

*Evolving IT Governance Practices for IT and Business Alignment – A Case Study in an Australian Institution*

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**Abstract**

Over the past decade, IS/IT governance has become a key issue of concern for senior IT decision makers around the world. The underlying goals for adopting formal IT governance practices are improvement of business performance and conformance with regulations. This exploratory study examines how IT governance is implemented in an Australian organization through a number of IT governance structures, processes, and relational mechanisms. The study reveals a number of important findings in the context of the implementation of IT governance in a higher education environment. The relationship between IT governance implementation and IT-business alignment issues will also be discussed further in the paper.

**Keywords:** *IT governance structures, IT governance processes, IT governance relational mechanisms, IT-Business alignment*

**Introduction**

IT governance has emerged as an important issue for organizations across the world. An organization's IT management and governance practices are generally influenced by its IT history. This paper analyses how formal IT governance is implemented in a major Australian institution of higher education, how its history influences the practices and the issues that it faces in the implementation of IT management and governance frameworks. The next few sections of this paper contains a detailed literature review regarding IT governance, IT-business alignment and the important IT related issues in the Australian higher education sector. This is followed by a discussion of the research questions and methodology and then the case study is described. Finally, the findings from the case study are presented and the conclusions and directions for future work are discussed.

**IT Governance**

Corporate governance has become increasingly important worldwide, especially in the wake of the Enron and MCI WorldCom incidents in the US. The Australian Stock Exchange Corporate Governance Council defines corporate governance as (ASX 2003), "... the system by which companies are directed and managed. It influences how the objectives of the company are set and achieved, how risk is monitored and assessed, and how performance is optimised." IT governance has increasingly become a key element of corporate governance because of the pervasive influence of information systems and the associated technology infrastructure in every area of an organisation's activities. The IT Governance Institute

describes IT governance as being an integral part of the corporate governance which consists of “*the leadership and organizational structures and processes that ensure an organization’s IT sustains and extends the organization’s strategy and objectives*” (ITGI 2003).

## **IT Management**

Whilst IT governance involves strategic level decision making for meeting the present and future demands of a business so that alignment between business and information systems can be achieved, IT management focuses on the operational aspects of IT in an organization (Sohal and Fitzpatrick 2002; De Haes and Van Grembergen 2005). IT governance creates a setting in which IT management can be conducted effectively and IT management decision making concentrates on the effective and efficient running of IT operations and services.

## **Previous Research in IT Governance and IT-Business Alignment**

Underlying the idea of IT governance is the concept of IT and business alignment. The alignment of IT with business objectives has been reported as a key issue for IT management in the research literature throughout the 1990s (Niederman et al. 1991; Pervan 1994; Galliers and Leidner 1999). The Strategic Alignment Model was developed by Henderson and Venkatraman (1993) to emphasize the interrelationship between an enterprise’s business, IT strategy and IT infrastructure.

The term IT governance, started appearing in the research literature towards the late 1990s, with its main proponent being the IT Governance Research Institute (De Haes and Van Grembergen 2005). Since then, the need to implement and improve IT governance has been recognized as a key issue by senior IT management across the world. IT governance is extremely complex and dynamic (Brown 1997; Sambamurthy and Zmud 1999; Duffy 2002; De Haes and Van Grembergen 2004; Weill and Ross 2005). A survey of top 10 priorities for senior IT management by Gartner Inc. in 2003, found the need for improving IT governance to be included in the list for the first time (De Haes and Van Grembergen 2004). It was found to rank third on the list, while the closely related issue of providing guidance to business executives ranked first.

De Haes and Van Grembergen (2004) propose that IT governance can be implemented through a framework of structures, processes, and relational mechanisms. This framework is presented in Table 1. Structures include the existence of well defined roles and responsibilities and IT steering committees. Processes involve strategic decision making and the use of various performance monitoring tools which can provide the IS organization with the means of examining its activities and its value to business. Relational mechanisms include shared learning and strategic dialogue between business and IT, and ensuring proper communications at all times.

In practice, however, the adoption of IT governance practices lags behind the adoption of corporate governance practices. In 2003, the IT Governance Institute conducted a survey through PricewaterhouseCoopers of 335 CEO/CIO level executives around the world in order to determine their IT governance priorities (ITGI 2004). The survey found that while 75% executives recognized the requirement for implementing IT governance only 40% were taking any action in this direction. In Australia, a survey of 155 organizations by Hewlett-Packard Australia in 2005 shows a disparity between the implementation of IT and corporate governance. The study shows that while 73% of those surveyed have fully implemented a corporate governance framework only 58% have implemented an IT governance framework (CPA 2005).

	Structures	Processes	Relational Mechanisms	
Tactics	<ul style="list-style-type: none"> <li>- IT executives and accounts</li> <li>- Committees and councils</li> </ul>	<ul style="list-style-type: none"> <li>- Strategic IT decision making</li> <li>- Strategic IT monitoring</li> </ul>	<ul style="list-style-type: none"> <li>- Stakeholder participation</li> <li>- Business/IT partnerships</li> </ul>	<ul style="list-style-type: none"> <li>- Strategic dialog</li> <li>- Shared learning</li> </ul>
Mechanisms	<ul style="list-style-type: none"> <li>- Roles and responsibilities</li> <li>- IT organization structure</li> <li>- CIO on board</li> <li>- IT strategy committee</li> <li>- IT steering committee(s)</li> </ul>	<ul style="list-style-type: none"> <li>- Strategic information systems planning</li> <li>- Balanced IT scorecards</li> <li>- Information economics</li> <li>- Service level agreements</li> <li>- COBIT and ITIL</li> <li>- IT alignment/ governance maturity models</li> </ul>	<ul style="list-style-type: none"> <li>- Active participation by principal stakeholders</li> <li>- Collaboration between principal stakeholders</li> <li>- Partnership rewards and incentives</li> <li>- Business/IT co-location</li> </ul>	<ul style="list-style-type: none"> <li>- Shared understanding of business/IT objectives</li> <li>- Active conflict resolution (non-avoidance)</li> <li>- Cross-functional business/IT training</li> <li>- Cross-functional business/IT job rotation</li> </ul>

Table 1: A framework of structures, processes and relational mechanisms for implementing IT governance (Source: De Haes & Van Grembergen 2004)

### IT Best Practice Frameworks and Standards

A recent report by Forrester Research highlights the importance of adopting best practice frameworks for IT governance and management (Crosman 2006). Crosman states that, *“Process improvement is not a choice. The evolution of IT is such that both complexity and cost containment will exert continuous pressure on IT operations and make best practices the only answer available.”*

A number of IT best practice frameworks and standards such as Control Objectives for Information and Related Technology (COBIT), ISO17799, IT Infrastructure Library (ITIL) and Capability Maturity Model (CMM) and ISO17799 are now available to IT organizations to help them improve their accountability, governance, and management. COBIT has been developed by the IT Governance Institute as a high-level IT governance and control framework. COBIT is designed as a high-level “umbrella” framework and it works very well with other frameworks like ITIL and ISO17799 which focus on specific aspects of IT management (Chickowski 2004). It contains 34 high-level control objectives and 318 detailed control objectives defined for four IT domains: planning and organization, acquisition and implementation, delivery and support, and monitoring. ITIL is the de-facto standard for IT service management and is organized around five areas: business perspective, application management, service delivery, and service support. ISO17799 provides guidelines for managing the security aspect of IT.

A recent Forrester Research survey of 135 IT managers in North America revealed that about 20% rely on COBIT while another 20% use ITIL (Dubie 2005). These frameworks are not necessarily mutually exclusive and increasing the value of IT from a business perspective requires an understanding of their strengths, weaknesses and focus (Symons 2005). Organizations may benefit from adopting what they find useful from each framework rather than just adopting a single one (Chickowski 2004).

In addition to these frameworks and international standards, Australian organizations have three local standards available to guide their IT governance and management practices (SAI 2006). These are AS 8015-2005 (ICT governance standard), AS 8018.1-2004 (specification for ICT service management) and AS 8018.2-2004 (code of practice for ICT service management).

The ICT governance standard, AS 8015-2005, provides a set of guiding principles for senior business decision makers regarding the effective and efficient use of information and communication technology (ICT) within their organizations, irrespective of the industry

sector. The standard addresses the governance of ICT resources for the provision of information and communication services within the enterprise.

The ICT service management standard, AS 8018.1-2004 adopts the British standard BS 15000-1:2002, and specifies the requirements for delivering an acceptable quality of managed IT services. It can be used by service providers to benchmark their management practices. The related standard, AS 8018.2-2004 adopts BS 15000-2:2003 and recommends a common terminology for IT service providers, so that effective processes may be established.

There is, however, very little available in the literature regarding the issues and problems with the adoption of these frameworks and standards in Australian organizations, and their contribution to achieving IT and business alignment.

### **IT Governance in Australian Institutions of Higher Education**

Higher education is a multi-billion dollar industry in Australia, and as such, it is of vital importance to the country's economy (Higher Education IT Consultative Forum 2000; Nelson 2002). It is both a major consumer of IT products and services as well as a major provider of services using ICT. IT has helped the improvement of a range of activities including research, teaching, learning and administration in the higher education environment. Significant developments have been made by these institutions in the area of online teaching and learning. The demand for IT based products and services, has also increased as a result of the rapid increase in student population in the last 15 years.

There is much work needed to be done by university governing bodies and policy makers in order for these universities to continue tapping emerging information technologies in order to maintain their competitive positions internationally (Higher Education IT Consultative Forum 2000). The issues range from infrastructure, applications, delivery and services to staffing and appropriate regulatory frameworks. A key issue concerning infrastructure, for example, is the lack of infrastructure linkages between universities and other institutions that would improve on-going research and teaching efforts. IT applications have also not yet penetrated all aspects of university teaching and more effort is required to bring about improvements in this area. However, despite the wide range of concerns facing IT governing bodies in Australian universities in the information economy, there has been very little research in this area addressing these issues.

### **Research Questions and Methodology**

The paper investigates the adoption of information technology governance in an Australian organization in the higher education sector.

The overall research question is:

*How are formal IT governance practices implemented within a higher education environment in Australia?*

The associated question regarding alignment is:

*How does adoption of formal IT governance practices lead to improved alignment between IT and business?*

As suggested by Benbasat et al. (1987), the case research method is useful for addressing the "how" questions, i.e., in the exploratory stage of knowledge building. This is particularly useful for a study on IT governance in the context of institutions of higher education in Australia, where the knowledge of researchers regarding new methods, techniques, problems

and prospects lags that of practitioners. A case research strategy is expected to provide rich insight in this context.

A leading institution of higher education in Australia was selected for the study. The data collected was primarily qualitative in nature. The data was gathered from hour-long face-to-face interviews with senior IT and business decision makers. The interviewees were selected based on their positions in the organizational chart. The chart is discussed in the section on IT governance structures. Of the five senior IT and business decision makers contacted, four agreed to participate in the study. The Director of IT, the Associate Director of IT Infrastructure, the Pro-Vice Chancellor of Academic Services and the Director of Employee Services were interviewed between March and May 2006 for gathering the data necessary for this study. The fifth person contacted by both phone and email, the Director of Student Services, did not respond to the request for an interview. Data was also gathered from the analysis of documents related to organizational and IT strategic planning, organizational structures, policies, and procedures, personnel information and student satisfaction surveys.

### **The Case Study Organization**

The organization chosen for this study is a large institution of higher education in Australia established in the 1960s. In order to maintain anonymity, the institution name will not be disclosed. The institution has over 3,000 academic and administrative staff members and over 30,000 students. Its primary goals are to achieve excellence in teaching, learning, research and development. Its present priorities include providing flexible learning opportunities, developing facilities and technological infrastructure to support research priorities, forming partnerships with industry and government and improving its revenue generation. The institution has an overall strategic plan as well as a number of divisional plans and maintains a balanced scorecard. It has six academic divisions which are subdivided into several schools, centers and departments, as well as a number of support areas including central IT services, finance, and student and staff services. The institution is publicly funded, with annual revenue of around A\$400 million, 10% of which is spent on IT.

### **The Institution's History of IT Adoption**

The institution's IT history began in the 1960's, with the acquisition of a computer for the mathematics department. In the early 1970's, the building housing the central IT department was built, and a computer system was installed primarily for teaching purposes. This was followed by the in-house development of an accounting package, signaling the first move towards corporate applications. The institution decided on continued development of both teaching and administrative applications, although these were to be handled separately. Since the various teaching and administrative divisions had specific application needs, the decisions regarding the procurement or development of applications lie with the divisions. In the late 1980's the institution received its first Australian Academic and Research Network (AARNET) connection and the use of email followed soon after.

### **The Institution's IT Governance Framework**

In 1999 the institution had a review of ICT conducted by an external consulting firm. The review identified a number of key issues including the negative impact of divergent IT directions in the divisions on overall corporate effectiveness, inadequate strategic planning and coordination related to ICT across the institution, inadequate ICT resources and lack of leadership at the senior level of senior management. In implementing an IT governance framework the institution has been attempting to address these shortcomings with varying

degrees of success. The next 3 sections explore how IT governance is implemented in the institution through a mixture of structures, processes and relational mechanisms.

### IT Governance Structures

IT governance structures include clearly defined roles and responsibility of IT executives to manage the IT structure within the organization (De Haes & Van Grembergen 2004). This may include setting up of IT committees to handle various IT strategies and oversees the functions of IT within the organization.

Currently, the institution has about 200 staff members employed to work in the IT area. Of the 200 staff members, 100 are located in the central IT services and the other 100 staff are within the divisions. Despite the observations made in the 1999 review it has not been possible to integrate the ICT across the institution into a single unit due to lack of an institution wide support for such a change. However some enterprise wide standards for ICT are being developed and the need for compliance by the divisions has been recognized. Duplication of some services across the divisions remains a cause of considerable concern and it is believed that considerable cost saving could result from avoiding such duplication.

Figure 1 shows the position of IT within an extracted portion of organizational chart relevant to this paper. The Director of central IT services reports to the Pro-Vice Chancellor of Academic Services. There are three associate directors who report to the Director of IT. Each academic division has its own Executive Dean and IT services. IT is not directly represented in the highest level planning and management committee of the institution. It is represented in this committee indirectly through the Pro Vice-Chancellor of Academic Services. A recent development has been the formation of the IT strategy committee, which reports to and advises the planning and management committee. The planning and management committee in turn advises the Deputy Vice-Chancellor. The membership of the IT strategy committee was decided based on discussions over the period of several months, in order to ensure involvement of all key stakeholders. It currently includes the Director of central IT services, representatives of all divisional IT groups, the Director of Finance, representatives from R&D and the Pro-Vice Chancellor.

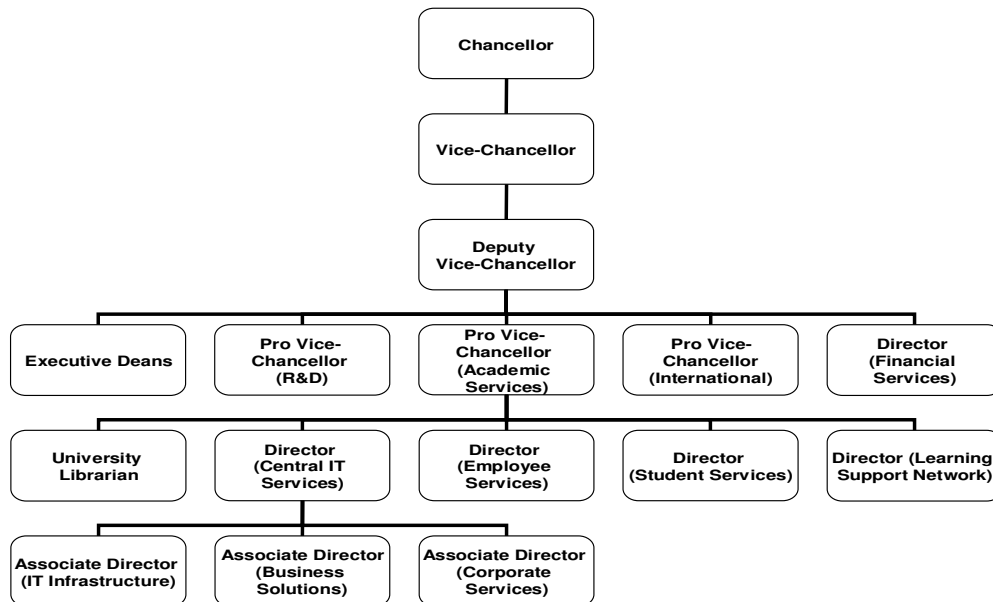


Figure 1: An extracted section of the organizational chart relevant to our paper

The committee makes recommendations regarding the alignment of ICT with the goals of the institution, monitors the activities of the central and divisional IT service providers and fosters effective communication amongst them.

The formation of the ICT committee, and the enterprise architectural standards being developed by central IT reflect the recognition by senior business and IT decision makers of the need for a more centralized structure for IT governance for successful alignment of IT with the goals of the institution. This evolution of IT decision making within the institution from its state in the 1960's is illustrated in Figure 2. This is consistent with the results of a survey by Mendez (2005) of IT executives in Europe which showed a significant shift in the IT organization structure from decentralized or federated models to centralized along with the decreasing influence of business units over IT decisions and the increasing centralization of the vendor management function.

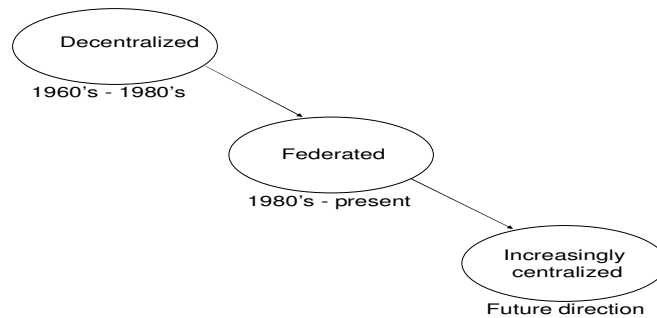


Figure 2: IT organizational structure: changing trends

Telecommunication and network related decision making in the institution has been centralized since the beginning. However, this has not been the case with desktop computers and servers because of the IT revolution in the 1980's. This has continued to this day, resulting in the institution's federated IT organization structure. There are six divisional IT groups which manage their own servers and desktop PCs independently of central IT. The divisional IT groups have independent funding and decision-making structures from central IT. Although they provide the same kind of services as the central IT group, their standards and practices may vary from those of central IT. Over the past year central IT has moved towards developing good relationships with divisional IT managers. This has helped in the achievement of some alignment between the central and divisional IT groups.

The institution continues to follow a business process owner model with decisions regarding applications procurement and development. If, for example, the Director of Finance wanted a new accounting package he would be expected to select the product and finance its procurement. This can be problematic as such decisions may not be subject to the right advice. Central IT is now starting to move towards a role in which it has far greater involvement in helping in the selection of products by divisional decision makers.

### **IT Governance Processes**

IT governance processes involve strategic decision making and the use of various performance monitoring frameworks and tools such as Strategic Information Systems Planning, COBIT, ITIL, Balanced Scorecard, Information Economics and others (De Haes & Van Grembergen 2004).

The institution has an overall strategic plan and follows a balanced scorecard. ICT has an ICT enabling plan, which is regularly updated. An important issue in this regard is that this ICT enabling plan is not directly associated with a budget for strategic expenditures. The

present budget allocation for ICT is for staff, software licenses, site licenses, and refreshing the IT infrastructure. Although the need for a new document management system has been recognized by both IT and business decision makers, in order for the institution to improve its record keeping, appropriate funds for such procurement are yet to be acquired.

IT management decision making within the institution is influenced by the guiding principles of the Australian ICT governance standard AS 8015-2005 and the service management standards AS 8018.1-2004 and AS 8018.2-2004. COBIT has been adopted since the year 2000 as the institution's IT governance framework. A direct effect of this has been the realization by senior IT decision makers that the effective utilization of COBIT across the institution requires a more centralized IT governance environment. However, given the massive size of the COBIT framework, only a small number of objectives are identified for review each year. The objectives were initially based on a large number of interviews conducted across campus in 2000 by ICT staff. In subsequent years, objectives have been identified based on the original interviews and results of an annual survey of student and staff satisfaction on IT issues.

ITIL is being used as the standard for service management. The current focus is on getting better at incident management, change management, problem management, IT strategic planning, managing the IT architecture and managing staff. The progress made has also been audited against COBIT and ITIL.

COBRA is being used with ISO17799 for risk management purposes. Since COBIT requires the use of a standard project management methodology, Project Management Body of Knowledge (PMBOK) has been selected as the guide in this regard. Based on the perceptions of business decision makers, in the last two years IT has shown considerable maturity in project management and delivery. This is the result of adopting a strong project management methodology.

People Capability Maturity Model (P-CMM) is used as the standard of IT staff management and development. However, a lot of work is required in the area of staff development.

The value to business from the implementation of best practice frameworks has been in terms of reducing the number of ad-hoc processes, bringing a lot of discipline to IT support activities and improving accountability. Whilst IT has made significant strides since the year 2000, the IT management recognizes that there is a long journey ahead.

As illustrated in Figure 3, the institution, like many others, is heavily dependent on public ICT and energy infrastructure and is vulnerable to failures associated with this infrastructure. However, standardizing internal ICT infrastructure and support services has helped the central ICT group in developing effective support for end-user applications.

One problem that has been faced in implementing the best practice frameworks like COBIT, which have high resource requirements, has been the shortage of adequate staff. Central IT currently has about 100 staff members. The demand for staff time and services are also increasing. Most of the central IT teams find it difficult and at times challenging to achieve their operational objectives. Staffing in the server support area, for example, consists of about 10 people supporting 300 servers of various kinds, implementing, changes to the infrastructure as well as managing large applications being used by thousands of people. Despite the staffing issue, however, process improvements continue to take place because of the continued commitment of senior IT management.



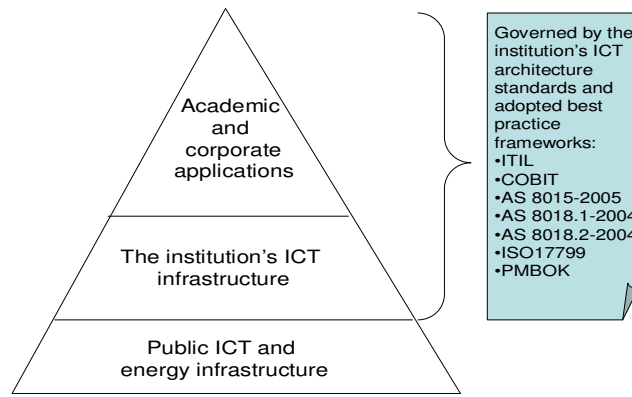


Figure 3: The institution's ICT pyramid and adopted best practices

Another key area of difficulty has been that of finding appropriate performance metrics measurement. Currently, technical measures being used include percentage downtime, percentage access failure, the number of students accessing their mail on a regular basis on the official communications channel, and so on. One particular measure, the number of available desktops in the computer laboratories per student was found to be not particularly useful. It was found that when the number of desktops was doubled based on survey responses; the satisfaction level was actually lower than in the previous year. Management decision makers in the institution attribute this to the increasing expectations from ICT facilities with the rapid advances technology. The institution continues to work on developing a balance business-IT metrics.

### IT Governance Relational Mechanisms

Relational mechanisms according to De Haes and Van Grembergen (2004) include shared learning and strategic dialogue between business and IT, and ensuring proper communications at all times.

The key stakeholder groups for central IT include teaching staff, students, business process owners, research and development, and divisional IT management whilst those for divisional IT include teaching staff and students. This is illustrated in Figure 4. There are efforts being made by central IT to improve the quality and frequency of communications with these groups. However, there are still perceived gaps in this communication amongst both students and faculty and more effort is required in this area.

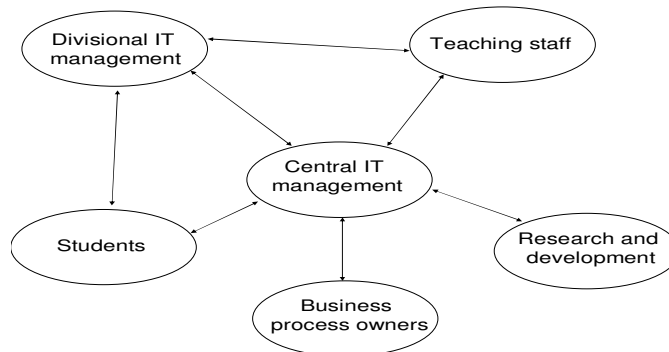


Figure 4: Communications between Central and Divisional IT and Stakeholders

Communications often take place at the tactical level. For instance, if a significant outage of services is being considered, divisional IT contacts and business process owners are contacted and their responses are used to guide appropriate decision making. In case of

policy changes, emails are sent out by the particular group within IT that is responsible for that policy. The senior IT decision maker responsible for infrastructure also meets with the divisional IT management on a monthly basis. Over the last couple of years there has been emphasis on strategic level dialog. The monthly meetings of the newly formed ICT committee are also helping in improving communications between business and IT. This increased effort made by IT decision makers to liaise with business, has led to a growing perception of IT as a valued service provider, rather than just a cost of doing business.

An area requiring further attention is staff development. Currently there is no staff retention program for IT staff and no opportunity for cross-training. There is also a need for increasing staff numbers in central IT. While an integration of IT services centrally might help solve the problem of staff shortage, a lot of opposition at the divisional level has yet to be overcome.

## **Findings**

The paper addresses the questions of how formalized IT governance practices can be adopted within the higher education environment and how such adoption could lead to improved alignment between IT and business. The increased dependence of IT in the higher education environment has also led to the awareness for the adoption of formal IT governance practices. As seen in the previous sections the institution has implemented IT governance through a mixture of structures, processes and relational mechanisms.

Based on the institution's experiences, the following findings emerge with regard to the implementation of IT governance in an institution of higher education sector:

- 1) The disparity in ICT services across the institution has led to difficulties in managing the perceptions of students and staff. Student dissatisfaction with ICT services at the divisional level is reflected on their perception of ICT in general in the annual surveys. A consolidation of services (e.g. helpdesks, printing) could help in maintaining the same standards of services across the institution and make it easier to manage perceptions.
- 2) The use of multiple learning management systems and multiple email systems may be beneficial to the divisions, however, this leads to duplication of ICT staff efforts without increasing the satisfaction of staff and students across the institution. A consolidation of systems could potentially provide a better direction for staff efforts, given the lack of adequate staff for implementing standards.
- 3) The effort to implement COBIT was an important eye-opener for management because it focused attention on the need for centralization of decision making, having well defined IT governance roles and responsibilities, and developing enterprise-wide standards.
- 4) Improving communication between central IT and divisional IT groups are helping in the general acceptance of central IT standards.
- 5) Improving communication between IT and business has led to the gradual acceptance of IT as a valued service provider rather than just a cost of doing business, in an institution whose core business is not IT.
- 6) While an institution of higher education has to deal with low staffing levels, this should not be a deterrent in adopting industry best practices. It is important to evaluate the strengths and weaknesses of the business and selectively adopt the aspects of standards like COBIT and ITIL that are most necessary for supporting the business.
- 7) COBIT requires the use of a good project management methodology. The institution's adoption of COBIT led to the adoption of PMBOK. This was particularly important as the institution's IT staff does a considerable amount of the project implementation and delivery work in-house.

With regards to the relationship between IT governance and IT-business alignment the model that appears to be emerging is discussed below:

8. A preliminary model as illustrated in Figure 4 seems to be emerging as a result of this pilot case study. This will be further developed and tested based on five case studies that are currently being undertaken. De Haes and Van Grembergen (2004) provide a broad framework for implementing IT governance through a mixture of structures, processes and relational mechanisms (as discussed in Table 1). However, they do not explicitly discuss the relations between these three and how they relate to corporate structures, processes and relational mechanisms and IT-business alignment.

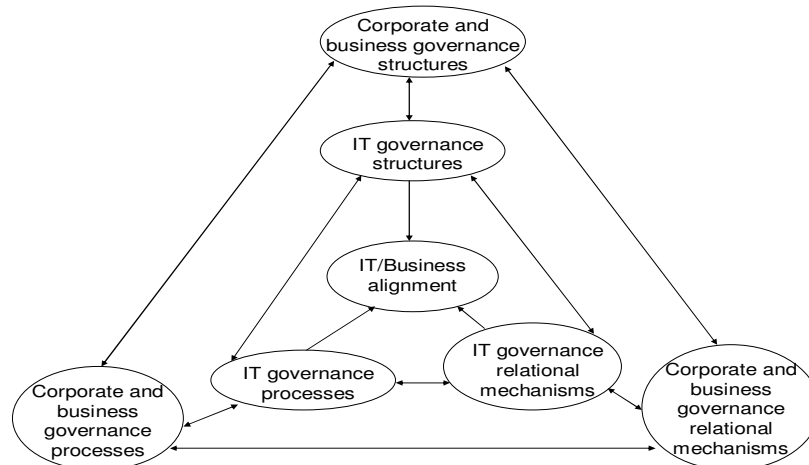


Figure 4: Implementing IT governance for IT-Business alignment

The pilot study suggests that the development of IT governance structures (eg. the ICT committee) leads to improved relational mechanisms and the wider adoption of IT governance processes (see Figure 4). The adoption of IT governance processes (eg. COBIT and ITIL) leads to the awareness of the need for centralized IT governance structures and improved relational mechanisms for enterprise-wide adoption of IT governance processes. Finally, attention to relational mechanisms (eg. formal and informal communications) ensures broader support for IT governance structures and processes.

IT governance structures (eg. the ICT committee) interact closely with corporate governance structures (eg. the planning and management committee). The corporate governance processes (eg. regulatory compliance to handle financial and student records) is made possible through the adherence to IT governance standards (eg. ISO 17799 and COBIT). On the other hand, the requirements of support for corporate governance processes drive the adoption of IT governance processes. Corporate relational mechanisms which are representative of the corporate culture are reflected in the IT relational mechanisms of this institution. This indicates that the improvement of IT relational mechanisms may lead to corporate relational mechanisms.

Figure 4 represents a dynamic system in which IT-business alignment is achieved through the dynamic interaction of all the other elements in the system. Both business and IT participants in the study seemed to feel that there was far better alignment between business and IT in the present. This was attributed to increased communication and standardized processes by participants. However this is very preliminary work and will need much further investigation.

## Conclusion and Future Work

The paper is intended to highlight issues regarding the adoption of formal IT governance practices in the higher education sector for the benefit of practitioners, academics, and researchers. While some useful insights into IT governance practices in this sector have been obtained from this study, more case studies need to be conducted in order to generalize findings in the context of this sector. As a result of this pilot case study further studies are now be conducted to investigate the extent of IT governance practices in the higher education sector in Australia and to further develop the model discussed in the previous section.

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