbal instruction is given and it involves a variation, then Contractor and Engineer must treat the issue of verbal instructions first. Then application for variation would follow or the Contractor can state his intention to claim for variation upon receiving Engineer's written instruction.

Interviewee 4

Interviewee 4 thinks that this clause reinforced that Engineer and Contractor to come together to discuss on any works which involve a variation. He emphasized that Contractor must be given the right to disagree with variation works especially if the scope is too big or unreasonable. Due to reasons such as cheap rates in the contract, Contractor is asked to carried out another extra components of works can be unreasonable.

In his opinion, a time frame should be provided for written instruction to follow verbal instruction given by the Engineer in this clause. If discussion is already done on site and verbally the both parties agreed on carrying out works that involved variations, a time frame for an issuance of formal variation order should follow. Site discussions and verbal instructions are common but rules on issuing orders must be in place.

Interviewee 5

According to Interviewee 5, any verbal instruction given by the Engineer should be replaced by site diary record. He added that instead of having both the Engineer and Contractor to argue over the content or clarity of the instruction, site diary record can used as an evidence for the verbal instructions. Hence, any verbal instructions which may involve a variation should be noted in site diary record. This is to avoid any confusion or conflict between both parties as stated above.

Clause 24.0 Measurement and Valuation of Works Including Variations

Interviewee 1

Interviewee 1 agreed that the Engineer should be the final decision maker who fixes rates or prices due to extra or additional work when it comes to the event of disagreement. This is because Engineer is the contract administrator of the project. However, he agreed that the usage of words such as "reasonable" and "proper" is ambiguous and should be replaced by more appropriate wordings. It is still used because there is a lack of better words. If the Contractor should doubt the credibility of the Engineer's decision, he suggested that a professional third party can be engaged to assist in determining the rate and prices. Interviewee 1 suggested the practice of engaging adjudicator/s.

He had seen cases when Contractor actually wrote in to reject on variation works because the rates that he proposed in the schedule of rates is way too low. Contractor stated that he did not asked for additional money because that was his own fault and he had to fulfil the contractual obligations for finishing up the project. But to do extra, he refused and showed calculation of the losses he will make. The case went to arbitration and Contractor won.

According to Interviewee 1, although the sentences of the clause are lengthy, but it is understandable for him due to his experience with the form. He suggested that the structure of this clause can be further improved and moved towards using simple language to promote usage and enhance readability. Interviewee 1 reminded that issues of measurement are covered in the following clause. Clause 23, 24 and 25 should be read together.

Interviewee 2

Interviewee 2 stated that this clause seems reasonable when state that there should be an agreement between the Engineer and the Contractor when determining the suitable rates or prices for any extra or additional works, which involves a variation. However, should there a disagreement, then the Engineer holds the power to fix all the rates or prices based on his sole opinion. This in his opinion contradicts one another.

He added that the Contractor must diligently submit all his claims with particulars which he thinks will incur expenses due to the additional works. But it is noted that the clause does not detailed out the Engineer's need to response or his response. According to him, the practice has become to look into all these claims at the end of the project in the penultimate account. He did not think that is professional of the Engineer and the form is certainly not helping to govern the responsibilities of the other parties.

According to Interviewee 2, the sentences of this clause are too lengthy and would be hard for him to understand without a substantial experience in contract management.

Interviewee 3

According to Interviewee 3, part 24 b) of this clause deals with the valuation of extra or omitted works and sets out the applicable procedure for this. Two distinct tasks are involved in the valuation process: one is the determination of the quantity involved and the other the choice of applicable rates. The second of these tasks is dealt with in this sub-clause and the part on measurement of quantity can be referred to in clause 25 but it is not clear. He will suggested the clause must work on how to quantify the additional works and reference shall be made to working drawings given by the Engineer or where such are not available or applicable, by in-situ measurement in which case part 24 b) is applicable. Reference should be made to Clause 25 as well. For omitted works, quantity should be taken-off from contract drawings.

He agreed that the net effect of all variation under part 24 c) can be clearer if shown on a formulae format. He added that he had previously suggested in his commentary on the form a formula that can be used to revise the rate in Bill of Quantities and the same can be applicable here.

Lastly, he also disagreed with the structure of the sentences under this clause mentioned that the modern movement towards form drafting is simplicity both in terms of language and structure.

Interviewee 4

Interviewee 4 stated that this clause does not seem to provide adequate coverage on measurement of the quantity of work that is additional or omitted and how the measurement is to be carried out. The clause concentrates mainly on rates determination. He therefore suggested more procedures and coverage on the issue of measurement.

In addition, he agreed that the time frame for processing and approval of the Contractor notification of expenses due to additional works by the Engineer is not covered. It does not make sense to say that the Contractor must put in his request but does not cover what the Engineer is to do with the claims. In his opinion, the form is actually drafted to provide flexibility for the Engineer, which is seen in many clauses. With modern contracting, this may not seems to work anymore. There really must be a time frame for the Contractor to prepare his claim and submission and time frame for the Engineer to make the approval/disapproval.

He disagreed that the Engineer is to have a final say in the final rates and prices. With frequent fluctuation in prices and cases of Contractor proposing wrong rates, he believed that issue with rates and prices must be a consensus rather than a solo opinion.

Interviewee 5

According to Interviewee 5, the sentences of this clause are too long and should be revised. Instead of using complex sentences, a simple and short sentence is more suitable to form this clause.

However, he did not see any problems with this clause as the Engineer has to make the final decision in determining the prices and rates in accordance to variation of works as to avoid extensive arguments over rates and prices. Most Engineers will based on the rates as proposed by the Contractor in the Schedule of rates and BQ and if none is available, Engineer will himself or request the Contractor to get quotations from the industry to determine the rate. Hence the rate is usually reasonable.

Clause 26.0 Measurement

Interviewee 1

Interviewee 1 stated that the terms "general and local customs" under part 26 c does not need to be there especially there is no proper definition of the term and how that related to the measurement of works. He added that such terms are not necessary, outdated and may lead to confusion. In his opinion, this clause can be provided as an option clause rather than focusing on the measurement set out in the Bill of Quantities in general. For example, there could be an option for measurement for the Bill of Quantities and another for measurement for a contract based on drawing and specification with provisional items, which can be used to ascertained the quantities for variation works.

Besides, he also pointed out that most methods of measurement have tried to reduce in-situ measurement to a minimum and when the necessity dictates, the procedure is as set out in part 26 b). From his understanding, there is no IEM standard method of measurement. He therefore suggested that in-situ measurement can be kept to a minimum and if possible completely eliminated by a carefully drafted method of a measurement that is based on working drawings in cases of variations.

Interviewee 2

Interviewee 2 agreed that even though there is a right for Contractor to disagree with the measurement put forward, the subsequent actions which follows his disagreement notice is not clear. And there should be a guideline of how to settle any disagreement made by the Contractor over the measurement.

Besides, he also disagreed with the quantities set out in the Bill of Quantities are only taken as the estimated quantities. As far as his concern, the quantities set out in the Bill of Quantities should quite complete and qualified to be referred as the correct quantities of the work and hence, the differences should be rather minor. In addition, as there is no measurement methods given or referred to, he suggested that the measurement to be made with respect to the drawings. He was also in the opinion that in-situ measurements required a close working together between the Engineer and Contractor and are often difficult to execute.

Interviewee 3

Interviewee 3 stated the clause should first and foremost state the contracting parties to choose whether it is a bill of quantity contract or a contract based on drawings and specification. The need of measurement for bills of quantity contract is essential where procedures of measurement must be strict and clear. The issue of measurement for a contract with drawings and specification will come in during variation works.

The clause is trying to lump these elements together to create a single clause for reference for both. He suggested writing the clauses based on two parts- one on bill of quantity contract and one on contract with drawings and specification and provide an option for the contracting parties to choose from.

Interviewee 4

According to Interviewee 4, this clause basically covers the issues of the quantities set in the Bill of Quantities, which are estimated value to begin with. He is not sure whether the same is applied to the quantities of works for variation works. There is a tendency to refer to this clause when it is necessary to work out the quantities of works for variation. But, as a matter of fact, it is never really stated as such or being referred to from other clauses. Therefore, he is unsure whether the clause is applicable to a Bill of Quantities contract only or can it be used for other types of contract as well.

He added that the issue of measurement is very sensitive and should be taken into account seriously. The Contractor himself must first and foremost keep a good record and not to leave everything till the end of the project to be subjected to measurement. The Contractor can disagree with the measurement put forward by the Engineer within a certain time frame but the subsequent actions which follows his disagreement notice is not clear.

Interviewee 5

Interviewee 5 stated that the quantities set out in the Bill of Quantities are usually quite complete and accurate but a bill of quantities contract usually means that there may be some quantities or some part of the drawings that is still under preparation and therefore incomplete. Hence, it is normal for the contract to inform that the quantities are to be taken as an estimated value.

On site, it is important that the Contractor is aware of measurement taken and work diligently to match with the quantities of works and material actually used. Monthly checking with the Engineer and his representatives is a way of keeping the Contractor's record up to date as well. To him the clause is generally clear but he thinks that part 26b can be split up into separate smaller parts to explain the procedures of measurement in a clear and systematic manner

Clause 27.0 Sub-letting and assignment

Interviewee 1

Interviewee 1 stated it is very important to state in all Contractor forms that whole part assignment and sub-contracting are not allowed and to be done with Employer's consent. Assignment can only be done only for finance and insurance reasons only and sub-contracting the whole part of works is really sub-selling the contract and this should not be allowed. This will cause immense difficulties in managing the project and total sub-contracting had created many ailing projects in the countries.

Besides, he agreed that the condition precedent to the employment of sub-Contractor/s should be in place to govern the engagement the sub-Contractors. And Engineer should have the right to check the credibility of the sub-Contractors before endorsing the engagement. He also reminded that nominated sub-Contractors and privately engaged sub-Contractors has different level of protection from the Employer. And hence, it is common that there is a specific clause in the form to cover for the nominated sub-Contractor. In view that sub-contracting, whether labour only or labour, machinery and material only is an essential part of contracting due to specialization of works, Interviewee 2 agreed that there should be a clause to work out on the different rights and responsibilities of the parties.

According to Interviewee 2, Employer's right to assign should also cover only for financing and insurance purpose and should obtain the consent of the Contractor.

Interviewee 2

Interviewee 2 stated privately engaged sub-Contractors engaged by the Contractor is the responsibility of the Contractor. And that is without any arguments. But the clause does not cover the Engineer to approve of the sub-Contractors, which is important as disagreement by the Engineer after the appointment and confirmation of the sub-contract to the sub-Contractors will involve legality issues as well.

He disagreed that the Employer should have any rights to be directly involved with the sub-Contractors as it will complicated the site management when instructions are given to the sub-Contractor instead of the site agent. This may be totally avoided. If there is no payment by the Contractor to sub-Contractor, consent for direct payment can requested by sub-Contractor but subjected to the approval of Contractor. Employer can take up a more pro-active role is checking whether payment has been made to the sub-Contractor unofficially but he must not have direct dealing with the sub-Contractors.

Interviewee 3

Interviewee 3 stated that the provision of labour on a piecework basis shall not be deemed to be sub-letting but the situation is not as clear with respect to "labour-only" sub-Contractors. In his own view, sub-letting on a "labour-only" basis does not constitute sub-letting, which requires the approval of the Engineer. He agreed that Engineer must be requested to check the conditions of employment of sub-Contractors before giving his endorsement. At the moment, there is none of such conditions in this form.

He added that under part 27 a) of this clause, it is unclear of what "Except where otherwise provided by this Contract" is actually referring to. There are no other clauses that deal with assignment except for insurance and performance bond in the form of banker's guarantee but both of these clauses does not make reference to this clause. Hence, he is in the opinion that such phrase should be more explicitly drafted.

Interviewee 4

According to Interviewee 4, this clause fails to cover the matter regarding to conditions for employment of sub-Contractor/s and make reference to use the sub-contracting agreement of IEM to be more consistent.

He also agreed that total assignment and sub-contracting cannot be allowed and it must be stated clearly in the form. But he noted that sub-contracting some parts of the work are quite common in the industry these days. He believed sub-contracting is a topic which requires a specific study and coverage.

He opined that the Employer and Engineer should not at any times be seen involving in the management of his sub-Contractor including matters such as payment, instruction. With such involvement, sub-Contractors will be nominated sub-Contractors and this is governed by a different clause in the form. He deemed involvement of the Employer and Engineer as an interference to the Contractor's management unless there is a prior agreement and sub-contracting agreement actually tie in with main agreement.

Interviewee 5

Interviewee 5 stated that this clause has delivered the matters of sub-letting and assignment very clearly. However, he agreed that the clause should clearly state that no sub-letting and assignment of the whole works are allowed and the conditions for employment of sub-Contractor must be clear and listed in the clause. And Engineer must be able to exercise the right to request the removal of sub-Contractors who are underperforming.

The clause does to cover the procedure or guideline to protect sub-Contractor's right where the employment of Contractor is terminated by the contract because sub-contracting agreement is a separate entity with the main Contractor and that is an agreement between the Contractor and sub-Contractor, which should not be interfered by the Contractor. Here, sub-Contractor can only be deemed as the workmen of Contractor and be treated as such in this form. Besides, he also mentioned that any decision made by Engineer and Contractor should be approved by the Employer regarding to issue of subletting and assignment.

Clause 28.0 Nominated Sub-Contractor and/or Nominated Suppliers

Interviewee 1

Interviewee 1 stated that the Engineer should have the power to nominate any sub-Contractors or suppliers based on his professional judgment and the list of nominated sub-Contractors or suppliers are usually available from the Employer. But he also suggested that the involvement of Contractor in the process of selecting the nominated sub-Contractors or suppliers will make this clause more complete. Even though, the Engineer will still be the final decision maker, the Contractor will play his role by giving comments or suggestions on the nominated candidate/s. He added the nominated sub-Contractor and suppliers are usually tested and tried by the Employer in other projects or they are the few of the specialty people around in the industry.

He added that since the nominated sub-Contractors or suppliers are placed under Contractor, all the payment should go to Contractor before nominated sub-Contractors or suppliers. However he agreed that part 28 c) stated that the Employer shall be entitled to pay to such nominated sub-Contractor directly upon the certificate of the Engineer can cause confusion or management problem. If the Contractor is fully responsible for their works, actions or defaults, the Employer should not interfere with the management of Contractor. Unless there is a solid proof that no payment has been made, then in the case nominated sub-Contractor, Employer can involve. But he suggested that involvement to be staged out. Management problem between Contractor and nominated sub-Contractors or suppliers should be handled by Contractor himself only to maintain control of the Contractor's team on site.

Interviewee 2

Interviewee 2 disagreed that the Engineer has full power authority for nomination and selection of nominated sub-Contractors and suppliers. As far as he was concern, the nominated sub-Contractors and suppliers will be employed by the Contractor and all the works and defaults of the nominated sub-Contractor are deemed as the Contractor's. Interviewee 2 insisted there must coverage on termination of nominated sub-Contractors and suppliers and all the necessary conditions and remedies after the termination should be stated. The clause according to him essential covers employment of nominated sub-Contractors and suppliers but not determination.

It is true the clause cover disagreement by the Contractor but if it is over a private issue, it will be difficult for the Contractor to use that as a reason for disagreement. Hence, he insisted that it may be better if the nominated sub-Contractor or suppliers are selected by the Contractor from the list provided by the Employer.

Besides, he also thinks that this clause is lacking of details under part 28 b) ii). Under this part, the nominated sub-Contractor is to indemnify the Contractor from and against any negligence but does not state method of indemnification. It is unclear whether the nominated sub-Contractor will uptake a similar insurance for his part of the works or any other ways of indemnification. According to him, the Contractor's right is not protected well under this clause.

Interviewee 3

According to Interviewee 3, there exist some arguments regarding to the matter of nomination of sub-Contractors and suppliers under this clause. The Engineer will be the party who makes the final decision in picking nominated sub-Contractors and suppliers and the Contractor plays no role in this process of nomination but the Contractor will enter into a contract with him. He believed that there is a better way of engaging nominated sub-Contractor or supplier.

Besides, he also pointed out that the issue of direct payment made by the Employer to nominated sub-Contractor whether indemnify or not, is essentially problematic. If the sub-Contractor is placed under Contractor, all the payments should go to the Contractor first. If Contractor defaults in payment, there has to be procedures to make payment to nominated sub-Contractor directly.

Interviewee 4

Interviewee 4 stated that this clause should provide a procedures or guideline for any disagreement of Contractor with the choice of nominated sub-Contractors and supplier, instead of just implying the fact he can disagree by stating he does not need to enter into a contract if he disagrees. As far as he is concern, the Contractor should have the firm right to disagree with the choice nominated of sub-Contractors and suppliers made by the since they are going to be employed by him. And when he disagrees, the follow on actions are not clearly stated.

In addition, he totally disagreed with the procedures and conditions related to direct payment of the Employer to sub-Contractors and suppliers. The conditions for direct payment are not even stated clearly. Interviewee 4 believed the problem of this clause is essentially it is not fully drafted out.

Interviewee 5

According to Interviewee 5, this clause is very clear in term of role distribution of each party regarding to matter of nominated sub-Contractors and suppliers. He said that the Engineer comes from a professional body and he is the most suitable person to decide the choice of nominated sub-Contractors and suppliers, which is from the list provided by the Employer. He also reminded that Contractor not to disagree with the choice unnecessary and only with valid reasons such as incompetency and previous failures. He is not forced to enter into a contract with the person/s he disagreed with as stated in the clause.

However, he stated that the issue of direct payment between Employer and nominated sub-Contractors or suppliers under part 28 c) should be managed properly. He added that if this matter is not managed properly, it can cause difficulties for the Contractor to manage the works of the nominated sub-Contractors and suppliers and for the Engineer as the contract administrator.

Clause 31.0 Artisans and Tradesmen

Interviewee 1

Interviewee 1 stated that this clause is short and simple but it certainly is lacking of some important details. As the Engineer for the job, if the work of the artisan and tradesman is not part of his design, he obviously cannot and would not take responsibility for it including commenting on the works and certifying the overall project, which includes such works. He suggested that the Employer to be careful on such employment as there may not be anyone to bear the risks for such works.

In his opinion, if the works by others is part of the Engineer's design, then the role of the Engineer will definitely include coordinating and monitoring artisans or tradesmen's' work. Contractor should not and cannot deal with others as well as only the Engineer has the power in giving instruction to them. This aspect is missing in the clause. He also agreed that the clause does not cover issues like finding, reporting and rectifying discrepancies.

Interviewee 2

According to Interviewee 2, this clause hardly gives any information and therefore, it is certainly lacking in various aspects. Interviewee 2 agreed that the clause has not cover many issues including finding, reporting discrepancies between the works done by others and Contractor's and the Engineer's response to the matter. In addition, he was in the opinion that the clause should also have coverage on the various responsibilities and rights of the contracting parties.

Interviewee 3

Interviewee 3 stated that the term "or others" can be added after "artisans or tradesmen" for the title head to include other trades and skills in order to make the clause more complete and comprehensive. The clause is just the Employer wanting to state his rights to employ others if necessary. Besides, he also thinks that there should be a guideline provided to ensure the works done by artisans or tradesmen can be fitted together with the Contractor's and does not affect the progress of the overall construction work.

Interviewee 4

Interviewee 4 stated that this clause seems fine with a clear and simple sentence stating the Employer's right to employ artisans or tradesmen. But there are many implications of having others to work on site. He stressed on the coordination of all the parties on site. Obviously those others are not sub-Contractors of the Contractor and hence, have no obligations to the Contractor. They would also not likely to have the entire set of drawings and it is highly likely that there will be discrepancies in the works between Contractor and those done by others. Hence, coordination works must be carried out by either the Engineer or the Project Manager who represent the Employer.

Interviewee 5

According to Interviewee 5, there should be coverage of Contractor's responsibility in reporting artisans or tradesmen' works should there be any discrepancies with the Contractor's further on works. He suggested that the Contractor should be the one to search and report of discrepancies. And either the Employer or the Engineer should be responding to that depending on whether the contract between the Employer and the Engineer. It may not be appropriate to state the Engineer is to respond or coordinate because he may not be engaged for those other works but it is definitely important to emphasize on coordination of works among the parties working on site.

Clause 32.0 Indemnities to Employer in respect of Personal Injuries and Damage to Property

Interviewee 1

Interviewee 1 stated that it is always the Contractor's liabilities in respect of any personal injuries and damage to property. He explained that the Contractor is the one who in charge of all the supervision works under this contract and he has taken up insurance. Therefore, he should be liable for any damage, expense, claim or whatsoever as mentioned under this clause.

However, he also opined that should the injuries and damages be caused by Employer and his representative, there should be a reduction in liability. He emphasized that the form was drafted more than 20years ago when most Employers are government agencies and hence, tendencies/elements of protecting the Employer remains strongly in the form.

Interviewee 2

Interviewee 2 agreed that the Contractor shall be liable and shall indemnify the Employer against any personal injuries and damage to property that has occur on site. However, the statement of the indemnities given by the Contractor should not be defeated or reduced by reason of any negligence caused by the Employer or Engineer under part 32 c) according to him, is client friendly. From his understanding, 'indemnities given by the Contractor should not be defeated or reduced' means that the Contractor is to make the relevant claims from the insurance company but it is unclear from the clause itself what it actually required.

He said that if he were to take the clause literally, he disagreed that the Contractor should be responsible for any loss or damage caused by the Employer or Engineer's fault and added the clause should at least provide for a reduction in the proportion liable by the Contractor if the loss or damage is caused by any act or neglect by the Employer or Engineer. The reduction can come is sharing of insurance premium and basic sum payout.

Interviewee 3

Interviewee 3 stated the form is obviously a client friendly form which again is due to the fact that it evolves from the old JCT and PWD forms. Hence, it is common to amplify the Contractor's responsibilities including taking up the liabilities of the Employer. One of such example is that this even if the loss is due to personal injuries is due to Employer and his representative; there would not be any reduction in the liability of the Contractor. This is usually argued as the Contractor has taken up the insurance and the responsibilities here means making a claim. But most insurance would have a baseline for claiming. Say if the baseline is RM 5000, it means for a claim of RM10000, the insurance company will only fork out RM5000. If there is no reduction in liability, that means the entire first RM5000 will be payable by the Contractor

Interviewee 4

Interviewee 4 disagreed that the Contractor shall be liable and indemnifies Employer against all type of damage under part 32 c). This is because the Contractor is doing works under supervision and instructions of the Employer or Engineer. He added if the damage occurred is due to Employer or Engineer's fault such as design or compliance with an instruction, the risk should not allocated to the Contractor only but there should be some sharing on risks.

Traditionally, most forms were written in such a way for such a clause where one party (usually) the Contractor is to take up more risks. The other way around this matter is to price the contract sum higher based on the well-studied risks. For example, if Contractor is working on excavation work in a highly cables dense areas, he has to be prepared to damage some cables and therefore, he has to be prepared in his contract sum for such risks as he needs to indemnify the Employer fully on this matter.

Interviewee 5

According to Interviewee 5, it is true that the clause is lacking of consistency as it does not refer to matters of insurances covered in other clauses. He was unsure whether by simply stating the Contactor is to indemnify the Employer will really ensure such protection. He agreed that the method of protection should be specific and if the Contractor does not take proper measure for indemnification, the sanctions should be specified as well.

Clause 38.0 Validation Commencement Time And Delays

Interviewee 1

According to Interviewee 1, although the sentences of the clause are lengthy, but it is understandable for him. However he suggested that the structure of this clause can be revised to suit the modern principles of form with simple language.

He mentioned that for every commencement of works, there must first be possession of site unless there is a specific condition that commencement of works can be based on Letter of Award or as provided in elsewhere in the contract documents. He agreed that the clause is not exactly procedural or have sufficient coverage on these matters. And he was in the opinion that 'delays' here is referred to as delay in possession of site, not the general delays.

Interviewee 2

Interviewee 2 wanted to bring specific attention to the clause where it states that 'to give as much as possible site for possession'. Interviewee 2 found such idea to be unreasonable. He stated full possession of site must be given before he can start work. The clause obviously does not cover full possession but dwell on partial possession. Yet, the issue of partial possession is not explicitly stated.

Interviewee 2 also noted that the clause emphasizes on the Contractor delaying on the commencement of work but it is brief about remedies for delay in providing for full possession of site by Employer. The clause in part 38 b) fails to address that the Contractor should be entitled to possess the site before commencement of work as the foremost condition and explains on the effect of delay in full possession of site on issues such as the maximum time frame for delay.

He also agreed that the sentences of this clause are very long and hard to understand especially in part 38 b) and the use of delay in the title of this clause is inappropriate.

Interviewee 3

Interviewee 3 opined that it is just sufficient to just state in part 38 a) that "The Contractor shall commence the Works within the period named in the Tender…", the words "on Site" after "Works" are not deemed to be necessary. He added that this is to avoid any confusion. Besides, he also commented on the structure of the sentences under this clause to lengthy. In order to improve the clarity of the form, a long sentence should be avoided and the usage of short sentences should be emphasized.

Besides, he also disagreed with part 38 a) where the maximum duration between the acceptance of tender and the instruction to commence works is not stated clearly and also very importantly, the maximum delay for possession of site. Another major lacking of the clause is the condition precedent to commencement of work such as submission of performance bond, insurance cover note and/or submission of working program and method of statement including quality and safety plan.

Interviewee 4

Interviewee 4 noted that the clauses in IEM form is either really short or the sentences are very lengthy. He agreed that the title head 'Commencement Time and Delays' is not appropriate can be replaced by more appropriate terms such as 'Commencement Time and Possession of Site'. He added that the terms such 'in his opinion' are too ambiguous.

In addition, he believed that the coverage for the issue of commencement of works is really lacking especially in terms of the procedures prior to commencement of works. Besides, it is not specific on the issue of possession of site. According to him, the clause does not seem to emphasize on full site possession and instead explain on partial possession. Without possession of site, legally he should not be doing anything on the site. Even site clearing work should not be started as essentially the site is not his to work on.

It is covered here that if there is delay in possession of site, the Contractor shall be granted an extension of time. But the clause does not cover pro-longed delay in site possession, which does happen due to reasons such as problems with approval and lack of funding/capital for the project. The remedy for all parties under pro-longed delay such as suspension of the contract and/or determination of the contract mutually is not covered.

Interviewee 5

Interviewee 5 agreed that submission of performance bond, insurance cover note and/or submission of working program and method of statement including quality and safety plan should precede commencement of works and this is not clearly covered in the clause. He also commented that clause does not cover the maximum delay in possession of site and the remedies for contracting parties.

Interviewee 5 agreed that under part 38 b) ii) the matter regarding to charges and payments for way leaves should be included in clause 11 statutory obligation for better consistency and the use of the word 'Delays' is inappropriate. Other than that, the rest of the clause seems fine and sufficient with information or procedure covered.

Clause 39.0 Completion of Works

Interviewee 1

Interviewee 1 is in the opinion that it is difficult to define practical completion and therefore has been left to the discretion of the Engineer on a project by project basis. And that of course have led to an argument that different Engineer has different standard and emphasis for his project. But he believed that it is possible to have a few criteria to define practical completion, which can reduce the various unnecessary disputes that he had presided over. He also emphasized that if there are such disputes and the Engineer's opinion is being questioned, getting a third party such as an adjudicator to help resolving the matter may be more efficient.

He stated that this clause is short and simple yet failed to cover some essential aspect that needed to form a more complete clause. According to him, the issuance of the certificate of practical completion has been too described briefly under part 39 b). It does fail to address the issues with respect to testing and commissioning, time frame the Engineer has to issue a certificate of practical completion, and also the issuance of certificate also requires the Engineer to put in the date on which the works has been completed.

Interviewee 2

According to Interviewee 2, the terms 'to the satisfaction of the Engineer' under part 39 b) to certify for practical completion is totally ambiguous. He believed in having a proper definition with guideline attached for both the Engineer and Contractor to refer to when the work has reached the stage of practical completion.

Normally, the Contractor is informed the Engineer on the job being practically completed including all the relevant testing and commissioning of the facilities. Engineer is to call for a joint inspection after receiving the notice from the Contractor and proceed to agree or disagree with the notice. Even though in practice, all parties usually know how to execute such procedures but to not have coverage in the clause at all is rather inappropriate. Arguments will occur with Engineer disagree with the Contractor's notice and hence, procedures and conditions to obtain certificate of practical completion will be even more essential. He insisted that if certificate of practical completion is not issued, the Engineer must issue the list of outstanding works for the Contractor to work on to attain practical completion.

Interviewee 3

Interviewee 3 explained as the form get into the more critical issues, the lack of the forms starts to become even more obvious. One of such issues is practical completion. Interviewee 3 stated that there have always been intense arguments to ascertain the meaning of "practical completion" and still remain so. There have been various suggestions and most forms would attempt to leave it to discretion of the Engineer or the Superintending Office. He believed that practical completion can be defined generally in the form and more specifically in the Appendix.

The clause according to Interviewee 3 fails to cover the matter of testing and commissioning and tying these in with practical completion. This is very serious miss in this form. Interviewee 3 also mentioned that the clause does not tie in with authority requirements and whether that can be taken as condition precedent to issuance of Certificate of Practical Completion.

Interviewee 4

Interviewee 4 stated that this clause is easy to understand as it explains on the matters on completion date and certificate of practical completion. He added, this clause seems fine as the Contractor has to finish his works before or at the "Date for Completion" and the allowance for extended time is subjected to clause 43.

However, he mentioned that as practical completion is not covered elsewhere in the form, the coverage here in this clause is insufficient. The procedures for the issuance of certificate of practical completion can be clearer. After testing and commissioning, inspection of site, there should be a time frame for the Engineer to issue a formal certificate plus any schedule of defects as that will affect the timing for penultimate claim, return of retention sum, defects liability works and other contractual issues to be resolved. He urged that the clause should be improved as such. In addition, if the certificate is not issued, the Engineer must issue a letter or certificate stating the works that is outstanding so that the Contractor has a basis to work upon.

Interviewee 5

Interviewee 5 did not think it is appropriate to define practical completion as it is different depending on the project. Interviewee 5 opined that there is nothing wrong to leave it to discretion of the Engineer as a professional Engineer is trained to check and verify whether the job has been satisfactorily completed.

According to Interviewee 5, part 39 a) under this clause can include a statement or formulae for calculation of date of completion to improve the clarity attribute. He added that issue of testing and commissioning should also be included in the clause.

Clause 42.0 Partial Occupation by Employer

Interviewee 1

Interviewee 1 opined that contractually this clause is not doing too badly. However, from the managerial point of view, the clause does not facilitate good management procedures. He agreed that with a partially occupied site, work flow and procedures will be different. It is thus important to include the submission of a new working program, work method of statement and most importantly a safety plan. If the site were to have occupiers and users, say for example a 1/3 stretch of the flyover are put into use, it is important to take extra safety precaution for the end users, which is the road users in this case.

He also noted that certain authorities (councils, water authority) may also refuse to issue permits for occupation based on a partially completed site, especially if the original drawings submission does not include sectional completion and handing over. Overall, he reminded that partial occupation is not as simple to manage as the clause is putting forward and requires coordination from both Engineer and Contractor.

Contractually, he noted that clause also fails to touch on some issues such as section completion, uncompleted works and partial occupation without the consent of Employer

Interviewee 2

Interviewee 2 stated that it is not practical to partial occupation on an ad-hoc basis. It must be plan from the start. The major problems will lie in the authority requirements. If submission of drawings are done and catered for partial occupation then it is easier to facilitate such procedures. Otherwise, typically when the Employer takes over the portion of the site, he has to be responsible for all damages and maintenance of the works if the authorities refuse to take over. Thus he opined that partial occupation has to be managed careful and in fact be included in the planning stage and then to be properly tied in with the form and the relevant clauses.

The clause, in his opinion, should really include a provide guideline or procedures that covers both the Employer and Contractor's risks and various remedies for it in order to successfully facilitate partial occupation. He agreed that it is currently lacking in some contractual aspects and totally does not cover any consequential effects of partial occupation.

Interviewee 3

Interviewee 3 mentioned that the clause is drafted in such a way that he can facilitate partial occupation any time the Employer wishes to take over certain portion of the work. But in the practical situation of a construction project, he reminded that contract is only one aspect of the entire procedures of facilitating partial occupation. The other aspects involve dealing with the uncompleted site works and external factors like the authorities and end users.

Hence, he generally agreed that typical problems highlighted here are relevant and typical. But the problems would usually be left to the Engineer and Contractor to negotiate especially if the partial occupation is not planned for. Another note on this is if partial occupation is not planned for and the Contractor refuse to give consent, the clause does not cover partial occupation without consent.

He added that there are two ways of looking at partial occupation that is Employer wishes to take over certain portion of the job or the Contractor has delayed and the Employer offers to take over the portion of the job. Both he reckoned need to be handle differently.

Interviewee 4

Interviewee 4 was unsure whether loss and expenses can be claimed from damages caused by partial occupation. He mentioned that typically when the complete parts were taken over and users start to use the facilities, the uncompleted parts of the works would be affected. Sometimes it is unavoidable to have damages caused by the end-users and/or the public in general. And even though it is stated that the defects liability period for the occupied part is separate from the defects liability period of the whole project, it is unclear that damages caused by occupiers will be the responsibility of the Contractor. . He opined that there should be guideline or procedure to protect the Contractor's right to claim any loss or damage due as a result of partial occupation.

He added that as the site is partially occupied but the work is not fully completed for other parts, there may be additional tasks of re-organization of resources. It is very probable that the non-completed part will be delayed due to not being able to work on a site that is without other external disturbances. Hence, if there is a delay due to partial occupation, it is not mentioned whether it constitutes a reason for delay and be granted extension of time.

Interviewee 5

Interviewee 5 was in the opinion that the clause is generally good with coverage on many aspects that is typically associated with partial occupation. However, he was also in the view that partial occupation has to be carefully managed.

If partial occupation is necessary due to delay on Contractor's work progress, the Employer would actually be doing the Contractor a favor in taking over some portion and reducing some of his liabilities. But the clause does not mention the issuance of a certificate of non-completion for incomplete part by the Engineer. It is also likely that the Employer has to take up a separate insurance for the end users or occupiers which will incur additional costs. It is also not mentioned whether such costs is chargeable to the Contractor.

He also noted that certain authorities such as council may not be willing to take over a portion of the site and hence, affecting the maintenance aspects of the facilities. In some cases, special applications have to be put forward and to be subjected to approval. Overall, he did not think that partial occupation should be facilitated unless absolutely necessary.

Clause 43.0 Delay and Extension of Time

Interviewee 1

According to Interviewee 1, although the sentences of the clause are lengthy, but it is understandable for him. However he suggested that the structure of this clause can be improved to enhance reading and understanding.

He stated if one compared this form with those that are revised in the past 10 years, this form including this clause will significantly be found lacking as there have been immense changes in ways of carrying out a project including the emphasis on management and the emphasis on the rights of the Contractor and that has been translated in to the recent forms launched or revised.

He agreed that the list of reasons stated for extension of time application can be further expanded to include for more recent issues and risks. Besides, if there is a clear guideline to assist the Engineer to assess the application including the factors of consideration it will certainly enhanced decision making on extension of time. For example, if the Contractor submits his claim based on the documents and proofs required and stated in the clause, it will reduce the possibilities for the request of supplementary information by the Engineer. And if the procedures of assessment including calculation method are in place, Engineer would be making the assessment based on the procedures as such that every approval and the number of days approved as extension or disapproval is obvious and clear.

The current practice now is based on the calculation of the Engineer who presumably has the professional knowledge and skills to estimate the length of the delay beyond the original completion date and grant the extension time.

Interviewee 2

Interviewee 2 stated that the sentences of this clause are lengthy and try to discuss the issue under one single clause. He therefore suggested that this clause can actually divided into more sub-clauses based on different content or issue.

Interviewee 2 agreed that this clause basically gives minimal coverage on the procedures for notification of delay and application of extension time by the Contractor. For example, the Contractor and Engineer should know the documents to be included in the application and to make in application within certain amount of time after the occurrence delay event. It may be good also to provide on the requirement guidelines for the calculation. Typically, the practice now is Contractor will submit his version of the application and wait for the response from the Engineer. He insisted that this is a very inefficient way of working.

In addition, he agreed that the Engineer must be given of guideline on how to assess claims for time and he must reply within certain time frame. If all the claims are back log till the end of the project, it may be difficult assess the actual delay. Besides extension of time granted or not granted will directly impact the planning of the Contractor for further works especially the changes on the working program and his procedures of work. And

liquidated damages will be charged upon the reaching completion date. Even though the charges are reimbursable upon the approval of extension of time, deduction will be completely not necessary if certification of extension of time is given earlier.

Interviewee 3

Interviewee 3 commented on the structure of the sentences under this clause, which is not procedural or systematic in expressing the relevant issues in the clause. Again he reinstates that this is typical of this form. He totally agreed with the usage of terms such as "in the opinion of the Engineer", "fair not reasonable" being inappropriate and too ambiguous. He favored more quantitative terms rather than qualitative because it is always better to be able to measure and use numbers to prove a point, whether is the Engineer or the Contractor. He opined that the Engineer can have the power to decide on extension of time but it must be made within the boundary of the Attributes stated.

Other than that, he agreed that the reason for extension of time can be further extended to include other reasons and the calculation method for the length of the delay, which must take into the account of critical activities and concurrent delays should be included.

Interviewee 4

Interviewee 4 mentioned that he finds the clause contradicting because if the Engineer should have the absolute power to approve and disapprove of an extension of time based on his opinion and judgment, then there is really not much point of making an application. He also reminded whatever response (the extension of time granted or not granted) by the Engineer the clause does not give any statement to whether the Contractor can disagree. It may just be less time consuming if Engineer just issue the extension of time as he deemed fit.

Otherwise, he insisted that clause should have more comprehensive procedures to spell out the rights and obligations of the parties contracting. He understood that the forms are generally written to spell out the responsibilities of the Contractor because the Contractor unlike Engineer is not professionally certified as there is no exams and certification to take up. But he reminded not all Engineers administrating the contract are trained specifically in the area of contract management. So, procedures for everybody should be explicitly provided.

He was also in the view that the Contractor should be given the permission to appeal for extension of time if he can provide more evidences for the causes of delays. In his point of view, the Engineer should not be given so much power to the extent that he can make decision without any consent from the Employer as well.

Interviewee 5

According to Interviewee 5, this clause is generally sufficient to work out the issues typically occurring on site and in administration of the contract. However, he also note that there are some lacks such as Contractor to make an comprehensive submission for application of extension of time within certain period of time after the delay occurred and the Engineer provide his decision within a certain given time frame.

After the approval of extension of time and given approved days, the Contractor should immediately submit a new working program and his plan to improve and catch up on the delays. It is also important to make references to liquidated damages in order to warn Contractor of the consequences of delay.

The sentences of this clause are quite long but it is not a problem for him as he able to understand almost all of them in a very short period.

Clause 44.0 Loss and Expenses caused by delays

Interviewee 1

Interviewee 1 stated that this clause is short and simple but it obviously lacks coverage, which is very typical of the short clauses in this form. In the past, claims for loss and expenses are always hard to prove in the monetary value other than interest loss. Therefore, loss and expenses are only allowed for those related to delays. He does not agree with claiming for interest loss that is calculated with bank interest. He found that to be unreasonable because it is hard to prove such loss. However, if there is a strong reason that the default is by other parties and that can be translated to real monetary losses or to be translated to time losses, which is eventually equated with monetary losses, then such losses can be considered

Interviewee 2

Interviewee 2 was most concerned with the procedures for loss and expenses and again the standard which the Engineer's decision of approval or disapproval is based upon. He reckoned that procedures should be stated so that all parties can adhere to it strictly.

And if the Engineer does not have a basis for his approval or disapproval, the Contractor does not even have the chance to disagree with whatever decision made by the Engineer. He also suggested that time frame should be provided if the above suggestion is approved for him to manage his claims. Interviewee 2 opined that clauses as such really show the power of the Engineer and creating such dependencies on the professionalism of the Engineer.

Interviewee 3

Interviewee 3 stated that the terms "loss and expense by delays" are strictly those that is related to delays and hence, the reasons would be similar to those of the previous clause on extension of time. He agreed that aspects of claims for those other than delays can be included. And because this is such a short clause, he also suggested that this clause can be demolished and to be placed in clause 43 since it is just an extension of clause 43 regarding to manner of loss and expense due to delays.

Interviewee 4

Interviewee 4 thinks the clause is too short and does not discussed much on the issue. First he was in the view that the feedback from the Engineer regarding to the application of claim made by the Contractor is not covered well under this clause. With this clause it actual mean that Contractor has to submit claims and wait for the Engineer's approval, which may come soon or it can come at the end of the project. As a Contractor if he claims and the particular reasons for claiming is not approved, he can always approached it from the other perspective for his next claim. If all approvals and disapprovals come at the end of the project, some details may be forgotten or covered up already or it may be harder to proof.

He thought this is really giving Engineer a huge flexibility in managing his business in the project. He suggested that there should be a guideline somewhere for the Engineer to state his decision of approval or disapproval within the period given.

Interviewee 5

According to interviewee 5, this clause is short and simple and it is mainly to cover loss and expenses resulted from delays under clause 43. He disagreed with giving the Contractor right to disagree as it will complicate the process of assessment of such claims. He insisted that the Engineer is the best candidate to estimate the amount of such loss and/or expense due to delay based on his professional knowledge. But from his understanding, Contractors are expected to come forward and discuss or negotiate his stand point if he disagreed.

Clause 45.0 Defects After Completion

Interviewee 1

Interviewee 1 stated that his very first impression of this clause is that the typical defects liability period of 6 months if not otherwise mentioned is short and outdated. Typically, it will be 12 months. He agreed that the clause is lacking of definition of the term 'defects'. According to him, the term 'defects' is a common word and may lead to confusion if it is not properly defined under contract form. He added, the types of defects which the Contractor is liable for are not listed clearly under this clause. In his opinion, the purpose of why drafters of this form not define the term as mentioned above properly could most probably of their thought of regular form users can understand the term easily.

Besides, he also pointed out another problematic issue under this clause. This clause fails to cover the critical and emergency defects occur during defect liability period. In his experience, there are some construction works need immediate remedies as any delay of them can cause more serious problems. For example, if the leakage of pipe is detected, the Contractor should be given instruction to do his repair work within a day or two but if there is a pipe failure, a burst, it need immediate attention.

Interviewee 2

Interviewee 2 stated that there should be a time frame given for the Superintending Officer to generate the schedule of defects after site inspection, testing and commissioning and/or after issuance of certificate of practical completion. This is to create a more systematic project management framework and where the Contractor can refer to. Besides, he also thinks that this clause is lacking to cover the serving the notice of default including the calculation of cost of remedying the defects by others to the Contractor before such deduction is made; calculation for diminution in the value of work. He added, all these suggestions are to protect the Contractor's right instead of placing all risk on him only.

Interviewee 3

According to Interviewee 3, the guideline or procedure to act as the remedies for the Employer when the Contractor fails to carry out the rectification works for the defects is not provided. He provided some suggestions regarding to issue mentioned above. For example, the issuance of certificate of practical completion can be extended or the defect liability period can be lengthening if the Contractor fails to complete his task due to rectification works. In addition, this clause should cover further retesting and access for Contractor to come in to rectify defects in interviewee 3's opinion. He explained that this procedure of retesting is reasonable as the Contractor has to liable with all the testing works including retesting upon the Engineer's instruction as mentioned in clause 5.

Interviewee 4

Interviewee 4 stated that this clause is complete and comprehensive in term of content as it able to cover all procedures and guidelines required regarding to defects after completion in his opinion. However he suggested that the clause should define the term "defects" properly as he does not understand what kind of defects that Contractor needs to cover.

Interviewee 5

According to Interviewee 5, he disagreed with the time frame described for the schedule of defects generated before end of Defects Liability Period under part 47 b). He furthered, the words "reasonable time" used to describe the period for the schedule of defects to be generated is not appropriate and lack of comprehensive. He therefore suggested the words "reasonable time" can be replaced by a range of time, said three (3) to five (5) days maybe.

Besides, he also thinks that this clause should cover the permit for Contractor to relieve from his responsibilities, payment, removal of workmen and equipment and any continuous warranty if necessary. The Contractor should not bond to all these issues as mentioned above if he has done all his rectification works accordingly.

Clause 48.0 Final Account Certificates

Interviewee 1

Interviewee 1 noted that there is no coverage on penultimate claim, certification and payment. Also he stated the main lacks of this clause is time frames. He opined that with penultimate claim and payment and final account settlement, it is very important to have time frame. Time frame for Contractor to do submission of their claims and time frames for Engineer to certify and time frame for Employer to honor the certification should all be covered. For final account, the clause does cover the time frame for Contractor and Engineer but not the one for the Employer. Typically, contracting parties actually assume that it is the same as those in the interim certification and payment. But Interviewee 1 reminded that it is actually not stated here as so.

But even with the time frames given, they are not so practical. For example, based on his experience, he will suggest the period of thirty (30) days would be more than sufficient for the Engineer complete his certification work and he really does not need 3 months to do so. That is overkill. Besides, he agreed that the formula of calculation of payment can be included in the clause or in the appendix for this clause for reference purpose. This will make this clause more complete and comprehensive.

Penultimate claims and final accounts are also typical items subject to disputes as with the various addition and deduction included in along the course of contracting. Interviewee 1 stated that this form which is used widely in the public and private sector has seen various disputes, including issues on final accounts.

Interviewee 2

Interviewee 2 agreed that the clause does not clearly spell out the duties of the parties in penultimate claims and payment and the settlement of the final account. He opined that the coverage is poor as it attempts to cover the bits and pieces of these issues.

He agreed that with final account there should be a procedures set for the Contractor to examine final account done by the Engineer. The clause is drafted in such a way that Engineer's accounting of the final account does not need to be agreed upon by the Contractor and the decision is final. But he opined that there should a procedure of disagreement where the Contractor can disagree with final account where he thinks the amount is not appropriate due to matters such as rates or standard used; unreasonable deduction of money without the consent of the Contractor and so forth. Situations as such had happened in the past and will happen again. Therefore, a good contract form should help the contracting parties to cover as much probable situations as possible.

There had been comments among the Contractors of no such need to read and understand contract forms cause at the end of the day, the Engineer and Employer will make all the decision anyway and Contractor has no rights, just responsibilities. He does not think such culture is healthy at all.

Interviewee 3

According to Interviewee 3, it is interesting to note how this form does not provide for penultimate claim and certificate specifically, which is the usual procedure that follows the issuance of certificate of practical completion. Penultimate payment differs from the usual interim payment and should be treated differently as it includes releasing of a portion of the retention.

And as the typical of this form, there is no time frame provided for the Engineer to carry out their duties of certification and again for penultimate and final account certification, the time frame should be different from those of the interim claim.

Interviewee 4

According to Interviewee 4, part 48 b) and c) describe the final account certificates but it does not cover when the Engineer is to make the assessment of the defects in the schedule of defects previously mentioned in clause 45. He stated that final account settlement actually relies heavily on the completion of defects rectification and assessment of the remedy works.

In addition, Interviewee 4 opined the time frame given is rather odd. Contractor is to submit his claim 3 month after the certificate of practical completion but the Engineer has 3 months after defects liability or certificate of making good to certify. He suggested that it should be Contractor to submit 3 months before end of defects liability and Engineer has 3 months after to certify.

He also opined that there should be a final account meeting before the Engineer to make the certification so that chances of disagreement can be lessened.

Interviewee 5

Interviewee 5 stated that this clause has been able to satisfactorily deal with the matter of account. It is true that there are some lacks as pointed out but he opined that forms do not need to be so precise so that all parties have more flexibility.

But based on his experience he thinks that the guideline for Contractor to submit his claim should be included to speed up the process of certification. He added, that all the documents should be listed clearly under this clause to act as a reference for the Contractor for submission of claim or the claim formula can be better expressed so that the Contractor would know exactly what to do. He had many previous experiences of Contractors accusing the Engineer of delay in certification but it was the insufficiency in details of submission that causes the delay.

Clause 49.0 Effects of Engineer's Certificates

Interviewee 1

According to Interviewee 1, the clause no certificates whatsoever issued by the Engineer can be used as conclusive evidence in dispute resolution procedures. As far as he was concerned, in the arbitration process, arbitrator will

look at the certificates as well but just not to use it as the conclusive evidence. He did not think that is a problem except that it may be better tie the clause in with dispute resolution to give it a better definition.

Interviewee 2

Interviewee 2 agreed that this clause does not make exception for final certificates to have effect in dispute resolution proceeding/s with is common in other form. According to him, certificates can at least be evidence if not conclusive evidence. It will make the Engineer more careful when issuing any certificates.

Interviewee 3

Interviewee 3 disagreed with the concept of non-finality of the certificates issued by the Engineer as mentioned in this clause. He added that the policy of having non-finality of certificates lends a lot of uncertainty to the administration of the contract itself and the Contractor will be left to gauge if whatever he has done is "final" enough. With respect to that, he opined that it also gives the Engineer a double-shot and to conceal any possible negligence certification on his part.

Interviewee 4

Interviewee 4 stated that this clause is short and simple to understand. However he opined that a list of certificates can be provided to strengthen the term 'certificate', which can help both the contracting parties to know what certificates to be expected from the contract.

Besides, he disagreed that all the certificates cannot be conclusive evidence to the works done by the Contractor. He questioned the point of issuing certificates if it cannot be used as conclusive evidence. Engineer's certificates define his professionalism in making decision making and certification of the works and material but to state the clause as such is really contradicting with the rest of clause where the form believed the judgment of Engineer is absolute.

Interviewee 5

According to Interviewee 5, this clause is complete and comprehensive. He has no issues with the content of this clause at all.

Clause 51.0 Termination of contractor's Employment

Interviewee 1

According to Interviewee 1, although the sentences of the clause are lengthy especially in part 51 c), it is understandable for him. However, he suggested that the structure of this clause and the words used can be further improved.

Interviewee 1 commented that determination is a very serious issue in any contract form. It must be executed with many warnings and notices and good, valid reason. Although the reasons are stated here in this clause, it is the duties of the Engineer to really prove the case. Otherwise, lawsuits will certainly follows as the Contractor disputed such decision.

Interviewee 1 firmly believed that all conflicts and disputes must be solved on site with the Engineer as the administrator. Determination is the final resort and should not be considered until absolutely necessary. He opined that the new practice of adjudication by having a panel of adjudicators and experts would help greatly to settle any disputes regularly on site.

He also agreed that there is no coverage of suspension of works as a predecessor to determination in the event of default by either party. Say if the Employer did not pay the Contractor, he can execute suspension first before the final determination.

Interviewee 2

Interviewee 2 agreed that this clause does not have sufficient coverage on many issues. First, there are no procedures in serving notices to the Contractor on his default. Ample of warnings and notices of default should be given instead of just a notice of stating default. Besides he did not think that the reasons of default are comprehensive. He agreed that this clause fails to cover the situation when the Contractor is underpaid during

determination case when work is slowed down due to payment reason and he is then determinate because he had not work diligently. And it is also unclear whether the Contractor can disagree to the reasons for determination.

Secondly, the amount of time 14 days for the Contractor to react to the default is unclear as to whether he has to comply with the notice or to reply to such notice. And lastly, the procedure of closing up the project that ends in determination is not clear. He agreed that proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site as this may involve legality issues in terms of possession and legal title, final account closed up, sum to be recovered by either party, performance bond and so forth should be in place.

He once again reinstate the form has poor coverage and it is typically tried to cover the issues but does it in a fragmented manner.

Interviewee 3

Interviewee 3 commented that the form is a dire need for revision. The usage of words 'reasonable', 'diligently', and 'regularly' are too ambiguous and outdated. According to him, the trend of simple language is very much practiced already. It is time IEM form catches up.

Interviewee 3 stated the reasons of determination can be mutual or one sided. If it is a one sided decision, then there is usually due to the default of the other party. In such cases, the procedures for prior to determination must be very clear and precise. Under this clause, the Engineer only needs to serve notice receiving the notice to react upon the termination process. In his point of view, this is not a complete procedure at all. He also mentioned that the form does not cover other form of determination such as mutual determination and suspension of works.

Interviewee 4

Interviewee 4 opined that clause does not give room for discussion and negotiation before activating determination. He agreed that there is no procedure of disagreement of determination of the Contractor by the Contractor. He added that the Contractor should be provided with the right to disagreement especially the reasons for determination. He believed that it will enhance communication on site.

He agreed that the determination is a serious issue and if the Contractor really defaults, then, determination is the last resort but only to done after many warnings and notices of defaults. The clause is both weak in terms of the reasons of defaulting and procedures to execute determination.

According to Interviewee 4, the statement that Contractor only have fourteen (14) days after such notice receiving the notice to react is acceptable as long as reacting means he can discuss with the Engineer or he can formally reply to the Engineer on the matter. Interviewee 4 also agreed that the suspensions of works procedures are not in placed as well and the follow up action after determination such as proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site as this may involve legality issues in terms of possession and legal title, final account closed up, sum to be recovered by either party, performance bond and so forth should be in place.

Interviewee 5

Interviewee 5 stated that it is typical for the Employer to have so much power in handling the determination of Contractor's employment with the Engineer's instruction. He disagreed that the clause is incomplete where all the possible situations that could arise as a result of termination are not stated well because, the reasons only serve are the guidelines and the Engineer need to determine the seriousness of the default.

However, he thinks that the procedure of termination is not clear and comprehensive as the Engineer only needs to issue notice specifying the default of Contractor during termination process. He also agreed that the follow up action after determination such as proper estimation of what belongs to the Employer and Contractor respectively before request for removal or possessing of the unfixed material, goods and equipment on site as this may involve legality issues in terms of possession and legal title, final account closed up, sum to be recovered by either party, performance bond and so forth should be in place.

For the structure of this clause, he thinks the arrangement of sentences and structure is not appropriate. In his thought, most of the form readers cannot understand the content of this clause easily as the wording is too long and confusing.

5. CIDB 2000

Clause 7 General Obligations of the Contractor

Interviewee 1

According to Interviewee 1, with due care and diligence may seem ambiguous but it is actually an industry way of benchmarking the performance against what another contractor in the same position would have achieved. There this is a rather common term. Beside he opined that this is a quite a radical form which would list out the duties of the Employer and SO in Clause 6. But that does not reduce the Employer's right but make it more equitable among the contracting parties.

He stated if the design option module is activated, then the contracting parties have to follow the terms and conditions stated in the option. He believed that Option D calls for design to be done by professional designer. But he agreed that definition of design can be clearer as to not constitute it as a design and build contractor

He agreed that time frames for various activities related to managing discrepancies can improve the clause especially to report on discrepancies.

Interviewee 2

Interviewee 2 stated that if there are any ambiguous terms used due to lack of suitable words, guidance should be given to provide a benchmark. In this case, it will be the industry standard.
As CIDB is actually a build only contract, the Contractor should not have the responsibility to check the design. So any faults in design are prefaced by 'IF the contractor shall find'. He opined that discrepancies among the contract documents can be better cover the various documents (specification, supplementary conditions, BQ, dawings, Letter of Award) which may differ and type of discrepancies (contradiction, unclear, overlap) that may occur.

Interviewee 3

Interviewee 3 is concerned on the part about design. He wondered whether using Option module D will actually make this a design and build contract but in his opinion, the clauses here will be inadequate to cover for that. Hence, it is better to define designs which the contractor is supposed to undertake for a clearer clause.
Interviewee 3 mentioned that the consistency of referring to other clauses does exist but it is not a blatant one and can be reconciled by the SO. This sort of inconsistency is acceptable but of course improvements can be suggested.

Clause 13 Site Administration

Interviewee 1

Interviewee 1 acknowledged that the drafting of this clause and also the form in general is rather awkward. It tries to be complete and procedural but yet still has its miss outs. And there are still certain terms which is rather ambiguous and cannot be spelt out, which will then be left to the arbiter (the SO) to decide.

He agreed that the clause should provide for procedures for all contracting parties to follow on the issue of access. Power must be confer onto the SO to access the other locations to ensure the workmanship and/or material quality but not to the extent he can go at any time and without any advance notice. There are procedures in testing and opening up he can follow if he has reasonable doubts.

Interviewee 2:

Interviewee 2 agreed that even when the movement towards simple language is seen, some of the terms used are fairly old-fashioned like vexatious and reasonable which are definitely ambiguous. With terms like this, it is important to provide a benchmark as guidance. For example a guidance to what qualifies as 'reasonable'. In some cases, based on industry standard may not be so appropriate and the drafters are reminded to be careful with using the term industry standard.

This is generally an equitable form in terms of fairness and risk, but there are obviously still clauses that are skewed towards the Employer and this is one of such clause where the SO is at the liberty to object and required the Contractor to forthwith remove the persons he employed.

According to him, the guiding philosophy behind the drafting of the CIDB is based on everyday problems. Hence, the use of the title such as 'site administration' is seen. He also opined that the clause is trying to cover many issues under this one clause and hence, fail to be explicit in many parts.

Interviewee 3

Interviewee 3 opined that work method statement is an important element in managing the work on site. It is important to state the Contractor must provide for work method statement which will tie in with other documents such as quality and health and safety plan.

Also as a fair form general, to have the SO at the liberty to decide removal seems rather unfair. If it is the true CIDB style, there should be room for negotiations and hence this actual deviate from the style.

He mentioned that this is seen in a couple of clauses. He reckoned it could be the general drafting of this form, which is still unable to detach from the old school drafting style. Besides the drafting felt rather impromptu because the similar issues are pretty much everywhere whereby for better consistency and clarity, they should be put together under the same groupings. For example, all clauses related to site administration or site management can be placed one after another instead of finding the clauses at different locations (clause 5 work method statement and programme but site administration is Clause 13). Besides the form does not really have much cross referencing among the clauses. With inconsistencies as such, it will depend on the SO to resolve. Some inconsistencies are acceptable if it can be easily reconcile but some are rather blantant.

Clause 16 Labour

Interviewee 1

Interviewee 1 mentioned that this is indeed of the more incomplete clause and the drafting is awkward because it contradicts the general CIDB form drafting style for a practical and equitable form

Interviewee 2

Interviewee 2 agreed that this clause is lacking in completeness. Most CIDB clauses are very explicit but this one remain brief. Interviewee 2 mentioned As this form is not exactly a total Government form even though the initial idea is to replace PWD. It is also supposed to be catering for private employers whose commercial priorities certainly do not involve looking after the Contractor's workmen. And earlier clauses also state that Employer is not to interfere with Contractor's management.

Interviewee 3

Interviewee 3 agreed that this clause is lacking of completeness in terms of the workmen related issues and the various procedures related. He also mentioned this may be because the form has no commercial priorities to ensure protection for the workmen unlike the Government.

Clause 18 Other Contractors

Interviewee 1

Interviewee 1 stated that this clause is procedural but may be lacking in terms of risk distribution. CIDB is drafted on equitable principle but not each clause the risk is evenly distributed. Here the Contractor obviously has to take up more in ensuring the work that is related or passed on to him are checked before he takes over.

Interviewee 2

Interviewee 2 mentioned that because the Contractor is on site and taking over the work of others to tie in with his, he is the most direct person to detect any discrepancies or problems

Contractor has no choice but to work together with other contractors who are employed by the Employer. And As CIDB form is drafted with the philosophy of good management and has done a fair bit details for many details for other clauses, the clause can be more procedural to in terms of what to do after detection of discrepancies. He opined that SO definitely should be put to coordinate the work instead of leaving it to the Contract especially if he is also the designer.

Interviewee 3:

Interview 3 mentioned that works by other contractors are imposed on the Contractor. Basically, he has not choice in a sense because he is not given to right to say no if the Employer is getting someone else to do another part of work that does not constitute the Contractor's portion of works. Therefore, it is important to check the work done by others especially if his work is a continuation from the 3rd party's work. So he has to make sure that there are no defects or discrepancies. It does not seem fair to make this is a responsibility of the Contractor especially if the procedures are unclear.

Clause 19 Suspension

Interviewee 1

Interviewee 1 mentioned suspension of works by Contractor due to non-payment and the related procedures are covered in Clause 42. On the follow on actions after suspension of works, this is indeed one of the more incomplete clauses. This again points to the awkwardness in drafting because it contradicts the general CIDB form drafting style for a practical and equitable form

Interviewee 2

Interviewee 2 agreed that the contractor's right to suspend is not mentioned at all in this clause dealing with suspension even though it is clearly mentioned under the payment terms. For a form which prides itself on in being explicit, this is somehow missing out.

Interviewee 3

Interviewee 3 agreed that the Contractor's right to suspend is not clearly stated nor being cross referenced from another clause. This is not a serious consistency in his opinion as it can be easily reconciled by the SO. But the follow action is important because it deals with the practical sequence of events after suspension is activated and after work is resumed after a suspension.

Clause 23 Partial Occupation by Employer

Interviewee 1

Interviewee 1 opined that the clause is really explicit and to look at the issues stated here is over exhaustive. In terms of project management it may be good to leave things a little open so as not to inhibit the flexibility of the form. How partial occupation is managed has to be look at on a case to case basis.

Interviewee 2

Interviewee 2 stated that this clause is really explicit contractually. Strictly speaking, how to manage partial occupation and rest of the works after that is not part of the contract between the parties. He stated that it is not a contractual issue.

But since the idea behind CIDB drafting is about better implementation of project management in a project, it should spell out as much details as possible to be in line with the form principles.

Interviewee 3

Interviewee 3 mentioned that the problems brought up here is strictly speaking not contractual. It may be incomplete in terms of management but all it needs is probably some very general guidelines such as work method statement and working program.

Clause 24 Delay and Extension of Time

Interviewee 1

Interviewee 1 did not think that the other ground is too open because the Contractor has to proof that the grounds are actually valid and critical. The distinction is that it must affect the critical activities. And the method given her to assess EOT is very clear. The SO will have the discretion to look into the other ground and make a reasonable adjustment. The term reasonable and fair definitely cannot be spelt out. And hence the SO will be arbiter.

However, he agreed that by leaving things to the SO, it is in fact putting a fair bit of power on the SO and contracting parties really have to assume the SO's professionalism, unless it is proven otherwise.

Interviewee 2

Interviewee 2 opined that we need elaboration to be comprehensive but by the same token, it can be restrictive. And if we are too opened it also means that there is no elaboration and things are left to the discretion of the SO.

He opined that the clause stating any other ground actually is not too opened. This is because he is opinion in whichever form, the Contractor needs to prove that it is not only an event that is beyond anyone's control, it must be factually true and be proven related to the stated events and falls within the assessment procedures, which then allow the claim for extra time.

It is also a fact that CIDB still has fairly old fashioned language but the only advantage is that it is more elaborated. When things are left up to contract administration discretion, there is a risk that he does not practice professional duties due to various reasons – ignorance, commercial pressure, employer's pressure, arrogance or a combination of those. So yes, it is important to provide for guideline

Interviewee 2 also reinstated his view on the terms of act of God or Force Majeure. It is noted that the term here is a legal concept but the clause does not list out the list of things which constitute an act of God. Many things can fall under act of God but it does not mean that force majeure equals all these events. It is usually need to be proven in the Contract. The classic term is the inclement weather. It is neither the Government nor the Contractor's fault because it is a natural phenomenon but to claim extension of time, it has to follow the guideline of inclement weather.

Interviewee 3

Interviewee 3 opined that this clause did quite well in adding in the other ground for extensions of time. Interviewee 3 was in the opinion that even thought the clause puts in the guidelines for assessing extension of time, the actual methodology for assessing and evaluating the extension of time is not clear in order to achieve better facilitation of the clause.

He also agreed that the term 'reasonable and fair' is ambiguous as this makes the SO's role arbitrary when the parameters are not established. There is no yardstick to measure fair and reasonable.

Clause 27 Defects Liability after Completion

Interviewee 1

Interviewee 1 mentioned that the term 'works of reconstruction' does seems to be inappropriate as the normal definition will be minor rectification dealing with defects which appears at completion and during defects correction period.

He totally agreed that there is a need to serve notices including the calculation of cost of remedying defects before actually getting someone else to do it. Legally, it is not only the Contractor's duties as stated in the contract to return to the site that has already been handed back to the Employer especially during defects correction period but also he has the first right to inspect and repair the defects. Consent must be obtained from the Contractor if Employer will to get someone else to repair.

Interviewee 2

Interviewee 2 mentioned that the phrase reconstruction is serious. It is usually only used if patent defects are required. He is in the opinion that the definition of defects must be there. The form by having the defects liability clause gives the right to the Contractor to return to site. So with this provision, Contractor has the right to return to the site to attend to the remedial works. It is the Contractor's contractual obligations in this form to rectify defects.

However, if the Employer is to get someone else to the works, he must first get the consent from the Contractor. And if the situation is if the Contractor default by not working on the defects, Contractor is in breach but Employer must provide sufficient notice to prove the case that Contractor is in breach. Unfortunately, this clause is not clear about it.

He also agreed that the clause is not complete as it does not provide the time frame for the issuance of the certificate of making good defects and the follow on actions after the issuance of the certificate.

Interviewee 3

Interviewee 3 did not think it is appropriate to use the term 'reasonable time frame by SO'. In this sense, flexibility must be given to both the SO and Contractor to determine the time frame to generate the schedule of defects and for the repair or rectification of defects when appears during inspection for practical completion or over the course of the defect liability period. He also agreed that definition of defects must be provided, especially latent, patent, emergency or critical defects. This will enhance the clause rather than the phrase reconstruction.

Interviewee 3 reinstated that defects are to be taken seriously especially during defect liability period because end users will be affected. Unless certain guarantee are provided say by a developer, any defects after the defects liability, the house owners who is the 3rd party, has no contractual right. If 3rd party claim by Law of Tort, it may take ages.

Clause 28 Variations

Interviewee 1

Variation work is always an issue which can be argued about. For example, if there is unforeseen ground condition with cable running underneath, it can be argued as 1) there is a cable, this is a cumbrance and hence Contractor has not been given possession of site; 2) Contractor have deemed to inspect, so relocate at his own cost; 3) Yes Contractor has inspect the site and understand the soil condition but actual relocation of the cable is variation order; 4) Relocation can be considered as a cost of work instead of a variation order.

So it is noted that definition of what constitutes a variation is very important. And it must be noted that variation order cannot be done without a written instruction by the SO. And it is based on this instruction that the later valuation will be carried and variation order issued. He opined that it is bad management to get the Contractor to do the variation work first then followed up by instructions and then valuation and variation orders. The risk that the Contractor takes here will be big and it is unfair to expect that. It will be against the philosophy of an equitable form in CIDB 2000. But it must be noted that if the instructions is given, that means SO's directive is given; the contractor must proceed with the works.

He also insisted word such as 'shall' seen frequently in this clause is too convoluted and for the simplification of language and structure, it is recommended that the term 'must' be used.

Interviewee 2

In Interviewee 2's opinion, variation is not a good thing. It means changes to the works and sometimes even the design. By signing the contract, the contractor effectively consents to making changes. And every form will permit variations. Sometimes the Employer may think that it add value to his project because he is bargaining for another component with the post contract rates. Designers generally think that variation is a criticism to his original design. Contractor do not like variation orders which come late into the construction work and it is almost always a tedious task to prove that the variation resulted in a need for compensation in time and cost. While change is inevitable, detecting it earlier will provide a better cost and time savings. And it is this time and cost determination that creates a fair bit of construction disputes.

Besides there is always a problem of determining how much change is allowed. It is interesting how cardinal changes are brought up. There are many types of changes and the cardinal changes are defined as change beyond the scope of the contract. Whichever types of variation are involved, the clause already stated that the work must be carried out upon receiving instructions from SO. The Contractor cannot disagree contractually, but he can dispute the issue, especially if he can factually prove that the changes order is a cardinal change.

If the Contractor deemed that an instruction is a variation he must put in his application for variation or by giving a notice of his intention to make application later. If the application is rejected then contractor can put forward a claim. In fact claim for compensation is part of common law.

Interviewee 3

According to Interviewee 3 if there is discretion in works with the drawings and any method which is used then change the works whether it is addition or deduction will constitute a variation. Yes the clause is not properly defined in that sense. Variation need to be instructed and valued before a variation order is issued.

Hence it is important to issue an instruction with respect to variation and then proceed with variation valuation and finally order a variation order. In terms of valuation, types of measurement method – standard or specific should

also be listed. Although this can be resolved amicably among the contracting parties, if the proper sequence and procedures are in place and being followed, it will reduce the chances of disputes.

Clause 33 Construction Plant, Temporary Works, Materials and Good

Interviewee 1

According to Interviewee 1, deciding who owns various goods and materials at a particular point in time can be a surprisingly difficult task. Usually upon delivery the title of the goods are passed to the Employer but he cannot fully own the material and goods until such time the full payment is made. And it is noted that Malaysian standard forms does not have retention of title clause.

He agreed that the three (3) stated here can be separated to give all of them a better coverage.

Interviewee 2

Interviewee 2 opined that this issue has to be more clearly expressed in the standard form. By stating the client has full ownership may not be established in court. Unfixed material and goods delivered are always the issue. Once materials are affixed to the land, title passes from the contractor to the Employer even when the materials have not been paid for. If however the employer has paid for the materials and they are not attached to the land, the employer will only own the materials if the contractor to whom he made payment had title.

He also mentioned that temporary works including the design of teh temporary works is the responsibilities of the Contractor. Even though method of statement is not essentially a part of standard form, CIDB has required for it. And therefore, temporary works can be better incorporated in the work method of statement.

Interviewee 3

Another important aspect on title is the relationship between the main contractor and its sub-contractor or supplier. Normally it is implied that the latest titles for material and good will pass from the supplier or sub-contractor of the unfixed goods or materials to the main contractor at the time of delivery and it is not dependent on whether payment has been made unless the sub-contractor or supplier include the retention of title clause in their agreement with the Contractor.

Say if the main contractor does not pay the sub-contractor, the title has not been passed and sub-contractor and Employer do not have a contract even. Interviewees 3 strongly suggested that the clause must look at the issues of material by supplier and sub-contractor carefully.

Clause 34 General Responsibilities

Interviewee 1

Interviewee 1 does not think that it is a problem to split the clause up into general obligations and general responsibilities. But it is true that they could probably be placed closer to one another instead of one as Clause 7 and the other one Clause 7.

But he agreed that terms like to the satisfaction of the Superintending Officer is no good. This is outdated language. There is a tendency in the form to draft things with procedural provisions but when it gets too detail, it will stop and throw in the SO to decide and make judgment. Hence, the drafting in some clauses does not fit into the overall form philosophy and therefore the awkwardness.

Interviewee 2

Interviewee 2 opined that the least cross referencing can be done to link the two clauses together. With Contractor who does not read law, it should be just practical ‘how to do it’. He again mentioned that with any phrases which cannot be define, a guideline or benchmark must be provided to enhance the clarity of the clause.

Interviewee 3:

The term obligations is a legal duty of the contracting parties which underlines their contractual relations and responsibilities basically means what the contracting parties have to answer for, mainly arising out of the obligations. Interviewee 3 opined that it may be slightly complicated for the Contractor’s side without any legal

background to actually grasp this. In fact, to facilitate the ease of reading and understanding, both can be looked at together.

Clause 35 Indemnity Provisions

Interviewee 1

Interviewee 1 agreed that there are various types of sanctions which are implied but not stated in the clause and may be it will be good to be specific. For example if there is damage, the contractor must reinstate all damages. He can also affect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect. And the Employer can have the liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim for damages from any sums due to the contractor.

Interviewee 2

This clause basically put the Contractor to take up all the risks associated with his acts or failure to acts and those of his sub-contractor so as to hold the Employer harmless from any and all claims, even if it is caused by negligent acts or omissions of the Employer. It is difficult to say that such clause is unfair because Contractor readily accept the liability as way of doing business. However, he stated that even though the Contractor is taking calculated risks, the calculation is not done because they generally do not read enough.

In view that terms in a standard form are not negotiable, CIDB 2000 has in built a sub-clause to state that if the death, injury or damage are caused by any act or neglect by the Employer and his representatives, the proportion liable will be reduced. CIDB form according to Interviewee 2 is certainly more balanced but however, the new concepts (back then) were considered revolutionary.

His concern is it may be so easy to execute the reduction because the Contractor will need to prove that the fault is the Employer or his representatives. Often, there are grey areas. Again he is unsure what the calculation would be.

Interviewee 3

All Employers like this provision because it makes contractor liable for his own negligence and the negligent acts of his subcontractors. Contractors are used to accepting the provision as a risk he is to undertake. And in line with the equitable spirit of the CIDB form it actually says that the portion liable is reduced if the fault is the Employer or SO. But he was in the opinion that when it comes to execution, depending on the ground, there could be complications. As for the sanctions available if the Contractor did not live up to his duties to indemnify, he agreed that the clause can have a specific list and not to leave it hanging.

Clause 40 Assignment and Sub-Contracting

Interviewee 1

According to Interviewee 1, the Contractor usually has the its discretion to employ any number and any kind of sub-contractors as it sees fit in order to fulfil its obligations under the main contract. But in view of the rampant sub-contracting trend in Malaysia, Interviewee 1 believed that it is better if consent is obtained before the engagement.

And Contractor's obligations towards an employer would remain intact and unabated regardless of whether sub-contractors are privately engaged or nominated. Basically, to put in simply, Contractor would be liable to Employer for any failure, default or neglect on the part of its sub-contractors. Hence if it is nominated sub-contractor, most standard form allow the Contractor to raise objection against the nomination of any particular sub-contractor if it has reason to suspect the capability or ability of that particular sub-contractor. It is not unusual for Employer to require nominated sub-contractors to provide the former with direct warranties or indemnities in relation to the sub-contractors' performance.

Interviewee 2

It can be clearly seen that the idea of CIDB to implement good project management principles when it stated that no whole of works can be sub-contracted or assigned out. He opined that full sub-contracting is certainly difficult to manage.

Interviewee 3

There is no discussion of fairness issue for sub-contractors as such fairness depend on his agreement with the main Contractor. Employer will not have any contact with the sub-contractors. But he agreed that the clause is lacking in terms of sub-contracting and the issues cover under sub-contracting can be better extended in order to be more explicit.

He also opined that it is important that the Contractor have to have the similar conditions for the Contract to be translated to the sub-contract. Say the SOSCO and time sheets and so forth. Usually it would be better if there is a sub-contract agreement attached to the main form to achieve for better consistencies.

Clause 43 Effect of Superintending Officer's Certificate

Interviewee 1

Interviewee 1 stated that specific on the kind of certificates is not an issue because it is implied. He did not object to being more specific as long as there are no repetitions. He said that referencing can be one way of resolving this problem. He agreed that the clause has its inconsistencies, which need to be reviewed again.

Interviewee 2

It is difficult to put it as such that no certificates is bind and conclusive because certificates are binding. Say, after a certificate for payment is issued the Court will recognize that as the amount the Employer has to pay. If he did not pay, the Contractor can sue on that certificate. Basically certificates cannot be withdrawn unless to rectify errors with consent from both parties.

Interviewee 3

Interviewee 3 agreed that the kinds of certificates even though are already implied here, it would be better to be more specific by making references to them. Final certificate confers finality upon a certificate that is validly issued. It cannot be withdrawn or cancelled. So if the Employer's team have fail to put forward any issue or make a correct certificate, it cannot be provide as a basis to cancel or withdraw the certificate. So whether or not the form state so, certificates do has its effects.

Clause 44 Determination by Employer

Interviewee 1

Interviewee 1 strongly opined that CIDB has a lot of procedure provisions built in to facilitates clarity and comprehensiveness. Unfortunately there are certain things which escape the drafting team and certain things that are make open ended in order to give the form some flexibility.

And of course, when the there is a huge support for simplification of language and structure in standard form and use of clear and specific terms, there are still clauses that is against basic philosophy. That is why it was previously mentioned that the form is not exactly incomplete but the drafting is awkward and need some reviewing. It is after all a first edition of CIDB form.

Interviewee 2

Interviewee 2 agreed that usage of terms here is inappropriate. The good thing about CIDB is the in built procedures are clear. Otherwise usage of such terms should come with some definitions or benchmarks or standards. It is true the clause does not provide for more discussions and communications among the contracting parties to settle disputes internally but that is not contractual.

Interviewee 3

When Employer determines the contract, it is usually due to default of the Contractor or by mutual termination. It is very important according to Interviewee 3 to be extremely clear on the conditions for determination and not just use terms such as vexatiously or unreasonably. It does not protect anyone even the Employer who may get sue in return.

Clause 48 Recovery by the Employer

Interviewee 1:

The form will not make a clause to give the right to the Contractor to recover any amount due because the only amount due to the Contractor is payment and if he is not paid, he has to use the common law to recoup his losses or when the CIPAA comes into use, the recovery can be made through the act.

Interviewee 2

The clause essentially covers the Employer's right but not the Contractor's because Contractor will recover through common law.

Interviewee 3

Interviewee 3 agreed that it is not fair that Contractor's right is not cover but he still can do so under common law. He opined that the clause need improvement as it contradicts the basic philosophy of CIDB 2000 for an equitable form.

CIDB 2000 has 6 option modules for the users of the form to choose in order to streamline the contract form to the needs of the project respectively.

The Option Module A Bills of Quantities enables the users to use the contract as a BQ (Bills-of Quantities) contract. However, the clause does not state the conditions upon which this option module can be enforced. Under A2 'Quantities and Description', it only the states that quantities is deemed to be that set out in bills of Quantities. No mentioned on description or rates. The question remains whether the rate will follow the ones set out in the bills of Quantities or the original schedule of rate. Under A3 'Provisional Quantities', no reference is to clause on measurement. Basically, the existence of option module is commendable but without being properly cross referenced to all the relevant clauses, the clause may cause difficulties in the contract management of the project.

Option Module B Unfixed Equipment Materials or Goods Stored off Site does not make known of the conditions for the application of this clause and cross reference it to other relevant clauses. Without being properly cross referenced to all the relevant clauses, the clause (especially an option clause) may cause difficulties in the contract management of the project.

Option Module C Nominated Sub contractors and/or Nominated Suppliers as well does not make known of the conditions for the application of this clause and cross reference it to other relevant clauses. Without being properly cross referenced to all the relevant clauses, the clause (especially an option clause) may cause difficulties in the contract management of the project.

Option Module E Payment Bond is a rare clause in any contract form as it drafts out the Employer giving the Contractor a payment security deposit. Hence, it is important but not stated here the situations or conditions when this option can be enforced.

Option Module F Performance Security Deposit or commonly known as performance bond should be a must for any contract form instead of being list under as an optional clause. Various types of performance security deposit can be an option for the Contractor to take up but a form of performance security deposit is imperative.

Discussions on the Option Modules are done simultaneously in the interviews.

Interviewee 1

Interviewee 1mentioned that the option modules there to give some flexibility to the form usage. But he noted that flexibility only lies on the type of option modules and once the option is chosen, then the procedural is given and hence

He agreed to the referencing to the relevant clauses and it may be better to have conditions precedent to activate the option modules.

Interviewee 2

Interviewee 2 opined that it is not easy to achieve flexibility with option clauses. In fact many can be confused by it. He did not think that those options are really that helpful in creating flexibility because the issued covered there

are basically fundamental issues. He agreed that if there is a form that can be drafted to cover procurement routes he would be very interested to take a look.

Interviewee 3

Interviewee 3 stated that it is important to tell the users of how to use the option clauses as to which to use them and when they can be effective. Without a proper guideline, these options may be confusing and mis-handled.

APPENDIX D:

Sample of Raw Interview Transcript for Verification of Problematic Clauses

Meeting Date: 9th March 2013

Meeting Time: 230 pm -530 pm

Meeting Venue: Grand Margarita Hotel Lobby, Kuching, Sarawak

Interviewer	Mr K, I really thank you so much for making a time for us. It is so lucky of us to have you coming so coincidentally to Kuching to give talks on the new arbitration rules and the CIPAA act.
Mr K	No problem at all. My pleasure. I am just not sure if I can be any help. I took a glance at documents on the weighting you send me on my way here. I certainly can share with you my experience and opinions. But I have not look into it in a lot of detail.
Interviewer	Oh no, with your experience, I think you will be able to give us very valuable opinions and insights to the forms.
Mr K	Will try.
Interviewer	Thank you so much. But before I get started, there are a few formalities we need to clear up if it is ok with you.
Mr K	Sure. Go ahead.
Interviewer	Let me explain the purpose of this study. This is a study conducted in Unimas to study on standard forms of contract in Malaysia. And it will also form a part of a PHD thesis done under Curtin University Australia. Therefore, all information provided for by you will be used purely for academic purpose which may of course include the publication of papers in academic conferences and journal and of course a thesis. Is it alright with you?
Mr K	I have no problem with that.
Interviewer	Can I audio record our conversation?
Mr K	I am ok with it.
Interviewer	TQ. We have basically chosen the five major forms to study namely PWD 203, JKR Sarawak Form of Contract, IEM 89, PAM 2006 and CIDB 2000. From our emails correspondence, you mentioned that you are good to share your thoughts on PWD 203 and IEM 89. Is that right?
Mr K	Yes, I have worked with these two forms most over the years, so I am better off talking about those that I have most experience with.
Interviewer	I understand that our interview today will start with IEM 89, which is good as warm up. And if there is not enough time for PWD 203, we can do it on another day in Kuala Lumpur.
Mr K	Yes that is would be more practical. To be in depth about each form we need run through those clauses one by one. Better not to rush.
Interviewer	Can you maybe talk a little bit about your experience?
Mr K	I am a civil consulting engineer. You see I am over 70 years old so that makes me a really 'old' engineer. Over 30 years of experience.
Interviewer	Wow. This is indeed an honour. I see that you are still as active as an arbitrator, adjudicator as well. We met like 7-8 years back in the entry level arbitration course where you are one of the facilitator.
Mr K	Yes indeed. It was that long ago. Yes I still am doing arbitration works under Institution of Engineers Malaysia and also with the Chartered Institute of Arbitrator and also the KL Institute of Arbitrators. I guess being old also means that we were the only few around at the start. I remember we started to be trained as arbitrators we are the only 5 in the trade.
Interviewer	And I understand you also play a role in drafting the arbitration rules for IEM.

Mr K	Yes, yes.
Interviewer	Thank you for verifying your experience with us. I really thank you again for accepting this request to be interviewed, knowing how busy you are. So let us get started.
Mr K	No worries at all. I do want to share and in whatever way each one of us can do, we can try make some difference to the industry.
Interviewer	Let me explain to you the background of this research. The standard form chosen here is IEM 89. We have studied each of the clauses in IEM 89 extensively based on the method we had determined. This method we derived has 8 attributes which all clauses should have – clarity, comprehensiveness, completeness, consistency, flexibility, clear structured framework for project management, risk distribution and role distribution. The definitions of the attributes are as given on this piece of paper. Maybe you want to take another look and see if you are alright with them.
Mr K	(Pause) Yes I think they are good.
Interviewer	TQ. If an attribute is rated as 2 it means that a major redrafting is need and it has more than 8 problem areas; 4 means that a major improvement is required and it has 6-8 no of problem areas, 6 means that a general improvement is required because it has 3-5 problem areas, 8 means that a minor improvement is required because it has 1-2 problem areas and 10 means it is perfect for that attributes.
Mr K	Ok, I see how the rating is done. So based on the attributes, if there is certain no of problems under the said attributes a score is given. But you have to understand it may not be possible to talk about attributes by attributes. What I can do is share my experience about the clause and what I think the clause is lacking based on the attributes you provided. Would that be alright?
Interviewer	That is fine. We would not expect you to go through each clause each attribute. It was after all a 3 years effort which took us months for each form. Here is the list of problematic clauses which in academic study we think are problematic. And it is the aim of the interview to verify with users like you on the whether the clauses are really problematic. It may not be problematic at all or it could be lot worst. So we want to know that.
Mr K	I see what you mean. That is fine. So you found 28 problematic clauses.
Interviewer	Yes. The first being Clause 2.0 Duties of Engineer and Engineer's Representatives. Here is the score given under each attributes for this clause. Would you like to take a look at the clause and our scores? For example, completeness and comprehensiveness, it scores 6 because duties of Engineer are not stated. And without it, would there not be sufficient limitations to the power of Engineer. It is as if the Engineer is really powerful which of course cause the score of risk and role to be lower.
Mr K	Well, even though, the clause is called duties of Engineer and Engineer's Representative are usually not spelt out. Standard practice is older forms. The various duties of the Engineer as the administrator of the contract should be listed in the form such as Appendix or the duties can be summarized from the other clauses. I suppose it is better to have guideline for Engineers these days. I agree that the form does not give limitations to Engineer's power. You must understand in the old days, Engineer indeed truly and wholly represent the client. This form is drafted from the PWD forms which are the government forms. It is assume that if there is a limit, decision making is slowed down. But I agree that things have come a long way and this total no-limit ways of

	doing things are not really working.
Interviewer	Without limitations can only work if the Engineer uphold the integrity of the profession.
Mr K	Indeed.
Interviewer	And the other point that we found problematic is Engineer delegating duties to his representative and yet he reserve the right to disapprove certain works. Isn't that inconsistent, too open ended and risky for the Contractor?
Mr K	It is normal for Engineer to reserve right to disapprove certain issues when he found problems with it and his representative did not disapprove in the first place. By right, Engineer's representative should have always refer and seek for approval from him before giving instructions to Contractor. It is indeed confusing. Not good if the work has proceeded too far ahead and Engineer call for halt. Certainly a disputable issue.
Interviewer	Thank you Mr K. That is very helpful indeed. Moving on to the next problematic clause. Clause 3.0 Scope of Contract. Would you like to take a look at the clause and our scores first? (Pause). I find the term not well defined. It does not talk about scope of work at all. What is your opinion?
Mr K	I see you rate clarity low. Well, I suppose the first sentence of the clause is too lengthy and there should be a breakage within the sentence. To me there are pretty simple and easy to understand. Then again, I read this so many times. Elaborating the terms scope of work certainly will be helpful to make it more comprehensive.
Interviewer	Yes. Noted. The next problematic clause is Clause 4.0 Work to be the satisfaction of Engineer. Please take a look at the clause and our scores first. (Pause). I find this clause really provide high level of power to the Engineer, almost an absolute power. What is your opinion?
Mr K	This clause is simple and easy to understand. Contractor should comply with all the instructions given by the Engineer. He must complete the works to his satisfaction of him as well. That is way it should be. We don't want Contractor shirking from his responsibility to carry out the work n do it properly.
Interviewer	I have previously encountered Engineer who take this clause and demand Contractor to work in very unreasonable ways. Is there a problem with that?
Mr K	Well, like I said just now, the form is drafted based on the fact we trust Engineer as a professional person who will undertake his duties with integrity. To some extent yes we do have problems with these individuals but we cannot stop trusting our Engineer and the fact that they are professionally trained. And this industry has been here for so long. However, unreasonable the request is, there is a limit to the unreasonableness. I don't believe one person can control A-Z on site and Contractor has no say at all.
Interviewer	I get you mean. Great. How about the next one? Very much related to the last one. Clause 5 Engineer's Instruction. I m sure you have many interesting things to tell us here. Please take a look at the clause and our scores first. (Pause). What do you think of our scores? Do you think the clauses are lengthy?
Mr K	Again I m ok with it and of course I come from a view point of consultant or arbitrator who is familiar with this contract form. Certainly the sentences are lengthy now you point out. Maybe we can take note to improve on the structure of the clause to help other form users to understand. I certainly think so.

	You have to understand again the complexity of the structure of the clause is because IEM form is the combination and evolvement of older contract forms like the PWD form. The drafters over the years have not make revisions or checking on the arrangement of the clause. It has really been a while already. This is a 1989 form after all. But a new one is one its way. It should be out pretty soon.
Interviewer	That is good. Maybe through this work, those issues seen here in this form, we can see if they had addressed that in the new version.
Mr K	Oh yes. Definitely. But I think the new version is much better. I took a look. Much more up to date and comprehensive.
Interviewer	We will be looking forward for the new version then. And by the way, could you explain on the seven (7) days period of compliance? Will that post a problem as an unreasonable dateline to comply with instructions?
Mr K	Some contractors did complain to him that seven (7) days period for them to comply with the instruction is not really practical especially when they need to make some big repair works during construction. But as Engineer we know that seven (7) days is about complying, not completing the instructions. One way of improving this will be make to it clearer by stating that 'seven (7) days' period is for compliance and duration of completing is to be decide according to the need of the project. But on the second thought, seven (7) days to comply is not necessary good. It can be too long especially emergency cases.
Interviewer	Oh ya, emergency cases. That is very interesting. The clause did not cover that. So isn't that seven days too rigid?
Mr K	There should be coverage in the clause on emergency and critical situations. I remember many years as an Engineer for a job; we had a slope stability case. Or rather instability. I ordered immediate rectifications calling for machinery and manpower. The site representative was totally not cooperative saying things like he is not sure about the overtime and where to find excavator during off hour. I told him I will be responsible for the instructions and if he is offer extra money sure there is someone who is willing to do the job and if it is not a problem with shoddy workmanship, Contractor can claim. Finally he relented. We worked together till wee hours in the morning to resolve that. If we had to wait for seven (7) days, both bridge and road would have collapsed. It shows that even though time frame is there, it is not wrong for the Engineer to give instruction on this matter when based on his professional judgment it is difficult for Contractor comply within the contractual time frame.
Interviewer	So to conclude we can say that clause needs some form flexibility on the time frame provided including some platform for discussion and consensus for time frames and to provide for instructions related to emergency cases.
Mr K	I agree.
Interviewer	Now let us look at Clause 8.0 Sufficiency of Contract Documents. Please take a look at the clause and our scores first. (Pause). I find that it does not define contract documents even though the clause is about sufficiency of contract documents.
Mr K	Short and clear clause. Well, to define is good so as not to have confusion. Maybe to attach a list for project specific documents, say in the appendix.

Interviewer	Would you agree that the clause does not cover the issue of discrepancies in contract documents comprehensively in terms of procedures?
Mr K	Yes I can agree to that. And I think the term 'immediately' used to describe the time frame for contactor to write a notice specifying the discrepancy or divergence between the contract documents is somehow not appropriate. Maybe 'as soon as he discovered such discrepancy' may be more reasonable.
Interviewer	Ok. We shall note that. The next problematic clause on the list is Clause 9 Materials and Workmanship. Please take a look at the clause and our scores first. (Pause). What is your opinion? Is it reasonable especially in terms of the role and risk distribution to not state the conditions prior to such request of extra testing not intended for or opening up?
Mr K	It is a normal procedure for Contractor. The Contractor should provide Engineer with vouchers, manufacturer's test certificates to show that the material and goods are in good condition and as per the standard required. You see certain material stated in the specification has to go through standard operation procedure (SOD) testing after which the testing reports has to be send to the Engineer. But Engineer can request for further testing when he has reasonable doubts, especially when test reports can be unreliable. In this sense, I think it is not unfair. Many years back, I was on a project when the foundation used for the building that he has designed required timber piles. Although the timber piles came with SIRIM certificates, I was really unsure of the coating on the piles. So as the Engineer, I insisted Contractor provided for samples random chosen from the batch delivered to be sent for further checking and testing. The result did show that most of the timber piles had coating that did not comply with the standard.
Interviewer	What about the structure of the clause whereby opening up and testing are all combined together as one? Do you think it will affect the clarity of the clauses?
Mr K	Sentences of the clause are lengthy, but again with practice, I have no problem. But yes, I agree that that the structure of this clause should be revised for other form users.
Interviewer	The next clause, Clause 10 Unfixed Materials and Goods, is on similar issues that is related quality. Please take a look at the clause and our scores first. (Pause). Frankly, this clause worries me because it talks about a tough legality point here on ownership. Employer thinks that they are protected because Employer thinks that when they pay teh certain percentage, the material belongs to them. What is your opinion on this?
Mr K	You are certainly right. The clause does not deal with issues on ownership of such material and good. Titles material, goods and equipment are all usually under the Contractor because the Employer does not ask for a transfer of title. I have seen cases of suppliers coming in to remove the material as the Contractor has not been paying them. Employer has to realise that when they make payment/s to the Contractor, which has been set normally at 75% of the material worth, without the transfer of title especially as it is unfixed, they have no ownership. Either that or the clause has to be tightened up.
Interviewer	Great. What about Contractor to be fully liable for material and goods delivered? Is it possible for them to be fully liable? Is it fair to be fully liable?
Mr K	On the surface, the clause covers for matters on unfixed materials and goods. But if you look at it closer and deeper is clear that Employer is trying to protect himself from Contractor delivering the material and goods prematurely, claim for payment and take them elsewhere. So it insists on the

	Contractor to look after the material and goods delivered and are liable for the damages of such items. These are the obligations of Contractor and should remain as such.
Interviewer	I see. Thanks for your insight. For the next clause, Clause 11.0 Statutory Obligations. Please take a look at the clause and our scores first. (Pause). From our study, the clause is very lacking in a number of ways. It does not cover the sort of fees and charges, if the Contractor doesn't pay the fees and charges, what can be done, liaison with other authority by the Engineer. What is your opinion here?
Mr K	Well I agree. There is no coverage of the consequences or remedies if the Contractor failed to comply with payment of the required fees and charges. But in practice, for example, the Employer can hold Contractor's payment or deduct the payment from the Contractor for the amount he is accountable for. So it is not a big issue because that is what the Employer will do.
Interviewer	But this payment deduction method, will it cause any problems if the fees and charges are not properly listed in the first place?
Mr K	It can. But generally, Malaysian style, it is workable.
Interviewer	I see. So you mean most Contractors will not try to go against the Employer.
Mr K	Exactly.
Interviewer	What about liaison bit? I find that many times certain governmental authorities will not want to talk to Contractor but insist on designer or the Engineer to come to them.
Mr K	Yes, that is true. You see it may not be possible to be clear and specific on everything in a contract. Contracting parties must cooperate and help each other. It is appropriate to lend help to the Contractor to liaise with the relevant authority, when necessary. But the design must be his. As long as the design is his, he has to take such responsibility to get approval even on the matter of commencement of works.
Interviewer	Also we are thinking that would it be better for Part 11 a) and b) to be merge to make it more complete.
Mr K	I can agree.
Interviewer	The next issue on the list, Clause 12.0 Patent Rights and Royalties. Please take a look at the clause and our scores first. (Pause). Would not it be more appropriate to make reference to the external acts and regulations or law related to patent rights and royalties issues?
Mr K	Certainly the clause can be written with reference to the specific acts, regulations and law. Both are actually very different issue and it can help both Engineer and Contractor to be more aware of the issues involved. Fortunately, this clause is not so frequently needed. Contracting parties only really start looking at it when there is a problem. Maybe the Employer's representative to help to remind the Contractor on this matter so as not to overlook it.
Interviewer	But if Contractor fails to be careful and there are some legality issue say a penalty, how is that handle?
Mr K	I suppose the clause is lack of procedures of the method to indemnify the Employer. So it is just a friendly reminder kind of clause after all.
Interviewer	Does look like it. The next problematic clause we found is Clause 14.0 Inspection of Site. Please take a look at the clause and our scores first. (Pause). Don't you think that the sentences are just too long.
Mr K	Yes they are long but I can read. May be good to restructure it. It may be difficult for first timers.

	This is again a very old style of complex writing from the older forms. But those other forms such a PWD form and JCT form had gone through various revisions while this form is still as it is.
Interviewer	Have you had any problems with this clause before?
Mr K	Certainly. Some Contractors who had problems with the inaccuracy or insufficiency of the information or document given by the Employer and asked for variations. But I think a responsible Contractor must actually take the information or document given at his own risk. He should actually he must inspect and examine the site and its surrounding entirely at his own cost before submitting his tender. Contractor should not take this responsibility lightly. But of course, some information cannot be verified with just site visits but with tests. And it is of course not reasonable for Contractor to carry out any testing works as he has not won the job yet. Hence, it may be good if the clause can improved based on information that can be verified and information that cannot be verified to achieve better comprehensiveness.
Interviewer	Maybe the clause can be written in such a way that separate what can be verified and what cannot be verified to achieve better comprehensiveness.
Mr K	It is a way to go. But mind you, again, contract really cannot spell out everything. Many times practice is more important and the reasonableness of the persons handling the contract is even more important.
Interviewer	Yes, I believe that too. Many times it is the administrators of the contract that is problem. Not really the contract itself. Next on the list is Clause 18 Contractor's Superintendence. Please take a look at the clause and our scores first. (After a while). I myself is pretty confused with the word Superintendence.
Mr K	Now that is because you are young. And this is an old word. Contractor must provide superintendence means that Contractor must provide supervision on site, which also means that there must be representative/s of the Contractor on site who can act on and receive information on his behalf. He agreed that clause does not cover if the Contractor did not provide any site agents, which he found to be quite rare.
Interviewer	But what if the Contractor fails to provide a site agent. The clause does not seem to cater for that.
Mr K	Agree. Rare the Contractor doesn't provide a site agent. But it can happen.
Interviewer	What is your opinion of removal of site agent in this clause? Isn't too much of absolute power on the Engineer?
Mr K	It is normal for Engineer to reserve right to require the Contractor to remove any of his authorized agent at any time. Of course if it is not managed properly, it may cause dispute on site especially if the reason for removal is not strong or even a valid one.
Interviewer	And to do it as soon as practicable, is this term adequate?
Mr K	I have no problem with it. Engineer should be given such flexibility so that the Engineer can specify the time. If the offence is about site agent not attending to his work, then 7-14 days may be reasonable. If the offence is about stealing or fighting on site, forthwith removal may be issued
Interviewer	I see. What do you think of this next problematic clause, Clause 21.0 Removal of Workmen? Again please take a look at the clause and our scores first.
Mr K	This is talking about Contractor's personnel on site. Similar with previous one. Again it is normal for Engineer to reserve right to require the Contractor to remove any his workmen any time. Again it must be managed properly.
Interviewer	What is your opinion on words such as good character? How does one define good character?

	Even during employment, it is pretty hard for the Contractor to tell whether the fellow is of good character.
Mr K	Yeap, the word of such words is ambiguous. Can be confusing. I would think the clause need to add in types of reasons for removal. This clause covers the Engineer can remove the person who has caused delayed or is incompetent from the site. Again that is not so appropriate. I would say found negligence and reckless be a better replacement and can be one of the category of reasons for removal of workmen.
Interviewer	That is most helpful. I mean after all this contract has been used for so long, it will be quite easy to know the typical problems caused by workmen that requires removal isn't it?
Mr K	Yes.
Interviewer	Our next clause is a typical issue in most contract, Clause 23.0 Variations. Please take a look at the clause and our scores first. (Pause). I am honestly very confused with Contractor can only carry out variations made in writing but then the clause allow for verbal instructions. Do you find it problematic?
Mr K	There is without a doubt variation has to be issued in writing. No such thing as verbal instructions on variation. If there is a variation, then Engineer must put in writing and present it to the Contractor. Further action includes the submission of proposed of cost for variation. Unless the situation is urgent, negotiation should complete before execution of work. In arbitration, I really had many cases of parties not following the right procedures. So many conflicts could have been avoided.
Interviewer	So the clause really does not help to facilitate the administration then?
Mr K	It can be better.
Interviewer	Do you think the clause should also cover a different set of procedures for emergency situation where verbal instructions that will result in variations be handled?
Mr K	I agree. Verbal instructions which involved variation are sometimes necessary. There must be a specific way or guideline in dealing verbal instructions which involved a variation. And that has to be synchronized with the issue of verbal instructions and the valuation clauses.
Interviewer	That will mean the next clause, Clause 24.0 Measurement and Valuation of Works Including Variations. There must a synchronisation with this one right. Please take a look at clause and our scores first. (Pause). Do you think the Engineer should be the final decision maker to fix the rates and prices for variation work? Isn't that too one sided?
	I actually think it is necessary for the Engineer to be the final decision maker who fixes rates or prices due to extra or additional work when it comes to the event of disagreement. This is because Engineer is the contract administrator of the project.
Interviewer	But his decision is based on descriptions such as 'reasonable' and 'proper'.
Mr K	Now that is ambiguous and replacement for more appropriate wordings should be done. But you have to understand, these words are used because at the time, there is a lack of better words. If the Contractor should doubt the credibility of the Engineer's decision, he suggested that a professional third party can be engaged to assist in determining the rate and prices. He can try the practice of engaging adjudicator/s.
Interviewer	That is true. How good is their chance to get a fair valuation from the 3rd party?
Mr K	He had seen cases when Contractor actually wrote in to reject on variation works because the rates

	that he proposed in the schedule of rates is way too low. Contractor stated that he did not asked for additional money because that was his own fault and he had to fulfil the contractual obligations for finishing up the project. But to do extra, he refused and showed calculation of the losses he will make. The case went to arbitration and Contractor won.
Interviewer	I see. What do you think of the clarity of this clause? This is quite a long clause as compared to others.
Mr K	Sentences of the clause are lengthy and again it is understandable for me because of my experience with the form. But I really would like to see more movement towards using simple language to promote usage and enhance readability.
Interviewer	That is right. And the clause does not cover too much on measurement actually.
Mr K	The clause needs some changes in structure. Maybe some cross referencing. Measurement is covered in the following clause. Clause 23, 24 and 25 should be read together.
Interviewer	Yes, maybe we can take a look at Clause 26.0 Measurement. Please take moment to read the clause and our scores. (Pause). Any explanation on the terms "general and local customs" under part 26 c?
Mr K	Not a good term actually when there is no proper definition of the term and how that related to the measurement of works. Clause was written properly with evolvement from older British contracts in the early days after independence like how the PWD follows the JCT and IEM 89 adopts PWD. Some terms never got taken out. It is not necessary, outdated and confusing. I am more pro to making this an option clause rather than focusing on the measurement set out in the Bill of Quantities in general. For example, there could be an option for measurement for the Bill of Quantities and another for measurement for a contract based on drawing and specification with provisional items, which can be used to ascertained the quantities for variation works.
Interviewer	Also I know some forms like PAM they have a method of measurement set out in their own standards or surveyor standards. What about IEM?
Mr K	There is no IEM standard method of measurement to be read in conjunction here. Most methods of measurement have tried to reduce in-situ measurement to a minimum and when the necessity dictates, the procedure is as set out in part 26 b). In-situ measurement can be kept to a minimum and if possible completely eliminated by a carefully drafted method of a measurement that is based on working drawings in cases of variations.
Interviewer	That is a very helpful explanation. So this clause is lacking in terms comprehensiveness and clarity then. Let's look at Clause 27.0 Sub-letting and assignment. Please take moment to read the clause and our scores. (Pause). What is your opinion on assignment and sub-contracting?
Mr K	This is a big concern in Malaysia actually. It is so important to state in all contract forms that whole part assignment and sub-contracting are not allowed and to be done without Employer's consent. Assignment can only be done only for finance and insurance reasons only and sub-contracting the whole part of works is really to me, sub-selling the contract and this should not be allowed. I can tell you the immense difficulties in managing the project. Total sub-contracting had created many ailing projects in this country.
Interviewer	Should the Engineer be given the right to check the credibility of the proposed sub-contractor/s? O the clause to have some conditions precedent to engagement of sub-contractors.
Mr K	Of course. Condition precedent to the employment of sub-Contractor/s should be in place to

	govern the engagement the sub-Contractors. The Engineer must have the right to check the credibility of the sub-Contractors before endorsing the engagement. This is the one thing lacking in many contract forms.
Interviewer	Also I see that rights to assign by Employer are not covered.
Mr K	I would say to be fair, Employer's right to assign should also cover only for financing and insurance purpose and with the consent from the Contractor.
Interviewer	Ok. Another issue which I would like to raise up here is....privately engaged sub-contractors are not well covered by the contract form usually. My thoughts are if this can be improved, Employer will not have too many problems with sub-contractors leaving work because main contractor does not pay them.
Mr K	But please remember nominated sub-Contractors and privately engaged sub-Contractors have different level of protection from the Employer. It is more common that there is a specific clause in the form to cover for the nominated sub-Contractor but not for those privately engaged ones. Having to say, that I can still agree that the clauses somehow to cover whether the sub-contracting is labour only or labour, machinery and material only and work out better on the different rights and responsibilities of the parties. Also, I am not against sub-contracting, mind you. It is an essential part of contracting due to specialization of works in today's construction industry.
Interviewer	Yes I understand. You mentioned nominated sub-contractors and supplier. That brings us the next Clause 28.0 Nominated Sub-Contractor and/or Nominated Suppliers. Please take moment to read the clause and our scores. (Pause). What is your opinion the power of Engineer to nominate ANY sub-contractors or suppliers? Is that reasonable or beneficial to the project?
Mr K	The Engineer is normally given the power to nominate any sub-Contractors or suppliers because of his professional judgment and usually the list of nominated sub-Contractors or suppliers are available from the Employer. But I think if there is involvement of Contractor in the process of selecting the nominated sub-contractors or suppliers, it will make this clause more complete. Even though, the Engineer will still be the final decision maker, the Contractor can play his role by giving comments or suggestions on the nominated candidate/s. Nominated sub-Contractor and suppliers are usually tested and tried by the Employer in other projects or they are the few of the specialty people around in the industry.
Interviewer	I find that the direct payment bit not so adequate in terms of how it can cause disturbances to the Contractor's governance and management of the nominated sub-contractors. Like stated in part 28 c). What do you think?
Mr K	The nominated sub-Contractors or suppliers are normally placed under Contractor. Therefore, all the payment should go to Contractor before he pays the nominated sub-contractors or suppliers. Yes it is true the clause put forward that Employer is entitled to pay to such nominated sub-Contractor directly upon the certificate of the Engineer. I can agree it can cause confusion or management problem. If the Contractor is fully responsible for their works, actions or defaults, the Employer should not interfere with the management of Contractor. That is the general rule. Maybe the procedures can be better drafted. Say, unless there is a solid proof that no payment has been made, then in the case nominated sub-Contractor, Employer can involve. But the involvement must be staged out. Management problem between Contractor and nominated sub-Contractors or suppliers should be handled by Contractor himself only so that Contractor can

	maintain control of the entire team on site.
Interviewer	Thank you for your input. Look like this is very good discussion but it may take more than the1-2 hour allocated. Is it alright with you as we are already over an hour already?
Interviewer	No problem. I don't have any appointment till 530 but that is meeting a friend in Kuching.
Mr K	Thank you for your kind accommodation. I shall speed up as much as I can. Moving on to Clause 31 Artisans and Tradesmen. I will have to ask you again to read the clause and scores. (Pause). What do you think of this clause and our scoring on attributes?
Mr K	Well, this clause is short and simple from the clarity perspective but it certainly is lacking of some important details. From the Engineer's perspective, if the work of the artisan and tradesman is not part of his design, I obviously cannot and would not take responsibility for it including commenting on the works and certifying the overall project, which includes such works. I would not sign the papers for it. The Employer must understand and be careful on such employment because there may not be anyone to bear the risks for such works done.
Interviewer	Yes, I have met Employer who expects that. They wanted to save design and supervision cost.
Mr K	Exactly. But If the works by others is part of the Engineer's design, then the role of the Engineer will definitely include coordinating and monitoring artisans or tradesmen's' work. It is unfair to expect Contractor to deal with it. He should not and cannot deal with others contractor/s under the engagement of the Employer. Only the Engineer really has the power in giving instruction to them. I would say this aspect is missing in the clause. He also agreed that the clause does not cover issues like finding, reporting and rectifying discrepancies.
Interviewer	And it seems to be lacking of procedures and coverage on finding, reporting and rectifying discrepancies.
Mr K	I agree to that. That is quite important on a site that needs coordination works.
Interviewer	Ok. Moving to another completely different issue. Clause 32 Indemnities to Employer in respect of Personal Injuries and Damage to Property. Please read the clause and our attribute scores. (Pause). Is it reasonable for the form to state that it is the Contractor's liabilities to any personal injuries and damage to property without separating the cause of such events?
Mr K	Well, it is always the Contractor's liabilities in respect of any personal injuries and damage to property. Contractor is the one who in charge of all the supervision works under the contract and he should have already taken up insurance. The clause will remind him to be serious about taking up insurance. With insurance he should then be liable for any damage, expense, claim or whatsoever as mentioned under this clause.
Interviewer	What if the injuries and damage is not caused by the Contractor's fault or problem?
Mr K	Yes certainly the injuries and damages can be caused by Employer and his representatives like wrong instructions, design variations. Then, there should be a reduction in liability. Again you remember the form was drafted more than 20years ago when most Employers are mostly government agencies and hence, tendencies or the elements of protecting the Employer remain strong in the form.
Interviewer	Yeah that is really true. Even though the form is more used in the private sector, somehow the evolvement from the government forms are still obvious. Hope this will be less in the new revisions. Now, let's move on to another clause. This one is a time related clause. Always a debatable clause

	I suppose. Clause 38 Validation Commencement Time And Delays. Please take a moment to read the clause and our scoring. (Pause). What do you think of our scores?
Mr K	Understandable for me. Still the sentences are lengthy if using your criteria. Structure can be can be revised to suit the modern principles of form with simple language. On the completeness and comprehensiveness level, we must note these points. For every commencement of works, there must first be possession of site unless there is a specific condition that commencement of works can be based on Letter of Award or as provided in elsewhere in the contract documents. He agreed that
Interviewer	That is certainly not clearly spelt out in this clause.
Mr K	The clause is not actually procedural nor have sufficient coverage on these matters.
Interviewer	Right. Also I am confused with the word delay here. I thought delay is cover later on in other clauses. And it does not clarify the terms 'delays' here at all.
Mr K	I think 'delays' here is referring to delay in possession of site, not the general delays.
Interviewer	Alright. Thanks for clarifying that. On the same category, the next problematic clause is Clause 39.0 Completion of Works. Please take a moment to read the clause and our scoring. (Pause). I found that it is not very clear on the term practical completion. What do you think?
Mr K	It is actually difficult to define practical completion as in to list out what constitute practical completion. If, without definition it is left to the discretion of the Engineer on a project by project basis. And that of course have led to the argument that different Engineer has different standard and emphasis for his project. But to list a few general criteria to define practical completion, that can be done. I know some forms have attempt to and are quite successful. In some arbitration cases which I have handled, the disputes is actually unnecessary, if the criteria has been there in the first place.
Interviewer	Since this form at this point in time does not have such definition, is there any advice you can give from your experience in handling related arbitration cases. .
Mr K	Maybe the contracting parties, if there are such disputes and the Engineer's opinion is being questioned, can try getting a third party such as an adjudicator to help resolving the matter. Adjudication by far in my opinion is the most efficient method.
Interviewer	That is great! Are there any other problems you have had with this clause that you think is important for us to note here?
Mr K	This clause is short and simple after all. And that is where it fails to cover some essential aspects that are needed to form a more complete clause. The issuance of the certificate of practical completion is too briefly described under part b). Basically it fail to address the issues with respect to testing and commissioning, time frame the Engineer has to issue a certificate of practical completion, and also the issuance of certificate also requires the Engineer to put in the date on which the works has been completed. This can have rather serious consequence should issue of payment come into the picture.
Interviewer	Yes. We had found the same thing too. Ur insight has just verified us. TQ. Now, for the next problematic clause, Clause 42.0 Partial Occupation by Employer. Please take a while to read the clause and our scores. (Pause). As you can see from our scores, this clause really does not cover many issues. Doesn't a

	partial occupied site have completely different set of issues and matters to handle?
Mr K	Contractually this clause is not doing too badly. But, from the managerial point of view, this one certainly does not facilitate good management procedures. I agree that a partially occupied site, work flow and procedures will be different. So with partial occupation, there must be submission of a new working program, work method of statement and most importantly a safety plan for the rest of the work. Eg. When 1/3 stretch of the flyover are put into use, the site now has road users on it whilst the work in on going on the other stretch. It is important to take extra safety precautions for the occupiers, end users.
Interviewer	And I believe certain authorities such as councils and water authority may also refuse to issue permits for occupation based on a partially completed site especially if the original drawings submission does not include sectional completion and handing over.
Mr K	Yes, I agree. Partial occupation is really not that simple to manage as the clause is putting forward. It requires dedication and coordination from both Engineer and Contractor.
Interviewer	Anything else you think should be included?
Mr K	Well, it does not touch on some issues such as section completion, uncompleted works and partial occupation without the consent of Employer. Other newer forms like CIDB and PAM forms certainly have started to include these sorts of things.
Interviewer	Yes, that is very helpful. And back to time again. This form seems to jump about on the related issues. Would that make it difficult to be consistent and make referencing to?
Mr K	Yeah, this is a structure problem. New forms tend to be better in that sense.
Interviewer	So yes, Clause 43 Delay and Extension of Time. Please take a moment to read the clause and our attributes' scores? (Pause). What do you think of our scores?
Mr K	Clear to me but lengthy sentences. Will need to re-structure so that it can be read and understand more easily. If you compared this form with those that are revised in the past 10 years, this form including this clause will be found significantly lacking. There just have been immense changes in ways of carrying out a project including the emphasis on management and the emphasis on the rights of the Contractor and that has been translated in to the recent forms launched or revised.
Interviewer	From our study of other forms, yes, that is certainly the case. If we look at the list of reasons for example for the application of time. This list is rather small. And there is not guideline for Engineer to assess Extension of time.
Mr K	The list of reasons for extension of time application can definitely be further expanded to include for more recent issues and risks. Guideline is good. Typically for application of EOT, certain documents should be there. If the Contractor submits his claim based on the documents and proofs required and stated in the clause, it will reduce the possibilities for the request of supplementary information by the Engineer. And if the procedures of assessment including calculation method are in place, Engineer would be making the assessment based on the procedures as such that every approval and the number of days approved as extension or disapproval is obvious and clear.
Interviewer	What is the current practice now when using this form?
Mr K	The current practice now is based on the calculation of the Engineer who we of course assume has

	the professional knowledge and skills to estimate the length of the delay beyond the original completion date and grant or not grant the extension time.
Interviewer	Ok. Again that can be problematic isn't it? What about Clause 44.0 Loss and Expenses Caused by Delays. This delay here I presume is our usual delay in schedule.
Mr K	Yes certainly. Can be confusing.
Interviewer	Please have a read of the clause and our scores. (Pause). What do you think about our scores? It only loss and expenses are only allowed for those related to delays though.
Mr K	Again a short and simple clause. Another typical clause that lacks coverage on issues necessary. In the past, claims for loss and expenses are always hard to prove in the monetary value other than interest loss. But I don't agree with claiming for interest loss that is calculated with bank interest. It is hard to prove such loss.
Interviewer	What would your suggestion be? Should other reasons be allowed as claims?
Mr K	If there is a strong reason that the default is by other parties and that can be translated to real monetary losses or to be translated to time losses, which is eventually equated with monetary losses, then such losses can be considered.
Interviewer	That is great. Hopefully future revisions can account for that. Let see. We have 4 more clauses to go. Will run through this quickly.
Mr K	Is ok. It is a good discussion.
Interviewer	Clause 45.0 Defects After Completion. Another big area in contract forms. (Pause). What is your opinion on this one?
Mr K	My first thought is the typical defects liability period of 6 months if not otherwise mentioned is short and outdated. 12 months should be the minimum.
Interviewer	I don't see any definition of defects. Is that important?
Mr K	'Defects' is a common word, which meaning actually can vary at different stages of the work. So without a definition in this context may lead to unless of course we used the practice standard.
Interviewer	Can you elaborate on practice standard?
Mr K	It is a standard word, a common term. So the purpose of why drafters of this form not define the term could most probably be that they think any regular form users can understand the term easily. But by not defining the types of defects which the Contractor is liable, that is not good. I mean a critical and emergency defect is different as compared to usual defects. And any types of defects can occur over the course of the project and during defect liability period. There are some construction works need immediate remedies as any delay of them can cause more serious problems. For example, if the leakage of pipe is detected, the Contractor should be given instruction to do his repair work within a day or two but if there is a pipe failure, a burst, it need immediate attention.
Interviewer	I see that there is a difference here. So your suggestion is to include different types of defects and how they should be handled instead of definition of defects.
Mr K	Exactly.
Interviewer	Alright. Now let's move on to another big issue. Money matters. Clause 48 Final Account Certificates. Please take a moment to read this clause and the related scores. (Pause). There is essentially 3 components here from my understanding but there is no coverage on penultimate claims and certificates and payment. Why do you think it is like this?

Mr K	Well, it should be covered. There is a tendency to view it as part of a progress claim. This is of course a different case. As penultimate are related to defects liability issues and work completion issues. But my concern is time frames or the lacking of them. As penultimate claim is related to payment and final account settlement, it is very important to have time frame. Say, time frame for Contractor to do submission of their claims and time frames for Engineer to certify and time frame for Employer to honor the certification. Typically, contracting parties actually assume that it is the same as those in the interim certification and payment.
Interviewer	But it will generally take longer and there are more things to assess.
Mr K	Exactly. Some form of coverage is will be good.
Interviewer	What about for time frame for final account?
Mr K	For final account, the clause does cover the time frame for Contractor and Engineer but not the one for the Employer. But even with the time frames given, they are not so practical. For example, based on my experience, a period of thirty (30) days would be more than sufficient for the Engineer complete his certification work and he really does not need 3 months to do so. That is overkill.
Interviewer	Maybe a formula for calculation can be included.
Mr K	Not necessary but it can be included say in the appendix for reference purpose. This will make this clause more complete and comprehensive as mentioned in your attributes. Penultimate claims and final accounts are also typical items subject to disputes as with the various addition and deduction included in along the course of contracting. This form widely in the public and private sector. So it has seen its fair share of disputes, including issues on final accounts.
Interviewer	And now onto another short clause which we think even though short, but can be very problematic. Clause 49.0 Effects of Engineer's Certificates. Please have a read of the clause and our scores. (Pause)What is your opinion on no certificates whatsoever issued by the Engineer can conclusive?
Mr K	I think it is a waste of time. As far as I am concerned, in the arbitration process, arbitrator will look at the certificates as well but just not to use it as the conclusive evidence. So even it is stated as so, they are still assessed. But this one may be better tie in with dispute resolution clauses to give it a better definition.
Interviewer	Ok. And our last problematic clause, Clause 51.0 Termination of contractor's Employment. Please have a look at the clause and the scores. (Pause). What is your opinion on this clause?
Mr K	Not hard to understand but again lengthy sentence and simpler structure of sentence will be good. Determination is a very serious issue in any contract form. It must be executed with many warnings and notices and good, valid reason. Although the reasons are stated here in this clause, it is the duties of the Engineer to really prove the case. Otherwise, lawsuits will certainly follows as the Contractor disputed such decision. All conflicts and disputes must be solved on site with the Engineer as the administrator. Determination is the final resort and should not be considered until absolutely necessary. Again I like the new practice of adjudication by having a panel of adjudicators and experts would help greatly to settle any disputes regularly on site.

Interviewer	I see that there is no coverage on suspension of works in this form or related to this clause. Can suspension of works be made as a predecessor to determination in the event of default by either party? Of course there is not coverage on Contractor to determinate the contract especially in the event of no payment.
Mr K	Nope you are right. It is not seen here. If the Employer did not pay the Contractor, he can execute suspension first before the final determination. That is practice. Even though the contract form is not clear, comprehensive, complete, fair and so forth according to your attributes, it is for us to remember that, practice and industry has shown through cases of how many things can be accomplished. Not all cases are won by Employer but in fact many cases are won by contractors. So, not so good standard forms will not nail the coffin.
Interviewer	Yes Mr K I really thank you for your time. Your advice and perspective is very refreshing. Really sorry for taking almost 3 hours. I hope you still can accommodate me for the interview for the PWD forms.
Mr K	Sure. So you will be coming down to Kuala Lumpur?
Interviewer	Yes. Would you be around say around 18th March. I have some other interviews.
Mr K	I should be around later of the week. I have arbitration early in the week. Thurs and Friday will be good. You email me maybe to confirm date and time.
Interviewer	I will do that. Thank you again. Also may I also have a few other contacts for others in West Malaysia to be interviewed for other forms?
Mr K	I can think of a few.....
Interviewer	Thank you so much. It is such a pleasure talking to you again.
Mr K	No problem. I look forward for your research results.
Interviewer	Certainly hope it can provide some new insights to construction contracting. TQ, TQ, TQ again.

APPENDIX E:

Relevant Clauses in NEC3 and their Interpretations

Section 1 Clause 10.1 Actions

This clause stresses employer, Contractor, Project Manager and Supervisor action to act as stated in the contract and in a spirit of mutual trust and co-operation.

Section 1 Clause 11.2(2) Definition of Completion

This clause states that completion is when the Contractor has done all the work that the works information states he is required o do by the completion date, and has corrected notified defects which would have prevented the employer from using the works and others doing their work.

Section 1 Clause 11.2(5) – Definition of defect

Clause 11.2(5) defines a defect as:

- A part of the works which is not in accordance with the works information, or
- A part of the works designed by the Contractor which is not in accordance with the law or the design which has been accepted.

Section 1 Clause 11.2(16) – Site Information.

Site information is defined in Clause 11.2(16) as information, which:

- Describes the site and its surroundings, and
- Is in the documents which the contract data states it is in.

Section 1 Clause 11.2(19) Works Information

This Clause defines information which either specifies and describes the works, or states any constraints on how the Contractor is to provide the works. The Clause also states that works information is either:

- In the documents which the contract data states it is in, or
- In an instruction given in accordance with the contract

Section 1 Clause 12.2 Law of Contract

This clause states that the contract is governed by the law of the contract

Section 1 Clause 12.3 Revision to the contract

The clause also states that there will be no change to this contract, unless provided for by the conditions of contract, and has effect unless it has been agreed confirmed in writing and sign by the parties.

Section 1 Clause 13.1 Communications

The clause lists those documents/exchanges which are to be regarded as “communications”, and states that they should be communicated in a form which can be read, copied and recorded.

Section 1 Clause 13.3 Period for reply

This clause emphasize on the Project Manager, Contractor, and Supervisor to reply to communications within the period for reply.

Section 1 Clause 13.4 Replies on acceptances

Clause deals solely with communication on acceptances which require replies within the period for reply.

Section 1 Clause 13.5 Extending the period for reply

This clause emphasize on extending the period for reply. Project Manager has to get agreement from Contractor to extent the period of reply to a communication before he does so and hence notify the Contractor the extension which has been agreed. It can be seen that clause 13 states in much greater detail than any other standard form of contract how communications between Contractor and the Project Manager or Supervisor to be conducted.

Section 1 Clause 13.6 Issues of certificates

The clause does no more than clarify the simple point as to who is to be the recipient of certificates. The Project Manager is to issue his certificate to the Employer and to the Contractor. The Supervisor is to issue his to the Project Manager and to the Contractor. The reason for the Supervisor's certificates going to the Project Manager and not to the Employer is the need for the Project Manager to have those certificates to fulfill his wider role in administering the contract.

Section 1 Clause 14.1 Acceptance of a communication

The Project Manager's or the Supervisor's acceptance of a communication from the Contractor or of his work does not change the Contractor's responsibility to provide the works or his liability for his design.

Section 1 Clause 14.2 Delegation

This clause stresses on the delegation of Project Manager and Supervisor's duties. Project Manager and Supervisor can delegate their duties without restriction providing advance notice is given to the Contractor.

Section 1 Clause 14.3 Instructions

The clause stated that the Project Manager may give an instruction to the Contractor which changes the work information or a key date.

Section 1 Clause 14.4 Replacements

Clause entitles the Employer to replace the Project Manager or the Supervisor simply by giving notice to the Contractor.

Section 1 Clause 16.1 Early warning notices

The Clause states an obligation on the Contractor and the Project Manager give an early warning by notifying the other as soon as either becomes aware of any matter which could increase the total of the prices, delay completion, delay meeting a key date or impair the performance of the works in use.

Section 1 Clause 17.1 Ambiguities and inconsistencies

Project Manager or the Contractor is required to notify the other as soon as either becomes aware of an ambiguity or inconsistency in or between the documents which are part of the contract.

Section 1 Clause 18.1 Illegal and Impossible Requirements

The clause states the Contractor is to notify the Project Manager as soon as he considers that the Works Information requires him to do anything which is illegal and impossible. If the Project Manager agrees, he is to give an instruction to change the Works Information appropriately.

Section 1 Clause 19 Prevention

The clause states that if an event occurs, which:

- Stops the Contractor completing the works, or
- Stops the Contractor completing by the date shown on the accepted program
- And which neither party could prevent

- And which an experienced Contractor would have judged at the contract date to have had such a small chance of occurring that it would have been unreasonable to have allowed for it
- Then, the Project Manager gives an instruction to the Contractor stating how to deal with the event.

Section 2 Clause 20.1 Providing the Works

NEC 3 avoids the usual lengthy statement of the Contractor's general obligations and responsibilities and relies instead on the single short sentence in clause 20.1 stating that the Contractor provides the works in accordance with the works information. The key to the effectiveness of this clause lies in the two defined terms 'Provide the Works' and 'Works Information'. The term 'Provide the Works' is defined in clause 11.2(13). It covers both the obligation to complete the works and the obligation to provide whatever is required by the contract. The term 'Works Information' is defined in clause 11.2(19). It specifies and describes the works and details any constraints on the Contractor.

Section 2 Clause 21.1 The Contractor's Design

This Clause expresses the Contractor's obligations for design. It states simply that the Contractor designs the parts of the works which the work information states he is to design.

Section 2 Clause 21.2 Acceptance of the Contractor's design

Clause deals with acceptance of particulars of the Contractor's design.

Section 2 Clause 21.3 Practical implications of design

The clause states that the Contractor advises the Project Manager on the practical implications of the design of the works and on subcontracting arrangements.

Section 2 Clause 22.1 Using Contractor's Design

This clause allows the Employer to use and copy the Contractor's design for any purpose connected with the works or as stated in the Work Information

Section 2 Clause 23.1 Design of Equipment

Design of equipment by Contractor must be approved by Project Manager. Reasons for not accepting is confined by design in accordance with:

- Work information
- Applicable law
- Previous design that the Project Manager has accepted.

Section 2 Clause 24.1 Key persons

Contractor shall submit the name, qualifications and experience of each proposed employ or replacement person to the Project Manager for acceptance. Project Manager can only reject the application is that his relevant qualifications and experience are not as good as those of the person who is to be replaced.

Section 2 Clause 24.2 Removal of an employee

The clause gives the project manger the power to instruct the Contractor to remove an employee after having stated his reasons for the instruction. The Contractor is then obliged to respond the instruction from one day after the instruction and the employee has no further connection with the work included in this contract.

Section 2 Clause 25.1 Cooperation with others

This clause underlines the role of Contractor. Contractor has to co-operate with others in obtaining and providing information which they need in connection with the works. He co-operates with others and shares the working area with them as stated in the work information.

Section 2 Clause 25.2 Providing for Cost and Services

Employer and Contractor must provide for services and other things as stated in the Work information. Sanctions are provided if Contractor fail to do so.

Section 2 Clause 26.1 Responsibility for subcontractors

The clause confirms the Contractor's responsibility under the contract for work which is subcontracted. It states that the contractor is responsible for performing the contract as if he had not sub contracted. It also stated that the contract applies as if a Subcontractor's employees and equipment is the Contractor's.

Section 2 Clause 26.2 Acceptance of subcontractors

Clause deals with the acceptance of Subcontractors. The Contractor is required to submit the name of each proposed subcontractor for acceptance. A reason for not accepting the subcontractor is that his appointment will not allow the Contractor to provide the works. And the Contractor is not permitted to appoint a subcontractor until the Project Manager has accepted him.

Section 2 Clause 26.3 Conditions of subcontracts

Clause 26.3 deals with the conditions of contract for Subcontracts. NEC3 imposes a measure of control on the conditions. Contractor is required to submit the proposed conditions of contract for each subcontract to the Project Manager for acceptance unless a NEC3 contract is proposed or Project Manager has agreed that no submission required.

Section 2 Clause 27.1 Approval for Design by Others

Contractor must obtain approval for the design by others.

Section 2 Clause 27.2 Access to Work

Contractor must provide access to work and to plant and material being stored for the contract for the Project Manager, Supervisor and others notified by the Project Manager

Section 2 Clause 27.3 Contractor to obey instructions

The clause requires the Contractor to obey an instruction which is in accordance with the contract which is given to him by the Project Manager or the Supervisor. The important of clause 27.3 is that in conjunction with clause 20.1(providing the works) and clause 14.3 (changing the works information) it provides for variation of the works.

Section 2 Clause 27.4 Health and Safety Requirements

The Contractor is to act in accordance with the health and safety requirements stated in Works Information.

Section 3 Clause 30.1 Starting and completion

This clause states that the Contractor does not start their work on the site until the first access date and does the work so that completion is on or before the completion date.

Section 3 Clause 30.2 Deciding and Certifying Completion

This clause underline on deciding and certifying completion. The Project Manager decides the date of completion and certifies completion within one week of completion.

Section 3 Clause 31.1 Submission of programmes

Clause 31.1 requires that if there is no such identified programme then the Contractor is to submit a first programme for acceptance within the period stated in the contract data.

Section 3 Clause 31.2 Detail of programme

This clause states the detail to be shown on each programme the Contractor submits for acceptance.

Section 3 Clause 31.3 Acceptance of programmes

By clause 31.3 the Project Manager has to respond to submission of a programme within two weeks. The Project Manager must either accept the programme or state his reasons for not accepting it.

Section 3 Clause 32.1 Revising the Program

Contractor needs to show on each revised program with respect to progress achieved and its effect upon the timing of remaining work, effects of compensation events and notified early warning matters, plans for dealing with delays and notified defects, and others proposed changes to the accepted program.

Section 3 Clause 33.1 Access to and use of the site

Clause 33.1 requires the employer to allow the Contractor access to and use of each part of the site necessary for the work included in the contract, on or before the later of:

- the access date (which is a date or dates identified in the contract data), or
- the date for access shown on the accepted programme

Section 3 Clause 34.1 Instructions to stop or restart work

The clause which is the nearest thing in NEC 3 to a suspension clause states simply that the Project Manager may instruct the Contractor to stop or not to start any work and may later instruct him to restart or start it.

Section 3 Clause 35.2 Take over and use of the works

The clause permits the Employer to use any part of the works before completion has been certified. If he does so, he takes over the part of the works when he begins to use it except if the use is for a reason stated in the work information or to suit the Contractor's method of working.

Section 4 Clause 40.1 Test and Inspection

This clause states that sub-clause in clause 40 only govern test required by the works information or the applicable law.

Section 4 Clause 40.2 Material, facilities and samples

This clause emphasize on material, facilities and samples. It is the obligation of Contractor and employer to provide material, facilities and samples for tests and inspection as stated in Works Information.

Section 4 Clause 40.3 Notifications

This clause emphasizes on Contractor and Supervisor to notify each other of their tests and inspections before they start and afterwards the results.

Section 4 Clause 40.4 Repeat tests and inspections

The clause states that if a test or inspection shows that nay work has a defect the Contractor is to correct the defect and repeat the test or inspections

Section 4 Clause 40.5 Supervisor's test and inspection

This clause emphasize on Supervisor to do test and inspecting without causing unnecessary delay. Supervisor conducts his test without causing unnecessary delay to the work or to a payment which is conditional upon a test or inspection being successful. The payment is conditional upon Supervisor's test or inspection being successful becomes due; at the later of the defects date, and the end of the last defects correction period if the Supervisor has not done the test inspection and the delay is not due to the Contractor's fault.

Section 4 Clause 40.6 Costs of Repeat Tests and inspection

The clause states that Project Manager is to assess the cost incurred and the Contractor is to pay the amount assessed. The clause does not apply to the cost of testing that is part of the contract or serial testing.

Section 4 Clause 41.1 Testing and inspection before delivery

The clause states that the Contractor shall not bring plant and materials to the "working areas" until the Supervisor has notified the Contractor that they have passed tests or inspections required by the works information.

Section 4 Clause 42.1 Searching and notifying defects

The clause empowers the Supervisor to instruct the Contractor to search for a defect. The Supervisor is required to give his reasons for the search with his instruction.

Section 4 Clause 42.2 Searching and notifying defects

The clause requires both the Supervisor and Contractor to notify each other as soon as either finds any defects.

Section 4 Clause 43.1 Correcting defects

The clause states only that the Contractor corrects a "Defect" whether or not the Supervisor notifies him or not.

Section 4 Clause 43.2 Defect Correction Period

The clause states the obligation of the Contractor to correct notified defects after completion within whatever relevant and timescale is stated as the defect correction period in part one of the contract data.

Section 4 Clause 43.3 Issue of the defects certificate

The clause contains two provisions:

- The Supervisor is required to issue the defects certificate at the later of the defects date or the end of the last defect correction period

- The employer's rights in respect of defects not found or notified are not affected by the issued of the defects certificate.

Section 4 Clause 43.4 Access for Correcting Defects

The clause covers the Contractor's entitlement to access to and use of the works after they are taken over in order to correct defects.

Section 4 Clause 44.1 Proposals to Accept Defects

This clause put emphasis on proposal to accept defects. Contractor and Project Manager may each propose to the other that the works information should be changed so that a defect does not have to be corrected.

Section 4 Clause 44.2 Acceptance of Defects

This clause points out the procedure on acceptance of defects. When the Contractor and the Project Manager are prepared to consider the change, Contractor has to submit a quotation for reduced price or an earlier completion date or both to the Project Manager for acceptance. Project Manager has to give an instruction to change the works information, the price and the completion date accordingly upon he accept the quotation.

Section 4 Clause 45.1 Uncorrected Defects

This clause stresses on the uncorrected defect with access given. When the Contractor is given access in order to correct a notified defect but he has not corrected it within its defects correcting period, the Project Manager assesses the cost to the employer of having the defect corrected by other people and the Contractor pays this amount. The work information is treated as having been changed to accept the defect.

Section 4 Clause 45.2 Acceptance of Uncorrected Defect

This clause stresses on the uncorrected defect with access not given. When there is not given access in order to correct a notified defect before the defects date, the Project Manager assesses the cost to the Contractor of correcting the defect and the Contractor pays this amount . The work information is treated as having been changed to accept the defect.

Section 5 Clause 50.1 Assessment Procedure

Clause commences by requiring the Project Manager to assess the amount due at each assessment date. It then continues by stating when assessment dates occur.

Section 5 Clause 50.2 The amount Due

The clause describes in general terms the amount due:

- The price for work done to date, *plus*
- Other amounts to be paid to the Contractor, *less*
- Amounts to be paid by or retained from the Contractor, including taxes.

Section 5 Clause 50.3 Failure to Submit Working Program

This clause emphasize on the consequences on failure to submit program. As the consequences, one quarter of the price for work done to date is retained in assessments of the amount due until the contractor has submitted a first program to the project manager for acceptance showing the information which is required in this contract.

Section 5 Clause 50.4 Assessing Amount Due

This clause stresses on assessing amount due. Project Manager is responsible to consider any application for payment the Contractor has submitted on or before the assessment date and gives Contractor details on how the amount due has been assessed.

Section 5 Clause 50.5 Correction of assessments

This clause covers the corrections of assessments. Project Manager is responsible to correct any wrongly assessed amount due in later payment certificates.

Section 5 Clause 51.1 Certification

The provisions of this clause are as follow:

- The Project Manager is required to certify payment within one week of each assessment date
- The first payment is the whole amount certified (subject to any retentions)
- Subsequent payments are changes in amounts due from certificate to certificate
- If the change is a reduction the Contractor pays the employer.
- When the change is in increase the employer pays the Contractor
- Payments are made in the currency of the contract (as specified in the contract data) unless otherwise stated

Section 5 Clause 51.2 Time for payment and interest payment

The clause requires payment on each certificate within three weeks of the assessment date or within such other time as may be stated in the contract data. The clause also provides interest on late payment in the event either late payment of a certified amount or in late payment because the Project Manager does not issue a certificate which he should issue.

Section 5 Clause 52.1 Defined Cost

The clause states that all the Contractor's costs not included within defined cost are deemed to be included in the fee. The second provision of the clause states that the defined cost includes only:

- Amounts calculated using rates and percentages stated in the contract data, and other amounts
- At open market or competitively tendered prices with deduction of all discounts, rebates and taxes which can be recovered

Section 6 Clause 60.1 List of Compensation Events

The list of compensation events are provided for in this clause, some of which are explained in the following:

Section 6 Clause 60.1(1) Changes to the works information

Clause states that an instruction given by the Project Manager changing the works information is a compensation event unless it is a change made to accept a defect or a change to the works information provided by the Contractor for his design made either at the Contractor's request or to comply with works information provided by the Employer.

Section 6 Clause 60.1(2) Late access/use of the site

The Clause provides compensation event if the employer does not allow access to and use of the site, by the later of its access date, and the date shown on the accepted programme.

Section 6 Clause 60.1(4) Stopping/suspension of work

Under this clause, it is a compensation event if the Project Manager gives an instruction to stop or not start any work or to change a key date.

Section 6 Clause 60.1(8) Changing a decision

This clause gives the definition of compensation event. Compensation event occurs when Project Manager or Supervisor changes a decision which he has previously communicate to the contract.

Section 6 Clause 60.1(12) Physical Conditions

Under Clause 60.1(12) it is a compensation event if the Contractor encounters physical conditions which are:

- Within the site
- Not weather conditions
- Conditions which an experienced Contractor would have judged at the contract date to have such a small chance of occurring that it would have been unreasonable to have allowed for them.

Section 6 Clause 60.1(15) – Take-over before completion

Under this clause, certification by the Project Manager of any part of the works before both completion of the works and the completion date is a compensation event.

Section 6 Clause 60.1 (19) –Prevention as Compensation event

The clause states as a compensation event, an event which:

- Stops the Contractor completing the works, or
- Stops the Contractor completing by the date shown on the accepted programme
- And which neither party could prevent
- And which an experienced Contractor would have judged at the contract date to have had such a small chance of occurring that it would have been unreasonable to have allowed for it
- And which is not one of the other compensation events

Section 6 Clause 60.2 Judging physical conditions

Clause 60.2 supports clause 60.1(12) by stating the factors the Contractor is assumed to have taken into account in judging physical conditions. These are:

- The site information.
- Publicly available information referred to in the site information.
- Information obtainable from visual inspection of the site.
- Other information which an experienced Contractor could reasonably be expected to obtain.

Section 6 Clause 60.3 Inconsistency in site information

This clause states that if there is ambiguity or inconsistency within the site information the Contractor is assumed to have taken into account the physical conditions more favourable to doing the work.

Section 6 Clause 61.1 Notifying Compensation Event

This clause provides condition and procedure as for compensation event arise from Project Manager or Supervisor giving an instruction or changing an earlier decision, he needs to notify the Contractor of the compensation event at the time of giving the instruction or changing the earlier decision hence instruct the Contractor to submit the quotations unless the event arises from the fault of Contractor or quotation have already been submitted. The Contractor puts the instruction or changed decision into effect.

Section 6 Clause 61.2 Quotation for proposed instructions

This clause emphasize on responsibility of Project Manager and Contractor to the submission of quotation. The Project Manager needs to instruct Contractor to submit quotation for a proposed instruction or a proposed changed decision but Contractor cannot put proposed instruction or proposed changed into effect.

Section 6 Clause 61.3 Notifications by Contractor

This clause emphasizes responsibility of Project Manager and Contractor to notification of compensation event. The Contractor notifies the Project Manager on the happened event or event he expect to happen as a compensation event if the Contractor believes the event is a compensation event and the Project Manager has not notified the event to the Contractor. If the Contractor do not notify the compensation event within 8 weeks he is not allowed to change the price, competition date or key date unless is the responsibility of the Project Manager to notify.

Section 6 Clause 61.4 Project Manager's Decision

The Project manager is to assess on the event notified by the Contractor and notifies the Contractor on his decision. Any failure to reply within 2 weeks will be treated as an acceptance.

Section 6 Clause 61.5 Failure to Give Early Warning

If Contractor fails to notify on potential events, Project Manager can notify him

Section 6 Clause 61.6 Assumptions of Effects

If event is too uncertain to forecast, he can request Contractor to submit his quotations.

Section 6 Clause 61.7 No Notifications after Defects

A Compensation event is not notified after the defect date

Section 6 Clause 62.1 Instruction for alternative quotations

After discussing with the Contractor different ways of dealing with the compensation event which the practicable, the Project Manager may instruct the Contractor to submit alternative quotations. After that, the Contractor submits such quotation as required. The Contractor may submit for other methods which he considers practicable.

Section 6 Section 62.2 Quotation for Compensation Event

This clause stresses on the submission of quotation. Quotation for compensation events comprise proposed changes to the price and any delay to the completion date and key dates assessed by the Contractor. Contractor is responsible to submit details of his assessment with each quotation. If the program for remaining work is altered by the compensation event, the Contractor includes the alteration to the accepted program in his quotation.

Section 6 Clause 62.3 Submission of Quotation

This clause emphasize on time frame of submission of quotation. Contractor has to submit the quotation within three weeks of being instructed to do so by the Project Manager and the Project Manager has to replies the submission within two weeks. His reply includes an instruction to submit a revised quotation, an acceptable of quotation, a notification that a proposed instruction will not be given or a proposed changed decision will not be made or a notification that he will be making his own assessment.

Section 6 Clause 63.1 Changes to the price

This clause covers on changes to the price. Changes to the price are assessed as the effect of the compensation event on actual defines cost and/ or forecast defined cost plus the fee and the date when the Project Manager instructed or should have instructed the Contractor to submit quotations divides actual defined cost from forecast cost.

Section 6 Clause 63.3 Assessing Compensation Event

This clause highlighted on delay to completion. Any delay to the completion date is assessed as the length of time that, due to the compensation event, planned completion is later than planned completion shown on the accepted program. A delay to a key date is assessed as the length of time the planned date for meeting a key date is later than the date shown on the accepted program due to a compensation event.

Section 6 Clause 63.4 Instructions to Submit a Revised Quotation

This clause emphasize on the right of employer and Contractor. Employer and Contractor has the right to change the prices, completion date and key dates are their only rights in respect of a compensation event.

Section 6 Clause 64.1 Project Manager's Assessment

This clause states the procedures for Project Manager to assess compensation events

Section 6 Clause 64.2 Assessed Program

Project Manager can assess an event based on working program.

Section 6 Clause 64.3 Notifications of Assessment

The Project Manager is to notify the Contractor of his assessment.

Section 6 Clause 64.4 Failure to Assess

Any failure to reply by Project Manager, the quotation of compensation event will be treated as approved.

Section 6 Clause 65.1 Implementing Compensation Events

A Compensation events in is implemented when the Project Manager notifies his acceptance of the Contractors quotation.

Section 7 Clause 70.1 Title to equipment, plant and material

The clause stated that whatever titles the Contractor has to plant and materials which is outside the working areas passes to the Employer if the Supervisor has marked it as for the contract.

Section 7 Clause 70.2 Title within the working areas

The clause stated that whatever title the Contractor has to plant and materials passes to the Employer if it has been bought within the working areas. The title to plant and materials passes back to the Contractor if it is removed from the working areas with the Project Manager's permission.

Section 7 Clause 71 Marking Equipment, Plant, and Materials outside the Working Areas

The Supervisor marks equipment, plant and materials which are outside the working areas if this contract identifies them for payment and the Contractor has prepared them for marking as the works information requires.

Section 7 Clause 73.2 Title to materials

Clause provides that the Contractor has title to materials from excavation and demolition only as stated in the works information

Section 8 Clause 80.1 Employer's Risks

The clause lists the Employer's risks under six groupings which can be broadly described as:

- General – i.e. use of the works, unavoidable loss or damage, employer's fault
- Loss or damage of Employer supplied goods
- War, riots and similar non-insurable events
- Loss or damage after take-over
- Loss or damage after termination
- Additional risks as listed in the contract data

Section 8 Clause 81.1 The Contractor's Risks

Clause states that from the starting date until the defects certificate has been issued the risks not carried by the Employer are carried by the Contractor.

Section 8 Clause 82 Repairs

The clause states that the Contractor promptly replaces loss of and repairs damage to the works, plant and materials until the defects certificate has been issued and unless otherwise instructed by the Project Manager.

Section 8 Clause 83.1 Indemnity

This clause provides that each party indemnifies the other against claims etc. due to an event which is his risk.

Section 8 Clause 83.2 Contributory Reduction

The liability of each party to indemnify the other is reduced if event at the other party's risk distributed to the claims, proceeding, compensation and costs. The reduction is in proportion to the extent that events which were at the other party's risk distributed, taking into account each party's responsibilities under this contract.

Section 8 Clause 84.1 Provision of insurances

The Contractor provides insurance as stated in the insurance table, except insurances to be provided by the employer as stated in contract data and also additional insurance as requested by the contract data.

Section 8 Clause 84.2 The insurance table

The insurance are in the joint names of the parties and provide cover for events which are at the Contractor's risk from the starting date until the Defects Certificates or a termination certificate has been issued. The insurance table provide the insurance of the works, plant and material is to be for replacement cost; insurance of the Contractor's equipment is to be for replacement cost; third party cover is to be for the amount stated in the contract data for any

one event with cross liability; cover for the Contractor's employees is to be for the greater of the amount required by the applicable law or the amount stated in the contract data.

Section 8 Clause 86.1 If the Contractor does not insure

The Employer may insure a risk which the contract requires the Contractor to insure if the Contractor does not submit the required certificate and the cost of this insurance is paid by the Contractor.

Section 9 Clause 90.1 Notification of termination

The first provision of this clause is that a party wishing to terminate should give notice to the Project Manager giving "details" of his reasons for terminating. The second provision is that the Project Manager shall issue a termination certificate "promptly" if the reason complies with the contract.

Section 9 Clause 90.2 The termination table

Clause limits the Contractor's rights to terminate under the contract to the reasons listed in the termination table which forms part of the clause.

Section 9 Clause 90.4 Certification of amount due

This clause emphasize on certification of amount due on termination. Project Manager is required to certify a final payment from Contractor within 13 weeks of termination. The payment is made within 3 weeks of the Project Manager's certificates.

Section 9 Clause 91.2 Contractor's Default

This clause calls attention on Contractor's defaults. Employer entitled to terminate if the default is notification substantial failure to comply with obligations, non-provision of a required bond or guarantee and appointment of a subcontractor for substantial work before the Project Manager's acceptance. Clauses under NEC 3 are strict and detailed. Strict - appointment of a subcontractor for substantial works before acceptance by the Project Manager is expressly made ground for termination of the contract (clause 91.2). Detailed - the provision extend to control over the terms of subcontracts. This degree of regulation goes against the trend of other standard form of contract where the contractor's freedom to subcontract as he thinks fit has been introduced as being in keeping with modern commercial practice.

Section 9 Clause 91.3 Contractor Continuing Default

The Employer may terminate if the Project Manager has notified that the Contractor has defaulted and has not stop defaulting within four weeks of the notification by substantially broken a health and safety requirement.

Section 9 Clause 92.1 Procedures on Termination

This clause emphasize on completion of the work. Employer may complete the works and use any plant and material which he has title.

Section 9 Clause 92.2 Withdrawal from Site

This clause is highlight on withdrawal from the site and it consists of 3 procedures. First, the employer may instruct the Contractor to leave the site, remove any equipment, plant and material from the site and assign the benefit of any subContractor or other contract related to performance of this contract to the employer. Second, the employer may use any equipment to which the Contractor has title to complete the works. The Contractor promptly removes the equipment from the site when the project management notifies him that the employer no longer requires it to complete the works. Last, the Contractor leaves the working areas and removes the equipment.

Section 93 Clause 93.1 – Payment on termination

This clause includes an amount due assessed as for normal payments, the defined cost for plant and material, other defined cost reasonably incurred in the expectation of completing the whole of the works, any amount retained by the employer and a deduction of any un-repaid balance of an advanced payment.

Section 9 Clause 93.2 – Other amounts due

This clause states amount due other than the stated in clause 93.1. It includes the forecast defined cost of removing the equipment, a deduction of the forecast of the additional cost to the employer of completing the whole of the works and direct fees percentage.

Option B Priced Contract with Bills of Quantities

Option B is a priced contract with bill of quantities. It consists of detailed definition, interpretation, description, and the compensation events.

Option D Target contract with bill of quantities

Option D is a target contract with bill of quantities. It consists of detailed definition, interpretation, description, payment, subcontracting, compensation events and payment on termination. The price for work done to date is the defined cost the Project Manager forecasts will have been paid by the Contractor plus the fee.

Section X2 Clause X2.1Changes in the Law

Change in law is a compensation event if it occurs after the Contract Date. Project Manager has to notify the Contractor of a compensation event and instruct the Contractor to submit the quotations. The prices are reduced when the change in law reduces the total defined cost.

O**ption X5.1 Sectional Completion**

In these conditions of contract, unless stated as the whole of the works, each reference and clause relevant to the works, completion and completion date. The option can apply, as the case may be, to either the whole of the works or any section of the works.

Option X7.1 Payment of delay damages

The Contractor pays delay damages at the rate stated in the contract data from the completion date for each day until the earlier of completion and the date on which the Employer takes over the works. A Contractor who fails to complete by the due date is liable to the Employer for damages for breach of contract. Such damages may be either specified in the contract (usually known as liquidate damages) or they may be left to be determined after the breach of contract as general damages (known as un-liquidated damages).

Option X13 Performance Bond

The clause requires the Contractor gives the Employer a performance bond for the amount stated in the contract data and in the form set out in the works information. The bond has to be provided by a bank or insurer which the Project Manager has accepted. A reason for not accepting the bank or insurer is that its commercial position is not strong enough to carry the bond. If the bond was not given by the contract date, it is given to the Employer within four weeks of the contract date.

Option X14 Advanced Payment to the Contractor

X14.1 The clause applies the Employer's obligation is to pay the amount of advanced payment stated in the contract data.

X14.2 The clause requires the advanced payment to be made either within four weeks of the contract date or within four weeks of the receipt by the Employer of any advanced payment bond which is required. Delay by the Employer in making payment is stated in the last sentence of the clause to be a compensation event. Under the clause, the bond is to be for the amount of the advanced payment by a bank or insurer accepted by the Project Manager. A reason for not accepting a bank or insurer is that its commercial position is not strong enough to carry the advanced payment bond.

X14.3 The clause requires any advanced payment to be repaid in installments as stated in the contract data. The contract data deals with this by requiring two entries:

- The first stating when installments are to commence by reference to weeks after the contract date
- The second stating whether the installments are amounts or a percentage of paymenrs due

Clause X16.1 Deduction of retention

The clause deals with the deduction of retention. The amount for retention is determined by the "retention percentage" which is entered in the contract data.

C**lause X16.2 Release of retention**

The clause deals with the release of retention, the approach is conventional whereby half the retention is released on completion; remainder on the issue of the defects certificate.

Option X18 Limitation of liability

X18.3 – the Contractor's liability to the employer for defects due to his design not listed in the defects certificate is limited to the amount stated in the contract data.

Option W1 & W2 Clause W1.1 and W2.1(1) referral to adjudication

Clause W1.1 as it requires that a dispute arising under or in connection with the contract is referred to and is decided by the adjudicator.

Option W1 Clause W1.3(1) the adjudication table

Clause referred to the adjudication table in setting out which party may submit disputes to arbitration and the timescale for doing so.

Option W1 & W2 Clause W1.4(5) and W2.4(4) – Arbitration proceedings

Clause states that if the tribunal is stated in the contract data to be arbitration then the arbitration procedure, the place of arbitration and the method of choosing the arbitrator are as stated in the contract data.

Schedules of cost components

Schedules provide a division between reimbursable items of cost and the items deemed to be included in the Contractor's fee when payments to the Contractor are to be calculated on a cost basis.