Faculty of Business

Perceived Value of Mobile Commerce (M-VAL) – Conceptualisation, Scale Development and Validation

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DECLARATION

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ABSTRACT

Although Customer Perceived Value (CPV) is a well-established concept in the field of marketing, the literature has not sufficiently captured the dynamics of perceived value (PV) within the context of mobile commerce (M-Commerce). As M-Commerce creates value beyond conventional and desktop-based online commerce, it is critical to determine what consumers perceive as value from mobile commerce (M-VAL). Set in a highly competitive environment, M-Commerce requires an attractive value proposition to gain competitive advantage. In such a scenario, it is integral to understand what mobile shoppers (M-shoppers) perceive as value and how repurchase intention (RI) can be boosted using effective engagement strategies. As such, this study had conceptualised and developed an M-VAL scale for M-Commerce, and later, investigated the correlations among M-VAL dimensions, consumer engagement (CE), and RI.

This study reports the rigorous processes performed to develop the M-VAL scale based on two separate studies involving 878 Malaysian M-shoppers, mostly 25-45 years of age group, selected via convenience sampling. In Study 1, the M-VAL scale development steps were identified with items generated from literature review and qualitative study. In order to generate the item pool, systematic literature review was executed by reviewing the existing literature, in which accepted, established, and promising factors were selected. Next, the netnography approach was adopted to carry out a qualitative analysis for the purpose of supplementing the item pool. The outcomes retrieved from Study 1 were presented as scale items after a panel of experts had determined the face and content validity of the items for purification and validation purposes. In Study 2, scale purification and validation were performed via principal component analysis (PCA) (n = 365) and confirmatory factor analysis (CFA) (n = 513), respectively. The context of this research was travel industry; hence the scale items were contexualised for travel apps. The questionnaire contained screening and demographic questions, whereas scale items were measured on seven-point Likert scale. The M-VAL Scale was evaluated using nomological network of relationships. The conceptual framework was analysed using SEM through Analysis of Moment Structures (AMOS) 24 Software. The study outcomes yielded a purified and validated M-VAL scale, besides determining the impact of its dimensions on CE and RI for M-Commerce.

The findings revealed multi-item, multidimensional higher-order construct M-VAL scale with three primary dimensions, nine sub-dimensions, and 25 items. The three primary dimensions of M-VAL scale reflected second-order reflective constructs namely utilitarian, interaction, and credibility values. The dimension of utilitarian value was composed of the following three sub-dimensions: information, economic, and convenience values. Next, the dimension of interaction value comprised of four sub-dimensions of interface, customisation, visual, and gamification values. Lastly, the dimension of credibility value consisted of two sub-dimensions; system and social credibility values. Upon displaying internal consistency, reliability, construct validity, and nomological validity; the M-VAL scale revealed the complexity, the multidimensional, and the multidisciplinary nature of PV from M-Commerce. The three primary dimensions exhibited significantly positive effect on RI, with utilitarian value dominating the other two dimensions. Next, when the mediating role of CE was tested on the relationships between M-VAL scale dimensions and RI, full mediation was noted between interaction value and RI. However, no mediating role of CE was observed between the other two dimensions and RI.

This study substantially contributes to the literature on several relevant matters through the extension of CPV concept to M-Commerce. This study pioneers in conceptualising the M-VAL, and consequently, developing the M-VAL scale. It sheds light on both the nature and the dimensionality of developing this concept, hence offering new and crucial perspectives for the academic literature in developing this concept. In light of managerial implications, this study offers a viable framework for businesses to design the right mix of value proposition through their mobile apps. Better comprehension and clearer measurement of M-VAL can facilitate businesses to enhance the value proposition of their offerings by making it more effective and appropriate. Several shortcomings were noted in this study, particularly in terms of complexity of the scale being multi-item, multidimensional, and higher-order structure. An effective and precise scale should be simple and short. Future research work may focus on keeping the M-VAL scale shorter by reducing the number of simplified dimensions and by embedding fewer items.

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LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Moment Structures
AVE	Average Variance Extracted
CE	Consumer Engagement
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMB	Common Method Bias
CMV	Common Method Variance
CPV	Customer Perceived Value
df	Degrees of Freedom
DV	Dependent Variable
E-Commerce	Electronic Commerce
EFA	Exploratory Factor Analysis
GFI	Goodness-of-Fit Index
IV	Independent Variable
KMO	Kaiser-Meyer-Olkin
M-Business	Mobile Business
M-Commerce	Mobile Commerce
M-shoppers	Mobile Shoppers
M-shopping	Mobile Shopping
MI	Modification Index

NFI	Normed Fit Index
ORI	Online Repurchase Intention
PCA	Principal Component Analysis
PV	Perceived Value
RI	Repurchase Intention
RMSEA	Root Mean Square Error of Approximation
RO	Research Objective
RQ	Research Question
SEM	Structural Equation Modelling
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index
VIF	Variance of Inflation Factor
WOM	Word-of-Mouth

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CHAPTER 1

INTRODUCTION

1.1 Chapter Overview

This chapter presents the research topic of this thesis by briefly stating its background, purpose, objectives, contributions, and scope. This chapter starts with the background of this study, followed by the problem statement and research questions (RQs) to address the stated problem. Next, this chapter states the objectives, methodology, relevance, and importance of this study. The schematic view of this study is presented, along with the thesis structure encompassing the overall view of the research work, and followed by research contributions. Finally, this chapter highlights the structure of this thesis and ends with a chapter summary.

1.2 Background of the Study

Customer Perceived Value (CPV), which emerged in the 1990s, has garnered interest amidst academic and practitioners within the business and marketing segments. This CPV concept is one of the most significant factors that dictate organisational success (Burke, 2002; Hoffman & Novak, 1996; Klein, 1998). It has been envisioned as a critical strategic weapon in attracting and retaining consumers (Hsiao & Chen, 2016). According to Wang, Wang and Wang (2018), CPV has a significantly positive impact on purchase intention. Additionally, CPV exerts significant influence on consumer satisfaction (see Li, Aham-Anyanwu, Tevrizci, & Luo, 2015; Zboja, Laird, & Bouchet, 2016), consumer loyalty (see Koller, Floh, & Zauner, 2011; Kuikka & Laukkanen, 2012), and attitude of consumers (see Aydin & Karamehmet, 2017; Izquierdo-yusta, Olarte-Pascual, & Reinares-Lara, 2015). Additionally, prior researchers have reported the multidimensional and highly context-dependent nature of perceived value (PV) (see Holbrook, 1994; Voss, Parasuraman, & Grewal, 1998). As for the online retail setting, both product and website contribute value to consumers (El-adly, 2018). Customer value appears to be a key driver of competitive advantage and a critical strategic weapon in attracting and retaining customers within the online shopping setting (Lin, Chen, Wang, & Lin, 2018). Based on the initial definition of CPV contributed by Zeithaml (1988), numerous researchers have incorporated the one-dimensional approach to expand the

definition of CPV into multidimensional with higher order aspects (see Grewal, Monroe, & Krishnan, 1998; Holbrook, 1994; Lapierre, 2000; Sheth, Newman, & Gross, 1991; Woodruff, 1997). Later, the very concept of CPV and its dimensionality have been tested for various industries and markets (see Roig, Garcia, Tena, & Monzonis, 2006; Gómez-Ortiz, Pérez-Aranda, & Navarro-García, 2017; Sweeney & Soutar, 2001). This dimensionality and model taxonomy were reviewed and conceptualised by several researchers in the form of review paper (see Chang & Dibb, 2012; Sanchez-Fernandez & Iniesta-Bonillo, 2007; Zauner, Koller, & Hatak, 2015).

Mobile commerce (M-Commerce) was defined by Keen and Mackintosh (2001) as an extension of electronic commerce (E-Commerce) from fixed location to movable location with better convenience. Marthandan, Chong, Ooi, and Arumugam (2009) comprehensively defined M-Commerce as "any transaction including transfer of ownership or rights of any goods or services carried out by using mobile access through mobile devices" (p. 13). Evidently, mobile phones are an integral part of our daily lives (Stocchi, Cuerini, & Michaelidou, 2017).

The mobile phone is possibly one of the fastest technologies that have been widely adopted across the globe for multiple purposes, including communication, shopping, payment, booking, and entertainment (Deloitte, 2019). Over 45.5% of the world population (~ 3.5 billion) use smartphones, followed by 92.6% of internet users use mobile devises to go online, and 49.5% of consumers use smartphones for online shopping (Statista, 2020). The statistical evidence revealed that about one-fourth of product and service purchases were performed via smartphones or tablets, wherein mobile purchase has turned into a habit (Shukairy, 2017). Presumably, the number of downloads using mobile phones has increased to $284 billion, including $100 billion in revenue by 2021 (AppAnnie, 2016). The shift from conventional market to online market has been widely extended to mobile market (KPMG, 2019).

As the global M-Commerce market is poised to cross US$3.56 trillion by end of 2021 with a steep rise of 34.83%, as compared to 2019, the Asia Pacific market could constitute more than 50% of the figure (AppAnnie, 2020). Earlier in 2018, sales volume generated from mobile applications (apps) contributed to more than one-third of the total

E-Commerce sales volume in Asia-pacific. In 2019, the use of mobile shopping (m-shopping) apps grew exponentially by 240%; making M-Commerce the most popular channel amongst Asian users. In the South East Asian context, the use of m-shopping apps had tripled in just a year to ~ 28%. The major drivers of such growth were ascribed to world's highest mobile and internet users' penetration within the region.

In Malaysia, M-Commerce has been expected to flourish by three-fold, when compared to E-Commerce according to Digital News Asia reports (www.digitalnewsasia.com). At present, m-shopping platforms have grown by 47% in Malaysia, which is above the global average of 44%. With such substantial growth, Malaysia is ranked third just after Taiwan and India in the Asia Pacific region (MasterCard, 2018). Out of the 20.6 M active internet users in Malaysia, a large portion of 18.0 M are active users of internet on mobile devises, wherein 35% of them access the internet using smartphones, as reported by Transaction Network Services (TNS)-Google (2018). Malaysian shoppers are conscious shoppers and 70% of them perform some research prior to making purchase, thus making the market more competitive. This rate appears to be the highest within the South East Asian region.

The shift from conventional market to online market is extended to mobile market (Minna, 2008; Stocchi et al., 2017). Mort and Drennan (2007) asserted that such shift stems from clients who seek more convenience, which can be received from mobile capabilities of M-Commerce. M-Commerce is more unique than the conventional in-store commerce due to higher interactivity (Wang, Malthouse, & Krishnamurthi, 2015; Wu & Husio, 2017), convenience (Andrews, Goehring, Hui, Pancras, & Thomswood, 2016; Shankar, Kleijnen, Ramanathan, Rizley, Holland, & Morrissey, 2016), personalisation (Shankar et al., 2016; Tang, Liao, & Sun, 2013), and efficacy in the former platform (Andrew et al., 2015; Hofacker, De Ruyter, Lurie, Manchanda, & Donaldson, 2016).

As CPV is a comparative, personal, and situational concept (Miao, Xu, Zhang, & Jiang, 2014), the definition of value has evolved over time (Chi & Kilduff, 2011). The existing models are discussed in the context of traditional, in-store consumption scenarios. The effort of conceptualising the CPV dimensionality is continuous as empirical studies keep

emerging in the field citing the dynamic nature of CPV. Nevertheless, there is limited robust modelling of CPV for mobile consumers in the literature with extensive focus on experiential aspects, thus missing out other crucial dimensions (Goi, 2016). The dimensionality of CPV in the context of M-Commerce lacks conceptualisation and clarity (Huang, Mou, See-To, & Kim, 2019). ‘The perception is reality. Everything else is an illusion'. This famous quote by Ries and Trout (1993) reflects the phenomena of m-shopping and competitive market. The demand for businesses to offer the right and attractive value proposition is escalating in accordance to the needs of consumers (Leppäniemi, Karjaluoto, & Saarijärvi, 2017).

Oxenfeldt and Monroe (1990) asserted that although regular consumers are the best source of revenue, these consumers may face difficulty in expressing their expectations in any new context thus the difficulty to understand their perceptions. Mobile apps have become increasingly popular due to the ubiquity of smartphones. Unfortunately, most apps did not turn popular and exited play stores. In fact, 23% of users did not repeat the use of apps after the initial attempt (AppAnnie, 2016), mainly because they lose interest using low-quality apps without any real value. Some common reasons for such abandonment include privacy concerns, unsatisfactory user experience, excessive promotion and push messages, and navigation issues (Deolite, 2018). If the app does not offer any value, it gets replaced easily. As the app is never ready and must be upgraded constantly to provide better value, the concept of PV can be applied for mobile app design and development. This creates a competitive environment for M-Commerce, thus making repurchase intention (RI) and consumer engagement (CE) as the key success factors for M-Commerce. It is critical to identify what mobile consumers perceive as value to offer suitable value proposition. Generally, companies adopt numerous ways to enhance CE, such as free coupons, clustering, content management, product reviews, push notifications, live chat, social commerce, customer accounts, personalisation, incentivising visits, and interactive videos. However, no academic model is present to suggest the development of effective CE strategies. As M-Commerce offers additional value elements (Huang et al., 2019), investigation of consumers’ perception of such value is indeed important. The M-Commerce industry is highly competitive and similar services are offered by several firms, thus making consumers to be less committed to

any particular app and leading to low profit margins (AppAnnie, 2016). This requires deeper insight of various aspects related to perception of value from M-Commerce. Such aspects need to be conceptualised and tested empirically. Therefore, this study sheds light on the PV from M-Commerce by conceptualising it as M-VAL, as well as developing and validating the PV scale for M-Commerce - which is absent in the literature. Additionally, this study determined the impact of M-VAL on CE and RI in the context of Malaysian M-Commerce users.

1.3 Problem Statement

1.3.1 Industry Problem

Companies are increasingly turning to apps to gain additional consumers, mainly because mobile phone has become an integral part of our lives (Stocchi et al., 2017). While the mobile market is rapidly developing, anticipating what consumers expect or perceive is not easy to comprehend (Huang et al., 2019). Despite the significant increase in the online traffic of shoppers browsing using their smartphones, firms are struggling to convert inflow to actual sales (Lim & Cham, 2015). Based on Statista (2019) reports, only 1.56% of online visits on smartphones were converted into purchases. Besides, there is a chance of bounce back on purchases if loading time of app pages increases. According to KPMG (2019), the probability of bounce can increase by 32% if mobile page load time escalates from 1 s to 3 s. This causes buyers to abandon their purchase attempt at the final stage of purchase by 85.65% rate (Deolite, 2018). Mobile consumers are price sensitive and this nature places tough pressure on firms to reduce margins and to retain consumers for multiple purchases (KPMG, 2019). This poses several challenges for the businesses to cope up with such aspects. It is not easy to anticipate the expectations and perceptions of consumers, despite the rapidly developing mobile market (Gilbert, Sangwan, & Ian, 2005). These days, consumers are not only demanding, but their value-consciousness is increasing as well (Leroi-Werelds et al., 2014).

M-Commerce is a highly competitive industry and companies are in race to offer better value to customers to gain competitive advantage (Moss, 2016). Hence, M-Commerce businesses should understand what really underlines value for their customers to offer

the right value mix (Leppäniemi et al., 2017). In order to remain relevant in the competitive market and stay ahead of the competition, it is crucial to focus on providing value to M-Commerce consumers (Maity & Dass, 2014). As mobile consumers are constantly engaged in browsing competitors, businesses should offer suitable value proposition that matches the value criteria sought by users (Zhang, Li, & Wu, 2017). There is a 61% higher chance that consumers will switch to other apps in search of value. If the websites are mobile friendly, there are 67% more chances that customers will buy the product online. Hence, retailers are interested to invest in developing mobile friendly websites and apps. The first thing businesses should do is to understand mobile users, and then develop mobile apps to resolve any issues and to enhance their value offering.

According to Shankar, Smith, and Rangaswamy (2003), the ability of M-Commerce in facilitating consumers to achieve their goals in a simple, instant, and economical method has created value not only beyond the conventional commerce, but also E-Commerce. Notably, the unique characteristics of M-Commerce are mobility, easy and real-time information access, as well as a wide range of users that forms a bigger segment and utility for business purposes. Shopping via mobile offers speed, personalisation benefit, and less restrictions on consumers; unlike desktop-based online shopping (Scornavacca, Barnes, & Huff, 2005). Steinbock (2005) asserted that M-Commerce offers additional value elements, thus subsequently indicating the importance of identifying consumers' perception of value. There is always the risk of offering complex value proposition that is unappealing to customers or developing value proposition without determining the demands of consumers. It is imminent for businesses to identify the essential components of M-VAL. It is also important to understand the key consequences of M-VAL. Dodds, Monroe, and Grewal (1991) stated that although regular clients are the best source of revenue, it may be a challenge to determine their expectations in a new context. This poses a requirement of ensuring customer loyalty, so as to ensure RI among consumers. Loyalty, RI, CE, and satisfaction are some vital consequences of CPV.

The escalating number of mobile network operators has fuelled the growth of M-Commerce in Malaysia (Goi, 2016), thus resulting in increased competition. The CE, in the context of M-Commerce, has a crucial role to create useful and engaging apps that can resolve many business issues by enhancing RI. According to Sterling (2014), consumers prefer spending more time on mobile apps than desktop-based internet or the television resulting in more revenue as engaged consumer tend to repeat purchases which boosts loyalty. However, when it comes to consumption of mobile apps, it was found that 400,000 out of 600,000 apps in the iPhone Operating System (iOS) App Store had never been downloaded, while 80% of paid Android apps recorded less than 100 downloads (Lim, Bentley, Kanakam, Ishikawa, & Honiden, 2014). In addition, apps developers work in highly competitive markets, whereby despite the rapidly increasing number of apps; the margins per sales are very low (Lim, et al., 2014). The CE is critical in M-Commerce setting and strategies to device effective CE methods to affect their value dimensions. Value-based CE is beneficial for M-Commerce companies as suitable CE activities can increase interaction and RI exponentially. The conceptualisation of M-VAL warrants the need of empirical investigation to determine the impact of M-VAL dimensions on CE and on RI through CE. Hence, managers must identify the key consequences of M-VAL, such as CE and RI, so as to resolve the aforementioned business problems.

In a nutshell, research problem can be summarised as follows. M-Commerce is a highly competitive industry, therefore, in order to remain relevant and stay ahead of the competition, M-Commerce businesses should understand what really underlines value for their customers to offer the right value mix. On the other hand, consumers are not only demanding, but also their value-consciousness is increasing. At the same time, firms anticipate what consumers expect or perceive is not easy to comprehend. This makes difficult to offer appropriate value proposition to customers to gain competitive advantage. Firms are struggling to convert inflow to actual sales. In addition, customer engagement is required in order to retain them as mobile consumers are constantly engaged in browsing competitors. Current study solves this problem by developing M-VAL construct and a scale to measure the same. Furthermore, impact of M-VAL on CE and RI are investigated.

1.3.2 Research Gaps

Although the concept of PV is not new to the marketing field, the conventional PV theories are developed in traditional, in-store market; thus, may be ineffective in capturing the true nature of M-VAL (Huang et al., 2019; Karjaluoto, et al., 2019). Although these conventional models were tested empirically in traditional and electronic markets, one should note that these market settings differ from M-Commerce setting (Pura & Gummerus, 2007). According to DeSarbo, Jedidi, and Sinha (2001), conventional PV research models dismiss consumer and services heterogeneity. As business models become increasingly complex, consumers perceive value in different ways (Chi & Kliduff, 2011). Besides, Huang et al. (2019) and Karjaluoto et al. (2019) highlighted that M-Commerce offers additional value elements, thus signifying the importance of investigating consumers' perception of value.

Traditional in-store commerce differs from M-commerce in many aspects. The unique characteristics of M-Commerce include interactivity (Wang et al., 2015; Wu & Husio, 2017), convenience (Andrews et al., 2016; Shankar et al., 2016), personalisation (Shankar et al., 2016; Tang et al., 2013), effectiveness (Andrew et al., 2015; Hofacker et al., 2016), and production of value beyond traditional in-store commerce that result in the achievement of consumers' goals in a simple, instant, and economical way. Brick-and-mortar stores are usually constrained by location and time-consuming processes. Although some conventional value dimensions may be relevant in the M-Commerce setting, such as convenience or functional value, the meaning of value in M-commerce partially differs from the meaning of value for in-store business set up (Huang et al., 2019). Despite the similar definitions of M-Commerce in the literature, the convenience of M-Commerce generates varying perceptions about functional (Huang et al., 2019; Strom et al., 2014) and economic values among others. Moreover, M-Commerce offers flash sales and discounts, which distinguishes it from in-store business where discounts are generally offered during festive seasons. With social M-Commerce, consumers and companies may interact at any time and any place, which can further improve consumers' perception of social value (Strom et al., 2014; Wang et al., 2015; Wu & Hsiao, 2017). The existing models are discussed in the context of traditional, in-store consumption scenarios. Most researchers have extended the research landscape from in-

store consumption to service and online businesses (see El-adly, 2018; Williams & Soutar, 2009), while other studies have explored mobile services based on multidimensional models (see Karjaluoto et al., 2018; Yang et al., 2018). Meanwhile, some have identified mobile PV dimensions in varied contexts (see Huang et al., 2019; Karjaluoto et al., 2019).

M-Commerce differs from E-Commerce in several ways. Shopping from mobile offers personalisation benefits, speed, and less restriction on consumers; unlike desktop-based online shopping (Scornavacca et al., 2005). M-Commerce consists of an attribute of ubiquity, thus enabling easier information access in real-time that contributes to communication independent of user's location (Åkesson, 2007; Choi, 2018). It offers convenience to consumers through the constant availability of the device that stores data. Apart from enabling consumers to be contacted anywhere and anytime, limited accessibility could be offered to a particular person or at certain time (Pihlström & Brush, 2008). M-Commerce assists in the matching of services based on location, hence offering localisation - another aspect that distinguishes M-Commerce from E-Commerce (Choi, 2018). M-Commerce organisations are capable of utilising large data and offering personalised recommendations to consumers so that they can gain positive perceptions of emotional value (Shankar et al., 2016; Tang et al., 2013). Although the experiential value in E-Commerce may be extended to M-Commerce, further investigation is required to identify the experiential value in E-Commerce due to small screen size and limited storage space (Choi, 2018). Some drawbacks of M-Commerce are small screens and keypads that may result in limited messages and information browsing. Furthermore, the technical hurdles of mobile devices include limited memory and computing power, which can lead to insufficient bandwidth and limited data transfer capacity. When compared to desktop-based website, detailed product description and quality product images are sought in M-Commerce apps (Chi, 2018).

As the existing marketing literature may not thoroughly describe how M-Commerce provides value beyond the traditional or E-Commerce platforms, there is a continuous need to rethink, reinvestigate, and re-conceptualise the PV to determine what is perceived as valuable amidst consumers. Some studies highlighted what consumers

perceived as valuable from M-Commerce, although the technical aspects were the main focus (see Büyüközkan, 2009) or the studies were mainly based on the implementation of traditional models of PV in the context of M-Commerce (see El-adly, 2018; Williams & Soutar, 2009). In spite of the growing body of literature on the importance of mobile shoppers (M-shoppers), particularly in terms of better benefits (see Chen, Hsu, & Lin, 2010; Moon, Javaid, Kiran, Awan, & Farooq, 2018), reduced cost (see Moon & Lee, 2014), as well as hedonic (Huang et al., 2019; Moon et al., 2018) and experiential aspects (Huang et al., 2019; Moon et al., 2018) of m-shopping; the limited conceptualisation of elements into relevant and appropriate dimensions should be addressed. Thus, identifying the factors of the conceptualisation of mobile CPV dimensions and model taxonomy is crucial. Overall, the necessity for multidimensional PV construct is important to identify the heterogeneity of PV from M-Commerce. This also poses the requirement to devise a measurement scale for PV in the context of M-Commerce. In short, there is a need to define M-VAL because uncovering PV dimensions can be the key to address challenges in the industry due to high costs of conversion and acquiring new consumers (KPMG, 2019). The analyses should go beyond the technical aspects of M-Commerce by developing a multidimensional PV scale to ensure that M-Commerce can offer impressive value proposition. In addition, it is then become critical to investigate how such dimensions of M-VAL impacts CE and RI through CE in M-Commerce context as existing literature provides evidence based on in-store or E-commerce context (Overby & Lee, 2006).

Thus, this research addresses multiple knowledge gaps in the extant literature. Firstly, existing CPV dimensions were developed for traditional market context and therefore does not describe how M-Commerce provides value beyond the in-store or E-Commerce platforms. Present study concetualises the construct of M-VAL. Secondly, existing CPV scales are not suitable to measure M-VAL as such scales are focussed on tapping value from traditional market setting. The scale which considers all those aspects which are required to measure M-VAL holistically is missing. The current study addrsses this research gap by developing a scale to measure the same. Thirdly, it is then become critical to investigate how such dimensions of M-VAL impacts CE and RI through CE in M-Commerce context which is a definite research gap. All in all, current study develops

M-VAL construct, a scale to measure such construct and identify its impact on CE and RI in M-commerce context.

1.4 Research Questions

In order to resolve the issues discussed above, it is necessary to determine what mobile consumers perceive as value from M-Commerce. Dimensions and elements of such mobile PV need to be conceptualised and measured. After clarifying the mobile PV scale, its impact was tested on CE and RI. Hence, the following RQs were formulated for this study:

- RQ1. How can customers' perception of value from M-Commerce (M-VAL) be conceptualised?
- RQ2. How can M-VAL and its relevant dimensions be measured?
- RQ3. What are the consequences of M-VAL?

1.5 Research Objectives

This study proposes a multidimensional PV scale for travel M-Commerce, in order to investigate the impact of the identified M-VAL dimensions on CE and RI. Travel industry mainly covers flight and hotel booking, transport and related rental, as well as tour packages. The following specific research objectives (ROs) were formulated to achieve the study goal:

- To define M-Val as a construct.
- To identify the dimensions of M-Val as a construct.
- To develop a scale to measure M-VAL.
- To investigate the impact of M-VAL on consumer engagement and repurchase intention.

1.6 Research Scope

The theory of consumption value states that expectation and perception of value, which is also formulated from previous experiences, can change based on the context (Sweeney, Soutar, & Johnson, 2003). Hence, M-Commerce consumers who did not use such apps may have different expectations and perceptions. Perceived value (PV) involves pre-purchase, in-use, and post-purchase elements, whereby post-purchase

consequences of use may trigger future perception. The scope of this study is focused on the travel industry that mainly covers flight and hotel booking, transport and related rental, as well as tour packages. Contextualising scale items for a particular industry result in generating quality response from survey participants (Farh, Cannella, & Lee, 2006; Hantrais, 1999; Shaffer & Postlethwaite, 2012). As mobile apps across industries share similar basic attributes, importance of such attributes may vary based on nature of the industry. Therefore, the scale development based on a particular industry can be replicated for other industries as objective of a scale is a measurement instrument. Evidence of such contextualisation and replication of contextualised scales (e.g., Angeles & Shah, 2019; Riefler & Diamantopoulos, 2009; Walsh, Beatty, & Shiu, 2009) can be found in existing literature. Malaysians have adopted online shopping with their online purchase dominated by flight booking (88%), hotel booking (75%), cinema ticket booking (37%), as well as product categories led by apparel (42%), followed by appliances, electronic goods, and groceries (Wong, 2015). The travel industry constitutes a major share of the total M-Commerce, which includes flight and hotel booking, car rental, tours, and other related package booking. This study considers customers having personal experience of using Malaysian travel apps. Non-users are excluded from the study.

Data were gathered from millennial (age 25 to 45 years as of 2020) respondents. Students were omitted as sample to represent the general population of technology users as their behaviour differs from the general users (King & He, 2006). Millennials are the main users of travel M-Commerce; the main component of Malaysian population who are well-equipped with internet on smartphones and the ability to pay. The scope of repurchase in this study denotes repeat purchase of any item or brand using the same mobile app. Hence, RI is beyond the intention to re-use the app, but reflects the actual repeat purchase of the products listed on the app. The scope is not limited to a particular brand or product listed on M-Commerce apps. The focus is on repeat purchase of travel products that can increase RI and CE, which are key success factors for M-Commerce. Additionally, this study dismissed mobile website as mobile website is mainly the abstract version of the desktop website to facilitate the same experience from mobile

devices. This could limit the study from exploring value perception factors from mobile apps.

1.7 Conceptual Foundation

This study had been based on the conceptual foundation of the theory of consumption values, the consumer value perspective, and the existing literature pertaining to PV. Prior studies have uncovered various facets of PV and established the fact that value is not just economic (Holbrook, 2006) or functional (Roig et al., 2006), but it is also emotional, epistemic, conditional (Sheth et al., 1991), and social (Holbrook, 2006; Sheth et al., 1991). Other aspects, such as hedonic and altruistic, also form elements of PV (Holbrook, 2006). It was established by Sheth et al. (1991) and confirmed by several researchers that consumer choice is not a function of simple value element, but of multiple consumption values. Besides, it was prescribed that "value is always uniquely and phenomenologically determined by the beneficiary" (Vargo & Lusch, 2008, p. 9). Hence, the meaning of value and the process of value creation can rapidly shift from product organisation and exchange-centric view to personalised consumer experiences. The conceptual foundation of M-VAL in this study is in line with the key aspects of the core concept of PV that weighs in 'benefit' and 'sacrifice' components to be similar to the components of 'give' and 'get' of PV.

1.8 Schematic View

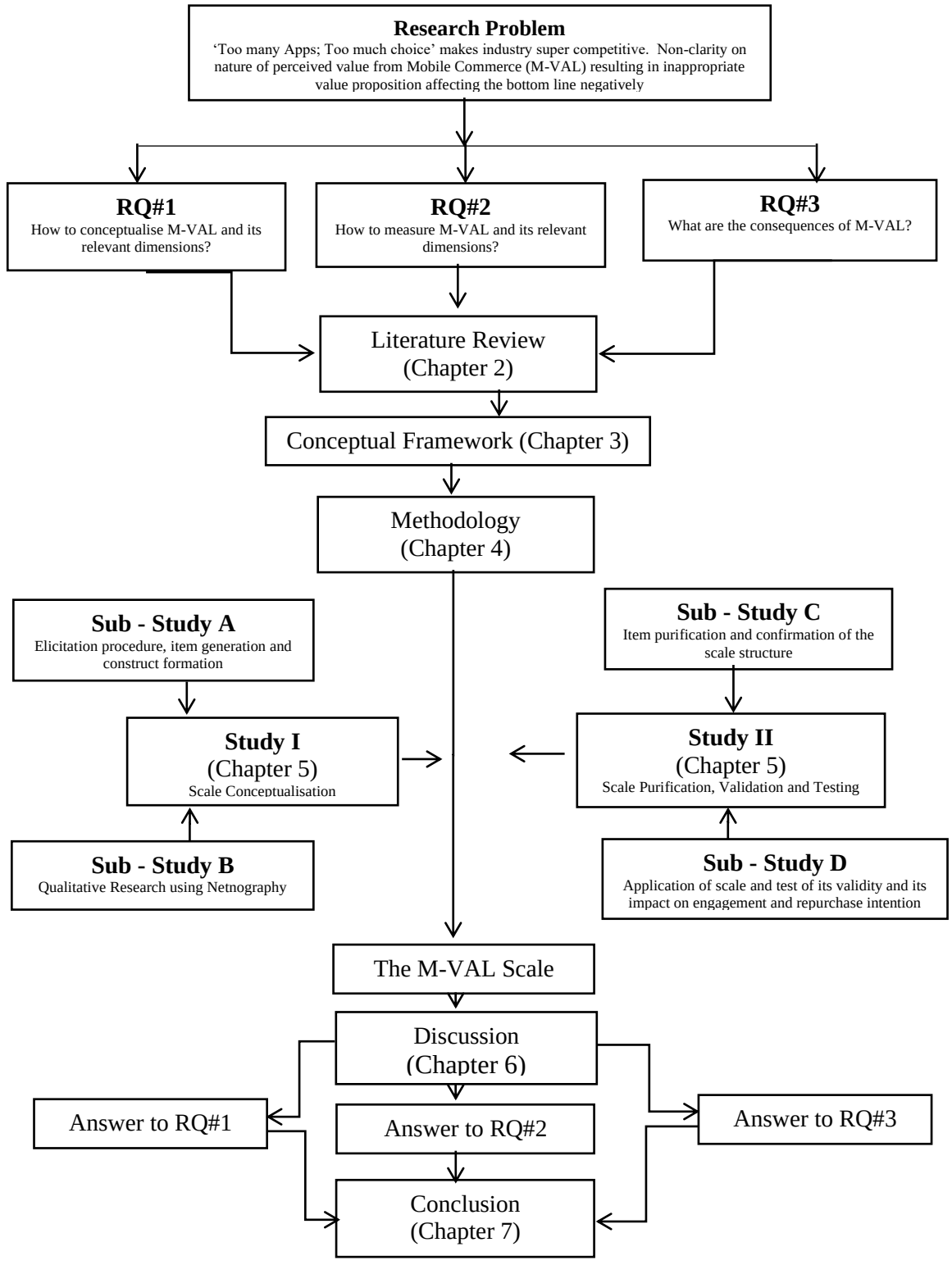


Figure 1.1 Schematic View of the Study

Source: Author

1.9 Overview of Methodology

In order to address the RQs and ROs, this study was carried out in two phases, Studies 1 and 2, wherein these studies were further divided into two sub-studies each viz. sub-studies A to D. Study 1 addressed scale development and purification, while Study 2 included validation and testing of the scale, as well as determining its impact on CE and RI.

The first study employed steps of scale development, including item generation, face validity, qualitative analysis using netnography for items refinement, questionnaire administration, factor analysis, internal consistency assessment, construct validity, and replication. The deductive scale development approach was deployed. The scale was conceptualised by identifying domain specification, item pool generation through literature review, qualitative analysis, and later, expert item judging. In order to generate the item pool, systematic literature review was conducted by reviewing the literature, and followed by selecting the accepted, established, and promising factors. The netnography approach was adopted to perform qualitative analysis, so as to supplement the item pool. Around 3000 reviews of app users were gathered from the Google Play platform. Thematic analysis was executed to identify related dimensions. This facilitated in developing the item pool with wording familiar to the respondents. Notably, Study 1 (sub-studies A and B) yielded the initial multi-item multi-scale for purification and validation purposes.

Next, Study 2 adopted the explanatory and quantitative research approaches. All value dimensions identified in Study 1 were tested empirically by designing a survey questionnaire that was distributed to the sample drawn from target population. The questionnaire contained screening and demographic questions, as well as items that were measured on seven-point Likert scale. Reliability and validity aspects of the model were analysed using Confirmatory Factor Analysis (CFA), whereas the causal correlation among the variables were assessed using Structural Equation Modelling (SEM) via IBM SPSS Analysis of Moment Structures (AMOS) 22 Software. Study 2 (sub-studies C and D) yielded purified and validated multi-item multidimensional M-VAL scale, as well as its impact on CE and RI.

1.10 Importance of the Research

The importance of the current research emanates from the fact that it conceptualizes PV from M-Commerce and develops a scale for measuring M-VAL. Developing a new M-VAL scale is important because it is critical to identify what consumers perceive as value from M-Commerce. Existing CPV dimensions and scales to measure such dimensions are developed for traditional in-store and E-commerce context which makes them irrelevant for M-commerce context as M-Commerce creates value beyond traditional and desktop-based online commerce. This conceptualisation of M-VAL and development of scale is also important because of its managerial implications as it may assist M-Commerce businesses to enhance the value proposition of their offerings by making it more effective and suitable. This study enriches the theory development in CPV literature by conceptualising the consumers' perception of value in the M-Commerce setting. A mobile PV scale is proposed, along with its impact on CE and RI. Essentially, this study offers theoretical, practical, and methodological implications.

1.10.1 Bridging the Research Gap

This study bridges the gap in PV theory by uncovering what mobile consumers perceive as value from M-Commerce. First, the value dimension was conceptualised in terms of M-shoppers, while the M-VAL definition is proposed to bridge the existing literature gap. Next, the multidimensional mobile PV scale was assessed that capture the perceptions of M-shoppers. Theory of consumption values (Sheth et al., 1991), typology of customer value (Holbrook, 1994), and customer value hierarchy model (Woodruff, 1997) provided value dimensions and were tested for various products and services in several markets. New dimensions were introduced when Overby and Lee (2006) proposed the 'Effect of Hedonic and Utilitarian Values on Online Shopping'. This theory covered hedonic and utilitarian aspects of value for online shoppers using desktop. This present study extends it to online shopping using mobile apps. This is because; there is no scale to measure PV from M-Commerce. Lastly, this study fills up the crucial gap identified in the M-Commerce user requirement model proposed by Büyüközkan (2009), which merely focused on technical aspects. This present study had gone beyond technical elements by proposing other related value dimensions. The

correlations among M-VAL, CE, and RI were explored to identify how and what elements of PV affected M-Commerce CE that led to RI. As such, this study proposes a framework to design effective CE strategies based on PV to boost RI.

1.10.2 Managerial Implications

Companies need to identify CPV and survive in this marketing context by exploring the new characteristics of CPV in the M-Commerce context. Companies are increasingly turning to apps to gain additional consumers as mobile phones have become an integral part of our lives (Stocchi et al., 2017). As business models are becoming increasingly complex, consumers perceive value in different ways (Chi & Kliduff, 2011). The proposed M-VAL scale offers multi-item measure to tap into CPV, while simultaneously producing appropriate value proposition that bridges the gap between what consumers perceive and what companies offer. Managers may devise effective strategies based on the dimensions of the scale and its impact on consumer behaviour. Impact of each dimension may be assessed separately, if required. The scale can be used in multiple contexts, such as mobile marketing, development of CE strategies, individual assessments, etc. It can also be applied to enhance advertisement efficacy, CE, and loyalty. The scale may serve as a guide to app developers and programmers to draft inputs and strategies in developing effective mobile apps. By understanding the dimensions of M-VAL and by employing the scale to measure them, firms can develop better strategies to monitor, and if necessary, to modify value proposition. When it comes to other implications for businesses, this study offers a useful framework for businesses to design effective CE strategies and the right mix of value proposition by bridging the gap between consumers' perceptions and company value propositions. The model functions as a facilitator in designing various CE and promotional strategies for Malaysian travel businesses, wherein such strategies are exclusively based on M-shoppers' perception, which in turn, ascertain RI.

1.10.3 Methodological Implications

In the methodology section, a combination of steps was deployed to develop the scale in the context of M-Commerce. The stages of scale development were formulated by reviewing several related studies. Second, the netnography approach was applied for

item generation via qualitative analysis. The use of netnography prescribes a new paradigm in qualitative analysis of mobile consumers' perception.

1.11 Thesis Structure

As portrayed in the schematic view of this study, it is composed of seven chapters. The first chapter presents study background, problem statement, RQs, ROs, and a summary of the methodology deployed. It outlines the scope, conceptual foundation, and justification for this study. This chapter ends by underpinning the theoretical, managerial, and methodological contributions.

Chapter 2 covers the literature review in detail. It starts by defining and reviewing the key concepts and theories deployed in this study. The review and analysis of the definitions were conducted based on extensive range of literature. The broad literature and major approaches towards CPV since its inception were reviewed systematically and critically to identify research gaps. As this study is related to scale development, literature related to various PV scales developed in the past was reviewed to decipher the related conceptual and methodological aspects. Finally, the chapter reviews related empirical studies to analyse their objectives, methods, and findings. Research gaps were clearly identified and hypotheses were formulated to fill the gaps. It then justifies that this study bridges the gaps that persist.

Chapter 3 discusses the conceptual framework and the hypotheses formulated in this study. This chapter explains the conceptual foundation based on the underpinning key theories, and followed by presenting the proposed conceptual M-VAL dimensions. Hypotheses were set to achieve the ROs. However, final hypotheses were developed after constructing the scale based on item generation via literature and qualitative analysis. This chapter concludes by presenting the conceptual framework.

Chapter 4 sheds light on the research methodology by narrating each step and option, along with justification of the selected options. The chapter starts with research paradigm, research method, research strategy, research design, key steps taken to develop the scale, purification, validation, and testing. All scale development steps are stated and justified. Next, the methodology is described in detail via Studies 1 and 2.

Study 1 outlines the steps taken for item generation, qualitative analysis, item reduction, and rewording. Next, the method involved in Study 2 is described, which mainly involved scale validation and testing. Questionnaire design, data collection procedures, sample size, sample techniques, pilot testing, and data analyses are explained in detail.

Chapter 5 is composed of two studies. Study 1 denotes scale conceptualisation and is further divided into sub-studies A and B. Sub-study A looked into item generation based on the literature, while sub-study B deployed qualitative analysis using netnography by employing NVIVO software for thematic analysis. Study 1 not only operationalised the scale, but also formed its items, dimensions, and overall structure. Next, Study 2 is comprised of sub-studies C and D. Sub-study C looked into scale purification and validation. Final dimensions and items were finalised here based on quantitative data analysis. Sub-study D tested the scale and its impact on other dependent variables (DVs) and mediator.

Chapter 6 discusses the findings based on testing of M-VAL scale, as well as its impact on CE and RI. The chapter then interprets the results and addresses the three RQs. This is followed by a summary of insights and a comparison with outcomes retrieved from past studies wherever necessary. Chapter 7 concludes the study and offers some implications. The conclusions are organised in the sequence of RQs and are linked with the achievement of the objectives. Next, theoretical, managerial, and methodological contributions of this study are presented. Lastly, it sheds light on study drawbacks and scope, while discussing avenues for future endeavour with specific recommendations.

1.12 Chapter Summary

This initial chapter has introduced the study. It presents the study background, explains the research problem, highlights its significance, and then, formulates the RQs to solve the stated problem. This chapter also presents the methodology and study structure to address the RQs. Contributions to literature, practice, and methodology are stated as well. The chapter presents the schematic of this study to provide better clarity on the research. The chapter has concluded by describing thesis structure with a brief on each chapter. The next chapter will critically review existing literature in order to provide theoretical background for conceptualisation of the M-VAL scale.

CHAPTER 2

LITERATURE REVIEW

2.1 Chapter Overview

This chapter positions this current thesis within the existing literature. It provides an overview of the current state of research on the topic of CPV, critically and systematically reviews major approaches pertaining to PV, and highlights both the gaps and limitations in the current understanding towards the topic at hand. It then proposes hypothesised dimensions of M-VAL, a conceptual framework, and a list of hypotheses formulated for this study. The chapter is composed of 11 sections. Section 2.1 defines the key terms related to the topic, which are PV, M-Commerce, CE, and RI. Next, as this study is centred on the PV theory, Section 2.2 presents an overview of the literature related to the same by reviewing several major theories. Section 2.3 reviews various measurement and research methodologies applied in CPV research work. Moving further, Section 2.4 looks into scale development studies, while Section 2.5 describes various approaches used in conceptualising CPV. This underpins the research gap in Section 2.6, which turns into a foundation to conceptualise M-VAL scale, and the subsequent hypothesised dimensions of M-VAL scale. The following sections present the conceptual model for this study. This chapter then ends with a summary.

2.2 Definition of Key Terms

This section presents and reviews the definitions of key terms related to this study, namely M-Commerce, PV, CE, and RI. The objective of this section is to first introduce the term, define the intended meaning used in this study, and review definitions given by main researchers within the field to consider all-round aspects related to each term before reviewing the key theories concerning the topic.

2.2.1 Mobile Commerce

M-Commerce, as defined by Keen and Mackintosh (2001), refers to the extension of E-Commerce from fixed location to movable location that offers more convenience. Marthandan et al., (2009) comprehensively defined M-Commerce as “any transaction including transfer of ownership or rights of any goods or services carried out by using

mobile access through mobile devices." In this section, M-Commerce is defined by considering various definitions given in the past. The terms 'M-Commerce' and 'mobile businesses' have been used interchangeably by many researchers. M-Commerce mainly contains subsets of m-shopping, mobile payment, and mobile banking; whereby m-shopping facilitates purchasing product from mobile devices via apps. Mobile payments enable consumers to transfer payments using mobile device, whereas mobile banking is banking using mobile apps. These are generally referred as 'M-Business', 'M-Commerce' or 'mBusiness', while M-Commerce is applied in this present study. However, other forms are used unaltered if cited from references. Table 2.1 summarises the key definitions of M-Commerce.

Table 2.1: Definitions of M-Commerce

Author(s)	Definition
Müller-Veerse (2000, p. 7)	M-Commerce is any transaction with monetary value that is conducted via mobile telecommunications network
Kalakota and Robinson (2002, p. 8)	The application infrastructure required to maintain business relationships and sell information, services, and commodities using mobile devices
Stanoevska-Slabeva (2004, p. 463)	Mobile businesses are additional wireless channel extension to online business
Tiwari and Buse (2007)	M-Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and completed by using mobile access to computer-mediated networks with the help of an electronic device
Jahanshai, Mirzaie, and Asadollahi (2011)	M-Commerce, alternatively to be known as wireless electronic commerce, is a subset of electronic commerce involving the use of movable computing devices in carrying out various types of economic transactions related to purchasing and selling

Therefore, M-Commerce is an extension of E-Commerce with the addition of new unique features, such as ubiquitous services accessible through internet. Although M-Commerce shares several common features with E-Commerce, they are not limited to such common features.

2.2.2 Perceived Value

The pioneering definition established by Zeithaml (1988) states CPV as consumers' overall assessment of perceived benefits received from shopping against perceived sacrifices. More importantly, numerous studies (see Holbrook, 1994; Lapierre, 2000; Sheth et al., 1991; Woodruff, 1997) have incorporated this one-dimensional definition, followed by multidimensional and higher-order aspects of PV dimensions in light of various industries and markets. In this case, past research work defined the construct of PV based on several terms although most of them share similar meaning. Based on an extensive literature review conducted by Woodall (2003), more than 15 different names were identified for 'value consumer', mainly derived from buying and using products. Business researchers also have used a wide range of terms, such as money, consumption, and service values, based on the contexts of product, service, industry, and market. Table 2.2 presents some of these frequently used terms.

Table 2.2: Alternative Terms for Perceived Value

Term Used	Author (s)
Customer Value	Anderson and Gerbing (1988a); Dodds et al., (1991); Holbrook (1994); Woodruff (1997)
Consumption Value	Sheth et al. (1991)
Service Value	Bolton and Drew (1991)
Perceived Value	Chang and Wildt (1994); Dodds et al., (1991); Grewal et al. (1998)
Customer Perceived Value	Grönroos (1997)
Value for Money	Sweeney, Soutar, and Johnson (1999)
Acquisition and Transaction Value	Grewal et al., (1998); Parasuraman and Grewal (2000)
Value	de Ruyter, Wetzels, Lemmink, and Mattson (2003); Iacobucci, Ostrom, and Grayson (1995)
Consumer Value	Havlena and Holbrook (2002)
Perceived Customer Value	Chen and Dubinsky (2003)

On a more important note, various definitions and interpretations of the PV are available in the literature. However, the classification of CPV elements differs across disciplines. In this case, the dimensionality of CPV is tested from time to time, while additional elements are continuously proposed based on market or products. On a similar note, empirical studies have proposed new aspects in defining PV. Presumably, the initial definition of CPV was given by Schechter (1984), who stated CPV as the combination of qualitative and quantitative factors that are both objective and subjective, which then forms consumer buying experiences jointly. Meanwhile, Monroe and Chapman (1987) described CPV as "a trade-off between quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price". Woodruff (1997) took a different approach of hierarchy in the PV elements by defining it as "a customer's perceived preference for an evaluation of those product attributes attribute performances and consequences arising from use that facilitate (or block) achieving the customer's goal and purposes in use situations". A holistic view of the concept was defined with more details by Woodall (2003) as "any demand-side, personal perception of advantage arising out of a customer's association with an organisation's offering, which can occur as reduction in sacrifice; presence of benefit (perceived as attributes or outcomes); the resultant of any weighted combination of sacrifice and benefit (determined and expressed rationally or intuitively); or an aggregation, over time, of any or all of these". Sheth et al., (1991), by adopting a multi-discipline view that combined economics, psychology, sociology, and marketing aspects, outlined five categories of value: functional, social, emotional, epistemic, and conditional values. These new elements were incorporated into the definition based on market type, such as industrial market.

For many decades, the narrative of PV has been scrutinised within the marketing literature. However, citing the expanded and complex nature of CPV and the critical review of facts, no well-accepted notion has been established. Consequently, many authors have presented diverse definitions of CPV and here is an effort to combine these varied definitions. It is noteworthy to highlight that there are a few commonalities among all the definitions. The first one refers to the notion that value is treated as a trade-off between 'give' and 'get' components from the consumers' view. Second, CPV denotes consumers' overall assessment in most definitions, followed by the perception

of value linked through the use of some products or services. The final commonality describes the perception of value by consumers rather than its objective determination. However, the most recent definition given by Chang and Dibb (2012) described CPV as an aspect, such as perception, which is based on competitors' product through the enrichment of the definition that is beyond the typical benefits and sacrifice components.

Broadly, two methods were noted in conceptualising value. The prior method regards CPV as one-dimensional by describing CPV as a single general perception deliberated by a set of items that examine consumer's discernment of value (see Agarwal & Teas, 2002; Brady & Robertson, 1999; Chang & Wildt, 1994; Dodds et al., 1991; Sweeney et al., 1999). Meanwhile, the later approach models the CPV as a multidimensional construct with several elements that underpin a holistic depiction of a multifaceted aspect. Table 2.3 lists the definitions of CPV.

Table 2.3: Definitions of Consumers' Perceived Value

Author(s)	Definition
Schechter (1984, cited in Zeithaml, 1988)	The net assessment of factors making up total shopping experience, whereby such factors can be qualitative and quantitative or/and subjective and objective.
Zeithaml (1988, p. 14)	An overall assessment made by consumers related to products utility based on perception of benefits received verses sacrifices incurred.
Morrison (1989, quoted in Murphy et al., 2000: 46)	The mental estimate that consumers make of the travel product, where perceptions of value are drawn from personal cost/benefit assessment
Monroe (1990, p. 46)	A trade-off between benefits customers perceive relative to perceived sacrifices
Dodds et al. (1991: 316)	A cognitive trade-off between perceived quality and perceived sacrifice
Seth et al. (1991: 160)	Consumer choice is a function of multiple consumption values (functional, social, emotional, epistemic, and conditional values). These consumption values make differential

	contributions in any given choice situation. The consumption values are independent.
Stevens (1992: 44)	Value for money is the relationship among price, quality, and quantity
Spreng, Dixon, and Olshavsky (1993, p. 51)	An anticipation that a consumer has related to the outcome of purchasing product or availing service in terms of future expected benefits and sacrifices
Holbrook (1994, p. 27)	An experience of consumption preference which is interactive realistic
Woodruff and Gardial (1996: p. 20)	In a certain situation, with ordered product or service, to accomplish a pre-set goal, what consumers perceive as intended future outcome.
Woodruff (1997, p. 142)	Consumers' perceived preferences and evaluation of attributes, performances of attributes and consequences arising from use of such attributes which facilitate or hinder achievement of consumers goal in that particular situation
Sirohi, McLaughlin, and Wittink (1998, p. 228)	A customer gets for what he or she has paid
Day (1999)	Perceived customer value = customer's perceived benefits – customer's perceived cost. That is, perceived customer value is the surplus (or the difference) between perceived benefits and perceived costs
Ulaga and Chacour (2000)	The trade-off among several aspects of benefits and sacrifices of a supplier's offering, as perceived by key decision makers in the customer's organisation, while considering the available alternative suppliers' offerings in a specific-use situation (in industrial market)
Flint et al. (2002: 171, cited in Snoj	Consumers' assessment of the value created for them by a supplier given the trade-off between all relevant benefits and

et al., 2004: 158)	sacrifices in a specific use situation
Chen and Dubinsky (2003, p. 326)	A customer's perception of the total benefits obtained against the sacrifices incurred in gaining such desired benefits
Woodall (2003, p. 21)	Any demand-side, personal perception of advantage arising out of a customer's association with an organisation's offering that can occur as reduction in sacrifice; presence of benefit; the resultant of any weighted combination of sacrifice and benefit; or an aggregation, over time, of any or all of these

Some commonalities may be regarded after reviewing the key definitions such as, it is inherently in or linked through the use of some products, services or objects. Besides, it is something that is perceived by consumers in converse to objective determination, and finally, value perception involves trade-off between what consumers gain and what they pay to get the product or avail the service.

2.2.3 Consumer Engagement

Next, CE is a key construct in this study, which was assessed for its link with M-VAL (as stipulated in RQ3 developed from specified problem statement). This section reviews the key definitions of CE and establishes the context of CE for this present research context.

Academics and industry professionals are engaging in booming discussion on this topic since the late 2000s. Consulting companies (e.g., Gallup) have initially proposed the concept of CE with a basic assumption that satisfaction alone is insufficient to ensure loyalty, thus it is imperative to focus on the link between consumer and company – known as engagement (Applebaum, 2001; McEwen & Fleming, 2003). Upon identifying engagement studies as one of the top research priorities regarding the way consumers engage in experiences, the Marketing Science Institute (2010) defined CE as "customers' behavioural manifestation towards a brand or firm beyond purchase, which results from motivational drivers including word-of-mouth (WOM) activity, recommendations, customer-to-customer interactions, blogging, writing reviews, and other similar

activities". Concurrently, CE was conceptualised by various academicians (see Bowden, 2009; Brodie, Ilic, Juric, & Hollebeek, 2013; van Doorn et al., 2010). Particularly, the literature in marketing on CE has grown as numerus researchers defined it in several ways to describe the varying facets of engagement (see Table 2.4).

Table 2.4: Definitions of Consumer Engagement

Author(s)	Definition
Patterson, Yu, and De Ruyter (2006)	Consumer's presence of various types including cognitive, emotional, and physical aspects in their relationships with organisation
Bowden (2009, p. 65)	A psychological process that models the underlying mechanisms by which customer loyalty forms for new customers of a service brand and the mechanisms by which loyalty may be maintained for repeat purchase customers of a service brand
Higgins and Scholer (2009, p. 6)	Engagement is a state of being involved, occupied, fully absorbed or engrossed in something—sustained attention
van Doorn et al. (2010, p. 247)	A behavioural manifestation towards the brand or firm that goes beyond transactions
Vivek, Beatty, and Morgan (2012, p. 127)	The intensity of one's participation in and connection with an organisation's offerings and/or organisational activities, in which either the customer or the organisation initiates
Brodie et al. (2013, p. 260)	CE is a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships. It occurs under a specific set of context dependent on conditions generating differing CE levels; and exists as a dynamic, iterative process within service relationships that co-create value. CE plays a central role in a nomological network governing service relationship, in which other relational concepts (e.g., involvement and loyalty) are antecedents and/or consequences in iterative CE processes. It is a

	multidimensional concept subject to a context- and/or stakeholder-specific expression of relevant cognitive, emotional, and/or behavioural dimensions

However, when it comes to M-Commerce, the concept of CE is intricate as several platforms, such as Twitter, Facebook, Travel Apps, and various video sharing platforms, including YouTube and Vineo, facilitate such relationship through multiple platforms and devices (Brodie et al., 2013; Hollebeek, Glynn, & Brodie, 2014). Therefore, such change on the nature of the relationship can be observed in the following terms: Participation, Interaction, Involvement, and Engagement. Thus, it is crucial to define such engagement for this present study. Hoffman and Novak (2000) emphasised on the importance of the internet as a communication medium that enables geographically-dispersed individuals to browse online. This is termed as 'many-to-many communication'. 'Participation' in online context was defined by Algesheimer, Dholakia, and Herrmann (2005) as a product of frequency and duration of visits, which is in line with the term 'Interaction' in studies conducted by Hollebeek (2011) and Kuo and Feng (2013). Valck, Bruggen, and Wierenga (2009) uncovered the capability of the internet that enables individuals to communicate directly with companies. 'Engagement' has levels of cognitive and emotional activity rather than just behavioural activity in brands community (Hollebeek, 2011). This present study focused on the CE concept within the context of M-Commerce.

Table 2.5: Definitions of Online Consumer Engagement

Author(s)	Definition
Thomson, MacInnis, and Park (2005, p. 271)	A state of mental readiness that typically influences the allocation of cognitive resources for a consumption object, object or decision
Mollen and Wilson (2010, p. 152)	Cognitive and affective commitment to an active relationship with the brand as personified by the website or other computer-mediated entities design to communicate brand value
Hollebeek	The level of a customer's motivational, brand-related, and context-

(2011, p. 24)	dependent state of mind characterised by specific levels of cognitive, emotional, and behavioural activity in brand interactions
Brodie et al. (2013, p. 108)	CE in a virtual brand community involves specific interactive experiences between consumers and brand, and/or other members of the community. CE is a context dependent, psychological state characterised by fluctuating intensity levels that occur within dynamic, iterative engagement processes

2.2.4 Repurchase Intention

Next, RI is another key construct in this study that was assessed for its link with M-VAL (as given in RQ3 developed from specified problem statement). This section reviews the key definitions of RI and online RI (ORI) to establish the context for this research work.

In simple words, RI refers to one's willingness to re-purchase the same product multiple times. Several terms have been used for this, including 'repeat purchase', 'repeat buying', 're-buying intention', 're-patronage intention', 'continuance intention', 'return intention', and 're-visit intention' (Al-Maghrabi, Dennis, & Halliday, 2011; Bolton, Kannan, & Bramlett, 2000; Chen et al., 2010; Fen & Lian, 2007; Oliver & Wardle, 1999). Notably, repurchase is consumers' behaviour that results in purchasing the same product or service on more than one occasion. Hellier, Geursen, Carr, and Rickard (2003) defined RI as "one's decision about buying again a designated service from the same company, taking into accounts his or her present situation and likely circumstances". Retention is another common term for repurchase (Hennig-Thurau, 2004; Narayandas, 1998; Zineldin, 2006). This present study focuses on 'intention' instead of 'behaviour', after considering the fact that 'intention' has the ability to predict one's behaviour that has own control (Rhodes & Dickau, 2012).

The RI is important for a company to predict the possible behaviour of consumers and demands (Fan, Lee, & Kim, 2013). The possibility that a person carries out behaviour as desired is determined by his or her intensity of intention (Ajzen, 1991). If the intention is supported by consumers' resources or abilities, then the possibility of carrying out the

actual action is more than a person without resources or abilities (Ajzen, 1991). Therefore, consumers with abilities or resources are more likely to make actual repurchase after gaining stronger RI. Online Repurchase Intention (ORI) is defined as the probability in which an online shopper would continue purchasing at an online retail store again (Jones, Reynolds, Mothersbaugh, & Beatty, 2007; Oliver & Wardle, 1999). The ORI refers to one's judgment about buying again a designated service from the same company, taking into account his or her current situation and likely circumstances. Based on the consumer's experience with the online store in the past, one would like to continue using the website to purchase products or continue buying products from the website in the future (Chiu, Lin, Sun, & Hsu, 2009). The ORI, as defined by Chiu, Tzeng, and Li (2014) is the subjective probability that experienced shoppers make to purchase again from the same online retailer. In the M-Commerce context, RI implies the same meaning of consumers' willingness or the probability of repurchase after having made similar purchases in the past. However, when it comes to M-Commerce, it is all about re-using and repurchasing through the same company mobile app or website (Chiu et al., 2009; Hellier et al., 2003; Kuan, Bock, & Vathanophas, 2008).

2.3 Critical Review of the Existing Theories

This section provides systematic and critical review of major theories in the literature of PV since its inception. Despite the ample of theories, models, and approaches related to CPV, this section covers only the most established ones. Most other theories have applied the foundation of these established theories and extended the same conceptual aspects. In total, 11 of such studies were reviewed.

2.3.1 Axiology or Value Theory

The three-dimensional model in the context of then traditional market place was developed by Cua and Hartmann (1968) by conceptualising value in extrinsic, intrinsic, and systemic aspects. The first aspect in this axiological model of the value sphere, 'extrinsic value', replicates as the utilitarian aspects of consumption, while 'intrinsic value' denotes emotional approval for using a particular product. The third aspect of 'systemic value' is a unique dimension in itself for uncovering value perception of systematic dealings viz. the relation within forfeits and profits.

This theory was adjusted by Mattson (1991) by simplifying, reclassifying, and renaming the dimensions as ‘practical’, ‘emotional’ and ‘logical’ instead of ‘extrinsic’, ‘intrinsic’ and ‘systemic’ respectively. These dimensions are explained as follows. ‘Practical’ dimension focuses on functions, usability, and serviceability of consumption; while ‘emotional’ dimension denotes consumers’ feelings. ‘Logical’ dimension of the perception is the consumption attributes related to reasoning and conceptual characteristics. This reinstated model views emotional aspects as dominating the practical, and in turn, logical aspects. Several studies then analysed this conceptualisation in the form of three-dimensional structure and the same was done across many disciplines, such as business, psychology, education, etc.

Danaher and Mattsson (1994, 1998) built a value measurement based on the foundation of Hartman (1967, 1973). Axiology or value theory denotes the background of satisfaction and loyalty with every value measurement having both optimistic and pessimistic proclivity. Finally, the element of perceived risk was added in this three-dimensional configuration of value by Barnes, Bauer, Neumann, and Huber (2007) and Herrmann, Huber, and Braunstein (2000). This reflects the initial development in value literature and mainly for the conventional market setup. When it comes to value perception from M-Commerce, this model deems to be unfit. However, several other models were reviewed before looking into the existing and the latest conceptualisation of CPV.

2.3.2 Means-End Chain Model

This was developed by Gutman (1982) to measure consumer behaviour and decision making for market analysis, market segmentation, product planning, and development of promotional strategies. Although not exclusively developed to measure CPV, this model presents PV as a result of ‘means’ namely desired attributes in products, ‘end’ as customers’ consequences as decision to make purchase, and personal values. This model established a link between consumers’ buying behaviour and consumers’ patronage behaviour pattern. As the framework is based on consumers’ ‘cognition structure’ to predict their behaviour, it poses some difficulties as cognition is within consumers’ mind and only they can describe it. The model has substantially contributed to the literature of

consumer behaviour, but warrants further research when it comes to measuring perception of value in consumers' mind.

2.3.3 Monroe's Theory

The conceptual foundation of this theory, as formulated by Monroe (1985), lies in one-dimensional approach as it classifies value perception based on quality and price affiliation. He proposes that PV is an imperative facet for consumers in stages of purchase decision process, wherein consumers always prefer purchasing products with better quality at lower price. Primarily, purchase decision of product is affirmative when it gives elevated perception of value. However, while purchasing the product, consumers will measure through their own insight what is scarified and what is gained (Monroe, 1985). This model uses price as the main criterion of sacrifice for appraisal of quality. Better the quality and lower the prices, more PV is gained from the transaction. Thus, consumers assess perceived quality against price subsequent to their purchases in order to obtain PV.

This model upholds that when perceived quality is higher than perceived price, a positive PV is exhibited by consumers towards that product or service (Monroe, 1985). Meanwhile, obvious limitation of the model is that it omits various other constructs, but solely relies on price and quality. Despite their significance, they are not comprehensive in measuring PV citing multidimensionality of the same. As this approach comprises just cost as the culprit to comprehend customer value, Monroe did not embed dimensions that evaluate CPV (Animashaun, Tunkarimu, & Dastane, 2016). Other limitation of this model is that the framework is mulled over trade-off model initiated by Zeithaml (1988) that outlines four aspects to measure CPV. Besides, the price-CPV link is not always well defined, as deduced by Peterson and Wilson (1992).

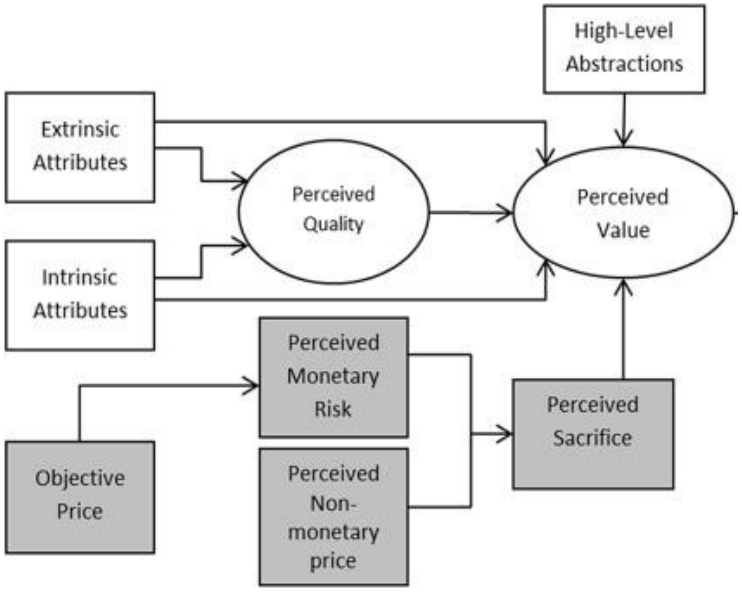


Figure 2.1 : Monroe's Theory of Perceived value

Source: Monroe (1985)

2.3.4 Zeithaml (1988) Model

This theory classifies functional value into price and quality, but the entire PV construct is categorised into the following four items: value is low price; value is whatever consumer wants in a product; value is the quality consumer gets for the price paid; and value is what consumer gets for what they give. Zeithaml (1988) asserted that perceived quality is part of benefits, while perceived price is the sacrifices incurred for purchasing product or availing services. This model has influenced purchase intention, while considering the trade-off between benefits and sacrifices, as well as calculating the overall PV. The model used foundation of means – end approach proposed by Gutman (1982). However, the model dismisses higher level multidimensional value aspects, such as perceived risk. Besides, this model omits the irrational experiences of customers, which are achievable by directly assessing customers' activities. The result is that this development has not been accepted as the final PV construct.

2.3.5 Theory of Consumption Values

The theory of consumption values, perhaps the most popular in value literature, was proposed by Sheth et al. (1991) and used as foundation amongst many PV researchers in the next decade after its publication. The model conceptualises 'value perception' in

unique format, perhaps for the first time, different than traditional conceptualisation of benefits verses sacrifices. It declares that consumers' perceptions and the preferences formed out of the same, to consume or not to consume a particular product or service over the alternatives available, depend of various structures of value. Such elements purported by this theory are functional, social, emotional, epistemic, and conditional values.

According to Sheth et al. (1991), functional value is the perception of usefulness of a product regarding physical or utilitarian performance from a substitute, which obtains functional value by having attributes related to physical, utilitarian or functional aspects. Next, social value is a perception related to usefulness that may be obtained from substitutes association with other social groups. Social value is measured on aspects of social impression and choice imagery. An alternative gains social value from its linkages with socioeconomic, cultural-ethnic, and demographic group stereotypes.

Next, emotional value is related to the perception acquired from the capability of an alternative product or service to initiate affective state and stimulate feelings. When substitute is related to generation of specific feelings or perpetuating those feelings, it acquires emotional value. This dimension of value is measured on profile of feelings linked with substitute. The dimension of conditional value is presented as perception acquired from the outcome of a specific situation of condition encountered by the buyer, which obtains conditional value with antecedent physical or social contingencies that improve functional or social value. Conditional value is assessed using a profile of choice contingencies. Sheth et al. (1991) finally presented a unique dimension of PV that no study has developed before - epistemic value. This is the perceived function obtained from the capability of an alternative to stimulate curiosity, offer novelty, and fulfil knowledge aspiration. The perceived function of epistemic value is obtained through means of enquiry concerning curiosity, novelty, and knowledge.

Figure 2.2: Theory of Consumption Values

Source: Sheth et al. (1991)

The framework is more useful in appraising diverse and specific features of a product by means of customer view. Although the means-end model initiated by Monroe (1985) depicts that customers perceive and make purchase decision based on the benefits received from the product, the theory of consumption value proved futile in specifying all the fundamental sources of the values by considering trade-off between benefits and sacrifices under given value dimensions. Sheth et al. (1991) also dismissed this concern, prescribed a range of product features, and the way these attributes runs operation to appropriately measure the dimensions of value that consumers receive before and after buying a product. This theory became a foundation for studies in traditional and recent market structures, such as online and mobile markets. The theory relies on the following three essential aspects. First, it states that consumption choice is based on utility and consideration of several value perfections. Second, these types of value formulate differential assistance in any particular choice circumstance. Lastly, the types of value are autonomous; meaning unique and independent from each other in existence. The limitation of this theory is that its only reflects to choose by a person and it merely deals with choices, which are methodical and voluntary (Animashaun et al., 2016).

2.3.6 Typology of Perceived Value

Based on the interpretation given by Holbrook (1994), PV is an 'interrogative relativistic predilection experience'. The author presented altogether different outlooks for the concept of CPV and conceptualised the same in a way that turned into one of the main multidimensional frameworks to immensely contribute for the measurement and conceptualisation of CPV. Holbrook (1994) described eight dimensions of CPV in the refined framework: competence, superiority, aesthetics, play, prominence, admiration, principles, and theology. Holbrook's disagreement has a fundamental characteristic that proposed the right types of CPV measurement, which are 'com-present' that implies all these elements tend to be present collectively with potentially changing degrees in the context of consumption occurrence. The CPV literature prior to the conceptualisation of this model depicts both one and multidimensional aspects. However, Holbrook additions undoubtedly contribute to enrich the CPV literature. The suggestions had been mostly based on the theory of axiology, but this framework considers not only PV associated with product, but related to the associated services as well.

		Extrinsic	**Intrinsic**
Self-oriented	Active	Efficiency (convenience)	Play (fun)
	Reactive	Excellence (quality)	Aesthetics (beauty)
Other-oriented	Active	Status (success)	Ethics (virtue)
	Reactive	Esteem (reputation)	Spirituality (faith)

Figure 2.3: Typology of Perceived Value

Source: Holbrook (1994)

This model suggests that the PV is related not only to the products, but also related to the process of buying and the consumer. It upholds that the nature of CPV is virtual, private, and conditional in the sense that it is objective to the perspective, while exemplifying a penchant judgment. Some new additions to the theory of CPV by this model include ethics and spirituality dimensions, to name a few, which fostered empirical studies using this model. Some of such theoretical indications on the Holbrook model have been published (see Bevan & Murphy, 2001) and numerous empirical studies were executed (see Mathwick, Malhotra, & Rigdon, 2001; Renger & Bourdeau,

2004). Despite its sumptuousness and comprehensiveness, Holbrook (1994) model has several limitations. Operationalising some sort of value dimensions are problematic considering the density of its configuration, for instance, ethical and spiritual values are relatively ignored in the CPV literature (Brown, 2000; Havlena & Holbrook, 2002; Holbrook, 1994; Wagner, 19999). Moreover, some features of this typology have restricted functions. For all these and other explanations, the small number of empirical studies on this typology have enclosed merely decreased sets of certain groupings (Gallarza, Arteaga, Floristan, & Gil, 2009).

This model is popular in the field as it considers several unique aspects, such as social, economic, hedonic, and selfless. Sanchez-Fernandez and Iniesta-Bonillo (2007) asserted that this model advances the knowledge on CPV to a great extent. According to Aulia, Sukati, and Sulaiman (2016), this approach is simple and eases the value dimension identification. The framework is based on three-dimensional aspect, thus appropriate to determine CPV. Although Holbrook (1994) had enriched the understanding of the benefit component in CPV, the sacrifice component - an equally vital aspect in CPV – is omitted. Thus, this approach towards CPV is imperfect and demands careful scrutiny if adopted.

Accordingly, Mathwick et al. (2001) formulated an experiential value scale that focuses on self-oriented unique construct of experiential value, which is a detachment of Holbrook' typology realm. They used the scale to assess the impact of consumer behaviour, shopping activities, and retention displayed on consumer discernment of experiential value. Brady, Knight, Cronin, Tomas, Hult, and Keillor (2005) outlined five value elements related to internet application, namely utilitarian, communal, hedonic, procuring, and education.

2.3.7 Woodruff (1997) Consumer Value Hierarchy Model

This value hierarchy model was conceptualised by Woodruff (1997), whereby PV was conceptualised in the form of priority-based elements. The theory suggests that consumers assess PV in three stages: customers' goals, consequences to achieve those goals, and value desired by attaining those goals (such desired value is based on

consumers' assessment and changes over time). Value creation occurs at level of consequences instead of attributes, while PV in this context denotes consumers' needs in terms of perception of value and positive/negative consequences of using products or availing services (Woodruff, 1997). The theory enriched CPV literature by presenting PV based on consumers' needs instead of assessment of benefits-sacrifices, which is exclusive in explaining the complex PV phenomenon. Besides, consumers' judgement of benefits-sacrifices stemming from evaluation of various products is explained in this theory (Khalifa, 2004). The emphasis of value judgement in this theory, which is from attributes to consequences, yields for distinction of offering to gain strategic competitive advantage. However, the diversity in CPV (Sanchez-Fernandez & Iniesta-Bonillo, 2007) and consumer preferences in terms of attributes that shape CPV are disregarded in this theory. The key reason for these drawbacks is that consumers' individual preferences are related to product features.

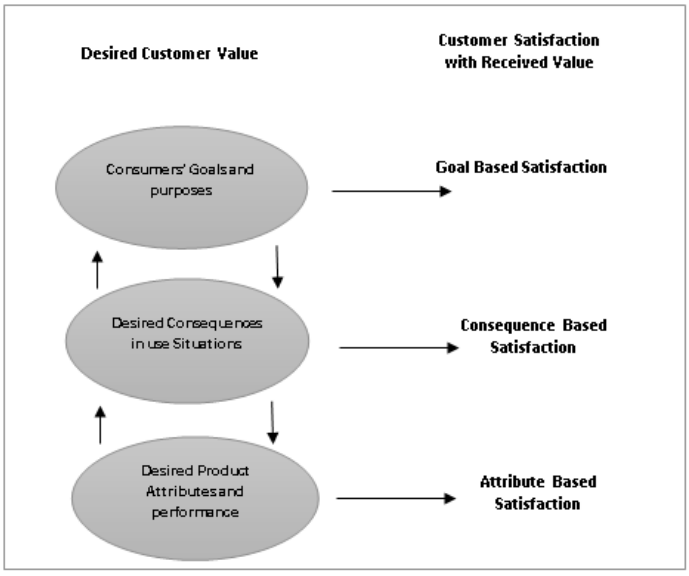


Figure 2.4: Consumer Value Hierarchy Model

Source: Woodruff (1997)

2.3.8 PERVAL SCALE

Sweeney and Soutar (2001) formulated a multi-item, multidimensional scale of PV for retail products based on two previous studies (see Sweeney, Soutar, & Johnson, 1997; Sweeney et al., 1999). The foundation of the scale lies in the theory of consumption

value and means-end theory, mainly because the scale considers functional, social, and emotional aspects, as well as price and quality. The scale excludes epistemic and conditional aspects from the theory of consumption values. Nevertheless, all CPV dimensions, including social, functional, and emotional aspects along with perceived sacrifices, have monotonous consequence on satisfaction. Although there is no confirmation on the direct control of various value dimensions on customer retention or loyalty, many studies have adopted this framework to validate the scale in varied business settings and academic streams. The scale is popular and serves as the founding stone for scale development studies in CPV literature. This is further detailed at later stage.

2.3.9 SERV-PERVAL Model

While PERVAL was developed by Sweeney and Soutar (2001) to measure PV of retail product, Petrick (2002) developed a preserved value scale for the service sector with a 25-item instrument to measure the construct and its dimensions. This SERVE-PERVAL scale is based on the theory initiated by Ziethml (1988) as the foundation to develop conceptualisation of service-related PV. The dimensions of the scale are as follows: quality (4 items), emotional responses (5 items), reputation (5 items), monetary price (6 items), and behavioural price (6 items). It enriches the PERVAL scale by enhancing its ability to measure PV from services. The main addition is the dimension of behavioural price and the items developed are imminent to measure service value. Consequently, many researchers have adopted the scale to empirically test the same in various service sectors across diverse geographical regions. Another modification in the PERVAL scale was Petrick (2002) named the social value dimension as reputation.

The drawbacks of SERVE_PERVAL cannot be ignored as the dimensions of this scale do not adequately differentiate between their meanings. To illustrate this, there is a component of sacrifice in the scale and a component of behavioural price. Although the addition of behavioural price is new to the value conceptualisation, there is unclear differentiation between that and sacrifice. Hence, there is no clarity between behavioural price as “sacrifice” and what consumers actually spend (Ayiehfor, 2009).

2.3.10 GLOVAL Instrument

This model conceptualised by Roig et al. (2006) is based on the foundation of theory proposed by Sweeny and Soutar (2001) with inclusion of more specific elements of PV (Zauner et al., 2015). This model allows measuring six dimensions of value perceived by customers, in comparison to only four dimensions in Sweeny and Soutar's (2001) PERVAL scale. The dimensions are as follows: functional value of personnel (4 items), functional value of establishment (4 items), functional value of price (3 items), functional value of product (4 items), social value (4 items), and emotional value (5 items). This framework measures functional value objectively by modelling consumers' utilitarian perception objectively with establishment, product, personnel, and price; unlike other models that view functional value in general. This addition in the CPV literature is enabled as Roig et al. (2006) extended the PERVAL scale to tourism industry and measured the value perceptions of tourists.

Later, several studies adopted this model to measure consumer perception in varied sectors. Roig et al (2006) modified the GLOVAL model to suit the banking service industry. This model substituted the functional value of product with functional value of service by developing four items for this dimension to measure consumers' perception of value from banking services. The GLOVAL model enhances the CPV literature by bringing the approach of objectivity in measuring the value dimensions, which is popularly cited due to its simplicity, as well as implementation and generalising capabilities. However, the model omits higher order value, non-monetary price, and risk aspects; thus cannot be a universal model to measure CPV. It is confined to the service sector.

Perhaps, for the first time, PV was recognised as an influencer in gaining competitive advantage. For product advertising, Grewal et al. (1998) initiated a model centred on acquisition value – transaction value, which explains the effect of advertised price and reference price on consumers' perception of quality, acquisition value, transaction value, as well as purchase and search intentions. The framework derived PV from the following dimensions: perceived quality (consumers' estimate of a product's (or service) cumulative excellence), internal reference price (price "on price scale" in a consumer's

belief construct that serves as a basis of judging/comparing actual price), perceived acquisition value (consumers' net gain (or trade off) from acquiring a product/service), and perceived transaction value (comparing product selling price with other internal reference prices). Although the model depicts that CPV gets affected by advertised prices, in a way of easiness to understand them by consumers, the model omits how CPV can be affected directly (Aviehfor, 2009).

This section concludes with a critical review of the key 10 theories of PV, whereby strengths and drawbacks of each theory are identified. Among these key theories, this present study has a particular theoretical underpinning. The conceptual foundation of M-VAL is in line with the main aspects of the core theories of PV, in which the 'benefit' and 'sacrifice' components are similar to 'give' and 'get' components of PV (Holbrook & Hirschman, 1982; Zeithaml, 1988). Next, the current conceptualisation follows the theoretical evidence from the current literature that CPV is multidimensional, context-related, and has a higher order (see Grewal et al., 1998; Holbrook, 1994; Lapierre, 2000; Sheth et al., 1991; Woodruff, 1997).

The synthesis of each dimension was carried out by combining both aspects, such as benefits and sacrifices, into a single dimension. For example, the conceptualisation of the term 'information value' represents the combination of 'benefit' and 'sacrifice' aspects that are related to the information aspect. In this regard, the theory of consumption value proposed by Seth et al. (1991) is selected as the theory underpinning this research as the current conceptualisation is based on such theoretical foundation.

2.4 Review of Methodology Used in CPV Research

After critically reviewing the major approaches in Section 2.3, this present section reviews the methods deployed in the past to measure the CPV construct, as summarised in Table 2.6.

Broadly, in order to gain outstanding outcome, researchers have recommended the use of mixed method comprising of both exploratory and explanatory approaches. In the past, several researchers have applied such combination of mixed methodology in the CPV research (see Agarwal & Teas, 2001; Dodds et al., 1991). However, the

formulation of appropriate research methodology greatly depends on the RQs and ROs. Therefore, one can see a variety of methods used in CPV literature to measure CPV, as well as the impact of its antecedent and the consequences of CPV.

Predominantly, in the context of CPV, most studies have applied the explanatory research design (see Rintamäki, Kuusela, & Mitronen, 2007; Sweeney & Soutar, 2001) and arrived at solid and comprehensible conclusions. Hence, the CPV research domain is dominated by quantitative research approach, wherein such studies have expansively applied rating scale questionnaires. However, false impression should be taken in this context that the use of exploratory and qualitative approach is less accepted. Some studies did use the exploratory approach to develop a conceptual model before testing it using the quantitative approach (see Roig et al., 2006; Sheth et al., 1991).

Table 2.6 lists the main theories in CPV, along with their constructs, items, research design, sample size, and the context in which they were executed. The table sheds light on the methodological aspects of the CPV literature. Apparently, most studies have used the explanatory approach and quantitative method (see. Bolton & Drew, 1991; Rintamäki et al., 2007; Sweeney & Soutar, 2001), while some have used exploratory approach via qualitative method (see Heinonen, 2004; Iacobucci et al., 1995; Zeithaml, 1988), and only a few have deployed the experimental design to measure CPV construct. The primary qualitative method used was interview, whereas mail survey for the quantitative method. In terms of sample size, a minimum of 100 and a maximum of 1944 respondents were involved in mail survey. Sample size is determined based on calculations related to targeted population and other aspects of the research design.

Despite the numerous studies carried out in diverse context, only a handful has looked into the M-Commerce setting. In the section of conceptualisation, more on this issue is discussed, thus leading detecting the literature gap. The growing number of studies is ascribed to the realisation that CPV is a crucial factor for businesses subsistence and a definite determinant of success (Slater, 1997). Thus, CPV has strategic importance in building and maintaining competitive advantage (Wang et al., 2004).

Table 2.6: Measurement of Perceived Value

Author(s)	Construct(s) / Item(s)	Research Design	Sample	Context
Huang et al. (2019)	Guarantee value, Design value, Emotional value, Social value, Functional value, and Monetary value	Mix – Interview + Survey	Interview – 179 Survey - 441	Mobile marketing
Karjaluoto et al. (2019)	Utilitarian (5 items) and Hedonic value (5 items)	Survey	992	Mobile financial services apps
Sa´nchez-Ferna´ndez et al. (2009)	Efficiency (5 items), Social (3 items), Quality (4 items), Aesthetics (4 items), Play (4 items), and Altruistic value (4 items)	Interviews	306	Restaurants (vegetarian)
Huber et al. (2007)	Risk, Emotional, Logical, and Practical (1 item each)	Surveys (6 episodes of services)	100	Car dealership business
Rintamäki et al. (2007)	Social, Utilitarian, and Hedonic (6 items each)	Survey	364	Shopping
Overby and Lee (2006)	Utilitarian (4 items) and Hedonic (4 items)	Survey	817	e-commerce
Sa´nchez et al. (2006)	Functional value person (4 items), Functional value establishment (4 items), Functional value price (3 items), Functional value product (4 items), Social value (4 items), and Emotional value (5 items)	Interviews	402	Tourism
Brady et al. (2005)	Service value (2 items), Overall service quality (3 items), Sacrifice (3 items), and Service quality performance (10 items)	Interview	1944	Health care, fast food, and entertainment
Heinonen (2004)	Functional value, Temporal value, Technical value, and Spatial value	Interviews	37	Online banking
Wang, Lo, and Yang (2004)	Functional value (4 items), Emotional value (5 items), Social value (3 items), and Perceived sacrifices (6 items)	Mail Survey	320	Security service

Petrick (2002)	Quality (4 items), Monetary price (6 items), Emotional response (5 items), Behavioural price (5 items), and Reputation (5 items)	Mail survey	792	Cursing
Agarwal and Teas (2001)	Perceived quality (5 items), Performance risk (2 items), Perceived sacrifice (2 items), Perceived value (5 items), and Financial risk (3 items)	Experiment	530	Hand-held business calculators, and wrist-watches
Sweeney and Soutar (2001)	Quality (6 items), Emotional value (5 items), Social value (4 items), and Price (4 items)	Mail survey	635	Furniture and car stereo
Sweeney et al. (1999)	Functional service quality (5 items), Technical service quality (2 items), Product quality (4 items), Relative price (2 items), Performance/ financial risk (2 items), and Perception of value for money (3 items)	Mail Survey	1068	Electrical appliances
Grewal et al. (1998)	Advertised selling price (2 items), Perceived quality (3 items), Internal reference price (2 items), Perceived acquisition value (9 items), and Perceived transaction value (3 items)	Experimental survey	328	Bicycle
DeSarbo et al. (2001)	Relative quality (5 items) and Relative price (3 items)	Experimental survey	95	Cars
Patterson and Spreng (1997)	Outcomes (2 items), Method (3 items), Relationship (2 items), Service (4 items), Global (1 item), Value (1 item), and Problem identification (2 items)	Mail survey	128	Consulting service
Iacobucci et al. (1995)	Price utilities, Friendliness utilities, Quality utilities, and Customisation utilities	Experiment	98	Four experience and credence services each
Chang and Wildt (1994)	Perceived price (2 items), Perceived quality (4 items), and Perceived value (1 item)	Laboratory experiment	823	Apartments
Bolton and Drew (1991)	Perceived service quality, Customer characteristics, Perceived service value, and Sacrifice	Mail Survey	1408	Telephone service

Dodds et al. (1991)	Perceived sacrifice, Perceived quality, and Price levels (five items each)	Experiment	585	Calculator
Sheth et al. (1991)	Functional (6 items), Conditional (4 items), Social (2 items), Emotional (7 items), and Epistemic value (3 items)	Mail Survey	145	Cigarette smoking (users/nonusers)
Zeithaml (1988)	Perceived quality, Perceived value, and Perceived price	In-depth Interviews	30	Beverages

2.5 Scale Development Studies in Perceived Value

This section reviews the existing scales related to PV. Various researchers have developed the scales to measure PV for various industries and consumer segments. This section reviews these scales to decipher the objectives and findings of these studies, apart from identifying the research gap. Essentially, this precise review facilitates in identifying the path of this research work.

2.5.1 PERVAL Scale

This multidimensional scale that measures CPV, developed by Sweeney and Soutar (2001), has been the landmark research in the field. In total, 19 parameters were initiated to measure consumers' value perception in the Australian retail environment for durable goods. This was probably the first well-accepted value construct. Several researchers after that had adopted this PERVAL scale to test on different markets or products, while some had modified or developed such scale for other sectors.

This scale is a paramount measurement tool that offers a functioning application of PV measurement at particular time. This is a step forward in comparison with the then available theoretical methods (Ruiz-Molina & Gil-Saura, 2008). This scale comprises of three types of value, namely emotional, social, and functional values. Emotional value is about sentiments and feelings related to product or service, while social value is efficacy obtained from capability of product or service to improve consumers social status or perception, and functional value is made up of two components; price and performance of a product.

PERVAL was later modified and tested for telecommunication services (Gummerus & Pihlström, 2011), healthcare sector (Teke, Cengiz, Çetin, Demir, Kirkbir, & Fedai, 2012), banking sector (Roig et al., 2006), higher education sector (Alves, 2010), hospitality industry (Cheang & Lee, 2013), restaurant industry (Jensen & Hansen, 2007), and shopping malls (El-Adly & Eid, 2015).

2.5.2 SERVE-PERVAL Scale

This scale introduced by Petrick (2002) is a 25-item instrument that measures service sector construct and its dimensions. The SERVE-PERVAL scale uses the theory initiated by Ziethml (1988) as its foundation to conceptualise service-related PV. The scale dimensions are quality (4 items), emotional responses (5 items), reputation (5 items), monetary price (6 items), and behavioural price (6 items).

2.5.3 Value in Context

Value in context (Helkkula, Kelleher, & Pihlström, 2012) was presented after weighing in the aspects of overall service industry, in which value is characterised as experience. It initially related value to services, as opposed to the construction in PERVAL that depicts value in the context of products.

2.5.4 Chen and Dubinsky

This scale by Chen and Dubinsky (2003) presents a theoretical framework expanded based on past efforts related to CPV by adding new variables suitable for E-Commerce setting. Several key variables were integrated in this framework. As for the e-commerce setting, the key elements of CPV were stated as valence of online shopping experience, perceived product quality, perceived risk, and product price. There were also efforts on exploring relationships among the proposed variables.

2.5.5 Overby & Lee (2006)

Some models (e.g., Overby & Lee (2006)) have exclusively identified various dimensions of online PV by classifying them under utilitarian and experiential aspects. Most of the work for online perception is related to clothing brands and online payments, wherein such studies focussed on the developed economy markets, apart from China, where consumers have well adopted the online shopping phenomenon. Bai, Li,

and Niu, (2016) had developed a PERVAL scale for online shopping by selecting value dimensions for online clothing brands based on literature review. It contains 21 items, thus proposing a multidimensional scale for Chinese consumers. Earlier, an E-Commerce CPV scale developed by Chen and Dubinsky (2003) considered limited value dimensions, such as quality, risk, and price.

2.5.6 CEXPVALS Scale

The experimental value aspect has not been discussed holistically in the literature. The CEXPVALS (Varshneya & Das, 2017) is an extension of the PV scale deployed to explore the underlying dimensions related to experiential value based on holistic view. This 16-item scale called CEXPVALS has four dimensions: cognitive, hedonic, social, and ethical values. The items of this scale holistically apprehend the experiential value in four main terms as cognitive value (quality of services, time, effort, and convenience), hedonic value (enjoyment, pleasure, and escapism), social value (status, esteem, and social approval), and ethical value (trust and privacy).

Having revived the development of PV scale, a gap was identified in the literature in light of multidimensional value scale for M-shoppers. As perception of customers keep on changing based on shopping platforms, such identification of value dimensions needs an update. However, there is no exclusive evidence of PV scale development for M-Commerce or m-shopping. Hence, it is timely to develop M-VAL or Mobile-PERVAL multidimensional scale to identify the PV elements.

Thus, one of the ROs is formulated, which is to propose a multidimensional perceived value scale for travel M-Commerce.

Table 2.7: Summary of Perceived Value Scale Development Research

Industry / Sector	Author (s)	Value Dimensions
Retail	Varshneya and Das (2017)	Cognitive value, hedonic value, social value, and ethical value. Development of 16-item scale known as CEXPVALS.
Online clothing brand	Bai et al. (2016)	Scale development based on literature review

Higher education	Cai et al. (2016) Alves (2010)	External efforts, motivation to study, socio-econometric status, physical benefits, financial cost, career success, emotional cost, task efforts, language skills, memory skills, and reputation Image and Quality
Hair saloon	Zhao (2014)	Benefits: quality value, social value, emotional value, and epistemic value Sacrifices: time/effort cost, monetary cost, and health risk cost
Organised retail	El-Adly and Eid (2014)	Hedonic, self-gratification, utilitarian, epistemic, social interaction, spatial convenience, transaction, and time convenience value
Mobile services	Gummerus and Pihlström (2011)	Context Value and In-Use Value
	Helkkula et al. (2012)	VALCONEX or value-in-context experiences
Hospitals	Teke et al. (2012) Cengiz and Kirkbir (2007)	Installation, professionalism, quality, emotional value, and social value. 21-item scale Functional value - installation, service quality, price, and professionalism; Emotional value – novelty, control, and hedonics; and Social value
Banking	Roig et al. (2006)	Perceived cost, perceived risk, performance expectancy, and effort expectancy. 22-item scale development based on PERVAL.
E-Commerce	Chen and Dubinsky (2003)	Valence of online shopping experience, perceived product quality, perceived risk, and product price
Service industry, tourism, and recreation	Petrick (2002)	Quality and price. 25-item scale known as SERVE-PERVAL.
Consumer durable goods	Sweeney and Soutar (2001)	Quality, emotional, price, and social. 25-item scale popularly known as PERVAL.

2.6 Modelling of Customer Perceived Value

This section starts with the review of various main approaches used in modelling or conceptualising CPV in recent past. Several review papers provide conceptualisation of CPV after a systematic review of the literature. However, the way these researchers modelled the taxonomy of CPV warrants review of earlier conceptualisations or modelling. Next, this section presents the gap in the literature and how it warrants need for conceptualisation of CPV using a new approach.

2.6.1 Major Approaches in Conceptualising and Modelling Perceived Value

This section reviews conceptualisation of CPV carried out by Woodall (2003), Al-Sabbahy (2005), Sanchez (2007), Zauner (2015), and Aulia et al. (2016).

2.6.1.1 Conceptualisation by Woodall (2003)

Figure 2.5 illustrates the visual classification of CPV elements outlined by Woodall (2003). Accordingly, several aspects are comprised of benefit and sacrifice components, which are crucial to enhance CPV. However, merely enhancing the benefit component does not help businesses, as rivals continuously offer various benefit aspects. Thus, it is necessary to reduce the sacrifice component while concurrently enhancing the benefit aspects. This conceptualisation presents both the attributes and outcomes under each of benefit and sacrifice components.

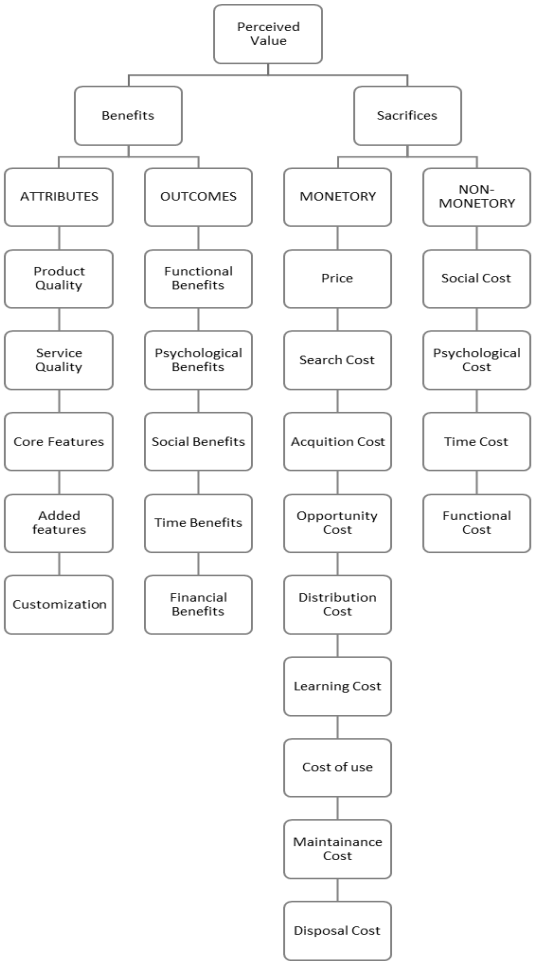


Figure 2.5: CPV Conceptualisation by Woodall (2003)

Source: Adopted from Woodall (2003) and modified by the author

2.6.1.2 Conceptualisation by Al-Sabbahy (2005)

According to Al-Sabbahy et al. (2004), there is no concrete definition of CPV and the construct of CPV is poorly defined. The foundation for this argument is that customer value was treated in the literature as an end state and not as a process. Zeithaml (1988) defined value as a process. Although this conceptualisation describes value not just as an end state, but as something that consumers receive in a process; it neglects post-experience aspects of CPV, such as acquisition value, transaction value, etc.

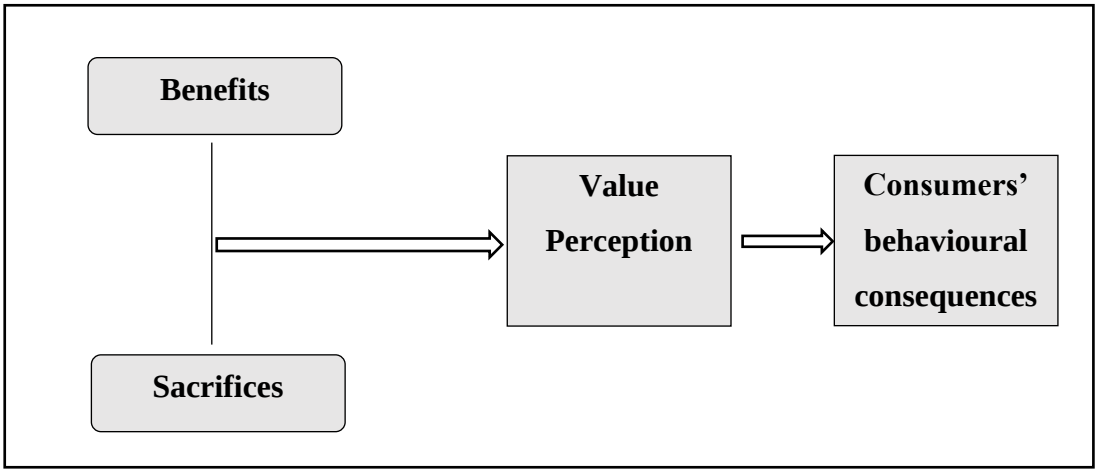


Figure 2.6: CPV Conceptualisation by Al-Sabbahy (2005)

Source: Modified by author from Wood and Scheer (1996); Al-Sabbahy, Ekinci, and Riley (2004)

2.6.1.3 Conceptualisation by Sanchez (2007)

Sanchez et al. (2007) presented a critical review of probably all the then existing models of CPV and commented on possible conceptualisation, as well as the nature of CPV. This nature of perceived value was broadly classified as uni-dimensional and multidimensional aspects. Uni-dimensional approach is classified as priced-based and means-end approaches. On the other hand, multidimensional approach is classified as utilitarian and hedonic values, as well as value hierarchy. However, value hierarchy denotes a combination of uni-dimensional and multidimensional approaches. Sanches et al. (2007) then established major CPV approaches under this classification, as displayed in the representation below. Although this classification is not holistic, it presents the complex nature of CPV. The review is comprehensive in itself by covering possible all CPV research work, although it neither establishes customer value as a construct nor presents a well-accepted definition of PV.

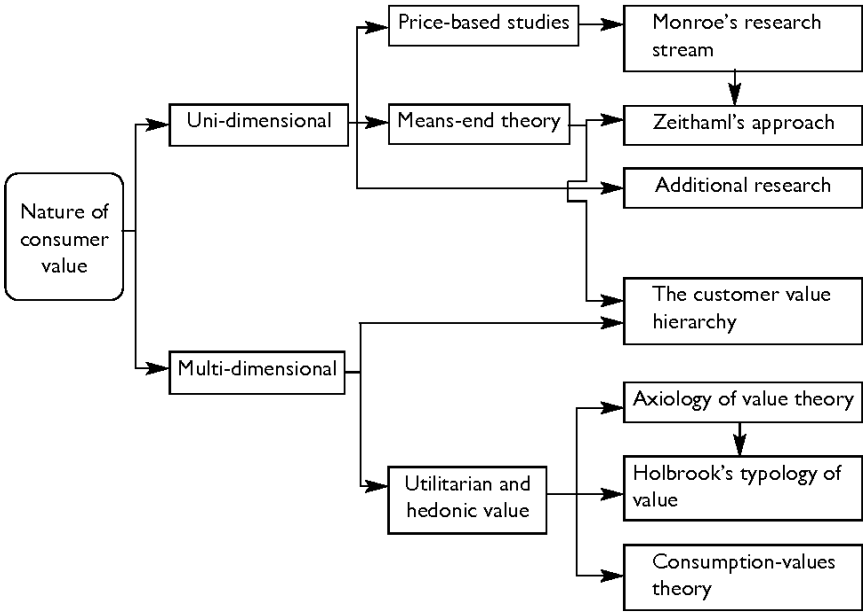


Figure 2.7: CPV Conceptualisation by Sanchez (2007)

Source: Sanchez et al. (2007)

2.6.1.4 Conceptualisation by Zauner et al. (2015)

Zauner et al. (2015) critically reviewed and conceptualised the CPV construct to present avenues for the future research as outcome of the critical review. This synthesis of various perspectives on the dimensionality, abstraction, and model taxonomy of CPV had considered vast empirical applications related to PV. The critical review not only covered major approaches of PV, but also assessed the definitional, conceptual, theoretical, and operational similarities and differences found in this research area. Similar to the conceptualisation given by Sanchez et al. (2007), this conceptualisation highlights both uni-dimensional and multidimensional aspects of PV. Nevertheless, it went beyond this and unravelled multidisciplinary roots of CPV. Table 2.8 reflects this conceptualisation as Zauner et al. (2015) depicted multidimensional customer value conceptualisations based on selected papers as the basis of this topic.

Table 2.8: CPV Conceptualisation by Zauner et al. (2015)

Author (s)	Conceptual Foundation	First order dimensions (number of items)	Higher order dimensions (number of dimensions)	
			Reflective	Formative
de Ruyter et al.	Hartman (1967) and	Practical value, emotional value, and logical value (5		

(1997)	Mattsson (1991)	items each)		
Lapierre (2000)	inter alia Zeithaml (1988) and Slater (1997)	Alternative solutions (3), product quality (4), product customisation (4), responsiveness (3), flexibility (4), reliability (4), technical competence (5), supplier's image (2), trust (5), solidarity (4), price (5), time/effort/energy (5), and conflict (3)	Benefit (10) and sacrifice (3)	
Sweeney and Soutar (2001)	Sheth et al. (1991)	Emotional (5), social (4), quality (6), and price (4)		
Mathwick et al. (2001)	Holbrook (1994)	Economic (3), visual (3), entertainment (3), escapism (3), enjoyment (2), and efficiency (3)	Aesthetics (2), playfulness (2), service excellence (2), and customer return on investment (CROI) (2)	
Petrick (2002)	Zeithaml (1988)	Quality (4), emotional (5), reputation (5), monetary (6), and behavioural (5)		
Wang et al. (2004)	Sweeney and Soutar (2001)	Functional (4), emotional (5), social (3), and perceived sacrifices (6)		
Lin et al. (2005)	Sweeney and Soutar (2001)	Website design (5), reliability (3), privacy (3), service (3), and monetary (2)		Perceived value (5)
Liu, Leach, and Bernhardt (2005) a	Anderson and Narus (1998)	Economic value (3), core service (3), and support service (4)	Customer value (3)	
Pura (2005)	Sheth et al. (1991)	Social (3), emotional (2), epistemic (3), and conditional (2)		
Carlos Fandos Roig et	Sanchez, Callarisa, Rodriguez,	Functional value establishment (4), functional value product (4), functional		Perceived value purchase

al. (2006)	and Moliner (2006)	value personnel (4), functional value price (3), social value (4), and emotional value (5)		(6)
Sánchez-Fernández and IniestaBonillo (2006)	Sweeney and Soutar (2001)	Functional value establishment (4), functional value product (4), functional value personnel (4), functional value price (3), social value (4), and emotional value (5)		Perceived value purchase (6)
Whittaker, Ledden, and Kalafatis (2007)	Sheth et al. (1991)	Functional (6), image (5), emotional (3), epistemic (3), price/quality (3), and social (2)		Value (6)
Philström and Brush (2008)	Sheth et al. (1991) and Sweeney and Soutar (2001)	Monetary (3), emotional (4), convenience (6), and social (3)		
Ruiz et al. (2008)	Zeithaml (1988)	Service quality (4), confidence benefits (4), service equity (4), and perceived sacrifice (4)		Service value index (4)
Sánchez-Fernández et al. (2009)	Holbrook (1994)	Efficiency (5), social value (3), quality (4), aesthetics (4), play (4), and altruistic value (4)	Consumer value	

Source: Zauner et al. (2015)

2.6.1.5 Conceptualisation by Aulia et al. (2016)

A year after Zauner et al. (2015) had presented their conceptualisation, Aulia et al. (2016) reported a review based on a wide range of recent empirical findings and model validations related to PV. This review, which also covered major value approaches, did not classify value dimensions in the traditional way based on one-dimensional and multidimensional aspects. In fact, they grouped the value elements as social-related value, person-related value, and product-related value. Although this approach was adopted way back in the 1980s when researchers began developing value framework based on emotional-, logical-, and attribute-based dimensions (Grewal et al., 1998; Zeithaml, 1988), the conceptualisation by Aulia et al. (2016) was more profound as it

considered a range of value elements tested empirically, and hence, classified them under the listed three dimensions. As a result, although the dimensions are traditional, the elements enrich the CPV literature. Social-related value was further classified as 'need for acceptance' (acceptance value) and 'need for compliment' (impression value). Product-related value was classified as 'need for product function' (functional value, ergonomic value, and sacrifice value) and 'need for pleasure' (experience value and convenience value). Lastly, personal-related value was classified as 'need for being own self' (congruity value) and 'need for doing good thing' (meaning value).

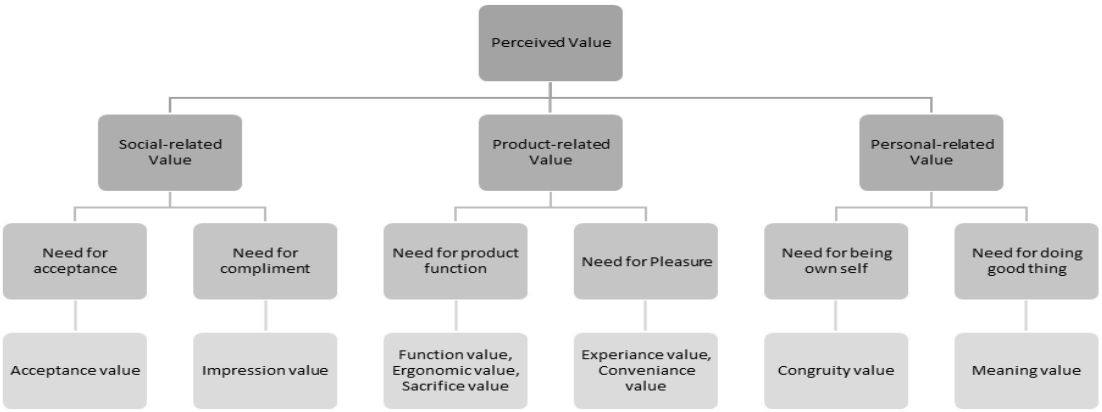


Figure 2.8: CPV Conceptualisation by Aulia et al. (2016)

Source: Adopted from Aulia et al. (2016) and modified by the author

2.6.2 Categories of Value Dimensions

Referring to past studies that have conceptualised CPV, several dimensions of CPV have been listed. Broadly, such dimensions can be classified as dimensions related to functional, social, emotional, epistemic, conditional, symbolic, ethical, economical, security, etc. Some have attempted to classify PV as part of aspects related to products, person, and social. However, this present study extends the concept of CPV to M-Commerce setting. It warrants a review and classification of CPV dimensions based on the various industries. The next sub-section presents such industry-based classification.

2.6.3 Industry Based Conceptualisation of CPV

As the main purpose of this study is to identify what consumers perceive as value in the context of M-Commerce, it then warrants the need to such industry-based classification. Thus, this thesis is the first to classify CPV studies based on industry. Besides, Section 2.6 reveals that review of CPV based on industry is indeed sparse.

The classification of dimensionality and conceptualisation of CPV had been conducted in several ways in the past, including CPV review based on one-dimensional or multidimensional approach, as suggested by Sánchez, Callarisa, Rodríguez, and Moliner (2006), as well as the classification based on discipline, as established by Chang and Dibb (2013). As such, the review of literature was performed to classify the approaches adopted in the past, so as to conceptualise the dimensions of PV for various markets or industry. It is the aim of this present study to review such empirical models based on industry, namely retail market, industrial market, service sector, relationship marketing, E-Commerce, and M-Commerce. Essentially, the gap in the literature is uncovered at the end of this section.

2.6.3.1 Major Approaches towards the Concept of Perceived Value

Retail marketing: Most studies on PV were carried out in this sector. The initial approach explained PV as a one-dimensional concept and was presented as a set of self-reported items to assess consumers' perception of value (see Agarwal & Teas, 2002; Sweeny et al., 1999; Dodds, 1991). However, further research work had redefined the concept of value as an aggregate construct derived from several components. This approach then presented PV as a multidimensional construct with several elements that were interrelated to forms holistic yet complex representation of PV (see Holbrook, 1994; Sheth et al., 1991; Sweeny & Soutar, 2001; Woodruff, 1997). Woodruff (1997) presented a value hierarchy model, where PV elements are presented in a hierarchy form and classified as goals, consequences, and attributes. It emphasises that value elements are based on preferences and evaluations that change over time. The consumption value theory proposed by Sheth et al. (1991), however, presented a multifaceted approach of the consumption value that included functional, social, emotional, epistemic, and conditional aspects. The theory suggests that consumers' decision to buy a certain product is influenced by their perceptions related these values. Subsequently, several

researchers used this theory as the foundation to propose models for the sector or products they chose for their research (see. Animashaun et al., 2016; Hoe et al., 2018). However, most of them criticised the consumption value theory for lack of generalisability and measurement. Sweeny and Soutar (2001) developed a 22-item scale to measure PV for the retail sector based on four value dimensions: emotional, social, quality, and price. It depicts a combination of means-end approach and consumption value theory. This scale was adopted by numerous researchers and tested on varied markets. Holbrook (1994) presented different aspects of PV dimensions as intrinsic and extrinsic nature, self-oriented and others oriented, as well as passive and active. This, together, offers eight value elements that are com-present, according to the theory.

Industrial marketing: Business-to-business marketing involves industrial products that are mainly classified under heavy investment. Such products come with associated services and customers of such products are business units with a representative to negotiate purchases. This poses additional incidences of benefit and sacrifice components for industrial customers, and concurrently, complexities are involved in dimensionality of the perception of value considering opportunity cost and competitors' product. This nature warrants relationship aspect and so the emotional bond between consumer and producer was included in the PV dimensionality proposed by Buts and Goodstein (1996). Consumers consider opportunity cost and opinion based on the comparison of competitors' offerings that contribute to PV (Gale, 1994). Day (1999) emphasised on the perceived lifetime cost, instead of just perceived cost as that in the retail context. Lapierre (2000) proposed 13 value-based drivers of value related to products, services, and relationship, which offered comprehensive dimensionality to CPV in industrial marketing context. However, parallels exist between business-to-business and economics literature, as these perceptions involve a trade-off between what customers receive and surrender in return.

Services marketing: Services are perishable, inseparable, and variable in nature, thus the process of identifying PV for services is complex than that of tangible products. In the service context, considering the intangibility, value is not product attribute alone and so different approached are warranted. Bolton and Drew (1991) presented performance

level as a vital dimension of service value. Service quality forms important component of the PV in this context, according to Petrick (2002). Other researchers depicted that service value depends on visual components of the service, information about the offering, previous experiences of the service, and organisation providing it (Brady et al., 2005). In the service literature, the constituent parts of customer-PV are more than price and quality. The inseparability of service product means that the customer is often closely connected to product delivery, with personal and situational variables playing important roles in value perceptions.

Relationship marketing: Minimising customers' relationship costs can reduce customer-perceived sacrifice, which in turn, increases customer-PV (Gronroos, 2000). Relationship cost is long-term sacrifice and due importance is given by consumers for other elements as well. Table 2.9 lists the empirical models of CPV in chronological order based on the various industries outlined above.

Table 2.9: Major Approaches to Perceived Value

Author(s)	Dimensions
Holbrook and Corfman (1985)	Hedonic value and utilitarian value
Monroe and Chapman (1987b)	Acquisition value and transaction value
Zeithaml (1988)	Intrinsic attributes, extrinsic attributes, quality, other high-level abstractions, and price (monetary and non-monetary)
Oxenfeldt and Monroe (1990)	Perceived benefits – Convenience, monetary, quality, and social Perceived sacrifices – Monetary, efforts, health, social, and opportunities
Sheth et al. (1991)	Social value, emotional value, functional value, epistemic value, and conditional value
Mattsson (1992)	Practical (P): tangible and functional aspects of the product Emotional (E): `Gestalt experience' of a service

	delivery process Logical (L): rational & abstract aspects of consumption experience
Anderson, Jain, and Chintagunta (1993)	Economic, technical services, social benefits, price, and alternative offerings
Darden and Babin (1994)	Hedonic value and utilitarian value
Groth (1995)	Perceived utility, psychological, internal, and external
Kantamneni and Coulson (1996)	Societal value, experiential value, functional value, and market value
Zeithaml and Bitner (1996)	Benefits (quality, satisfaction, & specific benefits) and costs (money, time, & effort)
Flint, Woodruff, and Gardial (1997)	Personal value, desired value, and perceived value
Grönroos (1997)	Cognitive emotional (psychological)
de Ruyter et al. (2003)	Emotional dimension or intrinsic value, functional dimension or extrinsic value, and logical dimension
Woodruff (1997)	Attribute-based, consequence-based, and goal-based
Voss et al. (1998)	Quality, price, acquisition, and transaction
Dodds et al. (1991)	Acquisition value and transaction value
Holbrook (1994)	Efficiency, excellence, play, aesthetics, status, esteem, ethics, and spirituality
Oliver and Wardle (1999)	Consumption value and extended value
Sweeney et al. (1999)	Social value (acceptability), emotional value, functional value (price/value for money), functional value (performance/quality), and functional value (versatility)
Lapierre (2000)	Alternative solutions, trust, product quality, product customisation, responsiveness, flexibility, reliability, technical competence, supplier's image, solidarity, price, time/effort/energy, and conflict
Parasuraman and Grewal	Acquisition value, transaction value, value 'in-use', and

(2000)	redemption value
Sweeney and Soutar (2001)	Functional dimension (economic & quality), social dimension, and emotional dimension
Petrick (2002)	Quality, emotional response, monetary price, behavioural price, and reputation
Eggert and Ulaga (2002)	Cognitive construct, pre-/post-purchase perspective, strategic orientation, present and potential customers & suppliers, and competitors' offerings
Wang, Lo, and Hui (2003)	Functional value, emotional value, social value, and perceived sacrifices
Liu, Leach, and Bernhardt (2005)	Core service, support service, and economic value
Roig et al. (2006)	Functional value of establishment (installations), functional value of contact personnel (professionalism), functional value of service purchased (quality), functional value, price, emotional value, and social value
Smith and Colgate (2007)	Instrumental/functional value, cost/sacrifice value, monetary value, symbolic/expensive value, and experiential/hedonic value
Heskett (2009)	Creating, economic, and value by design
Li, Li, and Kambele (2012)	Perceived sacrifice (technological effort, perceived fee, & perceived risk), social/emotional value, utilitarian value, and economic value
Puustinen, Maas, and Karjaluoto (2013)	Economic value-monetary saving, economic value-efficiency, functional value-convenience, emotional value-emotional, experiences symbolic value-altruism, and symbolic value-esteem
Gallarza, Arteaga, Del Chiappa, Gil-Saura, and Holbrook (2017)	Efficiency, service quality, social values, play, aesthetics, perceived monetary price, time & effort spent, and perceived risk

E-Commerce: In the view of the electronic marketing boom in the beginning of 2000s and its increasing online consumer base marketing, researchers have increasingly focused on online consumers. It was then identified that internet shopping offered several advantages over conventional shopping, including easy comparison of price and product features, time saving, effort saving, etc. However, the electronic shopping format also has several shortcomings. Such perceived cost aspect denotes one's inability to feel the items prior to purchase. It then warranted the need of atmospheric cues and its impact on online shopping perception by displaying product photos and information on the website. These issues were not experienced by online services, such as travel product booking. Perhaps, the first proposed and well accepted model of CPV in the context of online shopping is Experiential Value Scale by Mathwick, et al. (2001), which weighed in benefits derived from playfulness, aesthetics, service excellence, and return on investment. The scale emphasised on the multidimensional nature of online CPV and moved beyond the traditional value dimensions (social value, emotional value, etc.). For the first time, playfulness aspect was considered in E-Commerce, whereby online shopping was viewed as rather boring due to the absence of socialisation. However, the scale neglected several relevant aspects, such as risk and price. Many researchers have later expanded the dimensionality of CPV in online context by embedding more dimensions.

Chen and Dubinsky (2003) proposed a conceptual model of CPV in E-Commerce. The model incorporated perceived risk aspects, decorative or valence, price, and quality dimensions. This model contributes to online CPV literature by considering balanced aspects among hedonic and experiential values. The PV in E-Commerce is viewed "a consumer's perception of the net benefits gained in exchange for the costs incurred in obtaining the desired benefits" (Chen & Dubinsky, 2003). This definition, derived from the traditional 'give and get' concept, embeds consumption experience when assessing value (Anderson & Narus, 1998). Instead of identifying benefits and sacrifice, Chen and Dubinsky (2003) explored perceived gains and costs; thus proposing that experience, perceived product quality, perceived risk, and price can affect value perceptions. Meanwhile, Overby & Lee (2006) proposed a multidimensional scale with utilitarian values, such as price saving, time saving, service, and selection. They also expanded the

existing experiential dimensions by including interaction aspects and value derived from escape and visual elements. The scale was then tested in various sectors in the context of E-Commerce, commending the relevance of the dimensions in the model. More elements were included in utilitarian and experiential value dimensions, such as of flow experience through attractiveness and interactivity (Lu & Lin, 2012), website technology (Bonsón Ponte, Carvajal-Trujillo, & Escobar-Rodríguez, 2015), and product information (Zhao, 2011).

Table 2.10: Selected studies on CPV in Online Shopping Context

Author (s)	Dimensions
Mathwick et al. (2001)	Playfulness, aesthetics, customer "return on investment", and service excellence
Chen and Dubinsky (2003)	Valence of online shopping experience, perceived product quality, perceived risk, and product price
Montoya-Weiss, Voss, and Grewal (2003)	Navigation structure perceptions, information content perceptions, graphic style perceptions, and online channel risk perceptions
Overby and Lee (2006)	Utilitarian value – price saving, time saving, service, & selection Experiential value – entertainment, visual, escape, & interaction
Broekhuizen (2006)	Price, time & effort, risk, enjoyment, reputation, informativeness, and ease of use
Lu and Lin (2012)	Utilitarian value – reliability and ease of use Flow experience – attractiveness and interactivity
Chew, Shingi, and Ahmad (2006)	Perceived usefulness and perceived ease of use
Zhao (2011)	Website technology, commodity information, transaction function, and service function
Peng and Liang (2013)	Price value, functional value, emotional value, and social value

Carlson, O'Cass, and Ahrholdt (2015)	Service performance value, emotional value, monetary value, brand integration value, and convenience value
Bonsón Ponte et al. (2015)	Perceived privacy - internet privacy concerns, familiarity with website, disposition to third party certification, and understanding of seals Perceived security – security policy, website investment, vendor reputation, and assurance seal
Mohd-Any, Winklhofer, and Ennew (2015)	Utilitarian value, emotional value, social value, perceived control and freedom, value for money, and user's cognitive efforts
Karaboga, Koçyiğit, and Yazgan (2017)	Functional, emotional, social, and monetary

Some researchers proposed online value models based on the traditional CPV dimensions. Such studies adopted theoretical foundations, such as Theory of Consumpusion Value by Seth et al. (1991) (see Karaboga et al., 2017; Peng & Liang, 2013) and Technology Acceptance Model by Davis (1989) (see, Haba & Dastane, 2018). These studies did not uncover new dimensions of online CPV, but were unique in extending the existing theories for a particular objective. For example, the OCVAL model proposed by Carlson et al. (2015) had been based on theoretical foundation introduced by Sheth et al. (1991), along with the addition of some dimensions to propose a model for multi-channel online retailers. Unified Theory of Acceptance and Use of Technology (UTAUT), Expectation Confirmation Theory, Model of PC Utilisation (MPCU), and combined TAM-TBP applications were also adopted as theoretical foundation in past work. Overall, temporal, spatial, technical, and functional aspects were considered.

M-Commerce: Within the mobile market setting, not much is known about PV from M-Commerce. Ubiquity localisation, personalisation, and convenience were identified as the key aspects of PV (Clarke, 2001; Akesson, 2007). Some models were based on the foundations of traditional theories (see Alsheik & Bojei, 2012; Philstrom, 2008). Overall, the existing theories are dominated by technical and functional aspects.

Exploratory and scale development studies are untapped. As most empirical studies were based on the traditional foundations of CPV, there is need to develop constructs for M-VAL.

Table 2.11: Selected studies on CPV in Mobile Shopping Context

Authors	Dimensions
Clarke Iii and Harrisonburg (2001)	Ubiquity, localisation, personalisation, and convenience
Åkesson (2007)	Ubiquity, localisation, personalisation, convenience, and socialisation
Pura and Gummerus (2007)	Conditional, epistemic, emotional, social, monetary, and convenience values
Pihlström and Brush (2008)	Social, emotional, conditional, monitory, convenience, and epistemic values
Büyüközkan (2009)	User requirement model
Alsheikh and Bojei (2013)	Benefits – performance expectancy and effort expectancy Sacrifice – perceived cost and perceived risk
Choi (2018)	Ubiquity, location-based services, user control, usefulness, and ease of use

2.7 Consequences of M-VAL

Consequences of CPV were explored time to time in various contexts, such as retail, social commerce, and online commerce (see Alshibly, 2015; Zauner et al., 2015). In the context of in-store markets and specifically for retail sector, the established consequences of CPV are customer satisfaction (Gounaris, Tzempelikos, & Chatzipanagiotou, 2007; Vieira, 2013; Yang, & Peterson, 2004) and customer loyalty (Gounaris et al., 2007; Yang, & Peterson, 2004).

Recent empirical studies have assessed the impact of PV and its dimensions within the online commerce context. Those studies revealed that PV elements have a range of consequences, from online shopping adoption to RI. Mostly have verified the PV elements in E-Commerce as facilitating online shopping adoption (Akgül, 2018; Baganzi & Lau, 2017; Tan & Ooi, 2018), and then, affecting online purchase intention (Abou-Shouk & Khalifa, 2017; Ettis, 2017; Aldousari, Delafrooz, Yajid, & Ahmed, 2016) and online shopping behaviour (Akgül, 2018; Baganzi & Lau, 2017; Chen, 2013).

The CPV and its factors can influence online customer satisfaction (Punyatoya, Satpathy, & Agrawal, 2018; San-Martín, Prodanova, & López Catalán, 2016; Tandon et

al., 2018) and result in key consequences, such as online decision making (Abdallah & Jaleel, 2018; Fadhilla & Farmania, 2017). Various stages of decision making, such as information search, may be influenced by several value dimensions. This can affect consumer behaviour within the online shopping context.

Other consequences include online branding (Barreda, Bilgihan, Nusair, & Okumus, 2016), online WOM (Duarte, Costa e Silva, & Ferreira, 2018), and switching barriers. In M-Commerce, CPV elements have key role and result in consequences ranging from impulse buying (Akram, Hui, Khan, Yan, & Akram 2018; Liu, Lee & Hu, 2013) to m-shopping cart abandonment (Huang, Korfiatis, & Chang, 2018). The critical role of CPV in M-Commerce setting demands further exploration. The CPV affects m-shopping service quality (Kaatz, Brock, & Blut, 2018) and shopping experience (Bilgihan et al., 2014; Li et al., 2012; McLean et al., 2018). Both factors are vital to attract or serve new consumers, besides ensuring loyalty, repeat purchase, mobile app usage, and re-use intention (Kang, 2014; Ng, 2016; Shaw & Sergueeva, 2017) - the key outcomes of CPV impact on M-Commerce.

The main outcomes of CPV from business bottom-line are RI (Chou & Hsu, 2016; Jiménez & San-Martín, 2017; Pappas, Kourouthanassis, Giannakos, & Lekakos, 2017) and customer loyalty (Gracia, Ariño, & Blasco, 2015; Bhat & Singh, 2018; Carlson et al., 2015; Delić, Knežević, & Dužević, 2017; Faisal, Gonzalez-Rodriguez, Fernandez-Lanvin, & Andres-Suarez., 2017; Huang & Zhou, 2018; Kang, 2017).

This has been validated for a range of sectors, including retail, travel, banking, payment, and fashion. The consequences generated by CPV in online context are identical to those of the traditional CPV for in-store context, except for different impact and intensity. As depicted in Section 1.3.1 and as specified in RO 3, both CE and RI were selected as key consequences in this study to assess the effect of M-VAL.

The link of CPV with satisfaction and RI has been tested time to time. However, consumers' perception is dynamic and reinvestigation of the same is of utmost importance to identify how and what dimensions of perception change over time. Besides, CPV changes based on market, industry, and demographics.

The literature on the connection among CPV, CE, and RI in the context of M-Commerce is sparse despite some studies conducted of late. These studies were carried out across different geographical areas and industries. The CPV not only influences loyalty and security dimensions, but also has a mediating role between the two. Some researchers suggested that CPV has a significant impact on loyalty and can boost RI (Ozturk, Bilgihan, Nusair, & Okumus, 2016; Wu et al., 2016; Zhang et al., 2017). According to Dovaliene, Masiulyte, and Piligrimiene (2015), the cognitive aspects of CE have insignificant impact on CPV, but in context specific, CE significantly affects CPV. Thakur (2016) asserted that the elements of CPV have an impact on CE, which in turn, affects loyalty.

The CE is a proven method to enhance loyalty by engaging customers through various ways (Rabbanee, Haque, Banik, & Islam, 2019). In the E-Commerce context, CPV has a direct effect on RI and CE, along with a mediating impact on online consumers. According to Thakur (2016), CE is crucial in predicting customer loyalty, satisfaction, and convenience in M-Commerce context. Evidently, Marbach, Lages, and Nunan (2016) contributed to online CE literature and called for the need to assess the link of quality with e-customer engagement. However, in light of M-Commerce, correlations among CPV, CE, and RI are untapped. Certainly, one cannot generalise the findings of desktop-based shopping for mobile online shopping phenomenon. Companies are increasingly turning to apps to gain additional consumers, as mobile phones have become an integral part of our lives (Stocchi et al., 2017).

Engagement is crucial to retain customers and avoid app abandonment (Deolite, 2018). Although marketers offer appropriate value proposition, companies must find ways to engage customers. Generally, companies adopt many ways of CE, such as free coupons, clustering, content management, product reviews, push notifications, live chat, social commerce, customer accounts, personalising, incentivising visits, and interactive videos. However, the extent such engagement mediates the impact of M-VAL on RI remains unexplored. Thus, factors that drive CE and the impact of CPV dimensions on CE in the context of M-shoppers demand further investigation.

Table 2.12: CPV Concequences

Consequences	Author(s)
Online Shopping Adoption	Akgül (2018); Baganzi and Lau (2017); Tan and Ooi (2018)
Online Shopping	Akgül (2018); Baganzi and Lau (2017); Chen (2013)
Online Shopping Experience	Barreda et al., (2016); Li et al., (2012); McLean et al., (2018); Pantano and Gandini (2018)
Mobile Service (m-Service) Quality	Kaatz et al. (2018)
Online Satisfaction	Punyatoya et al., (2018); San-Martín et al (2016); Tandon et al., (2018)
Online User's Attitude	Al-Debei, Akroush, and Ashouri (2015); Ashraf, Thongpapanl, and Spyropoulou (2016); Bonn, Kim, Kang, and Cho, 2016; Ho and See-To (2018); Kantatasiri, Jaroenwanit, and Brown (2015); Park and Tussyadiah (2017); Rezaei, Chandran, and Oh (2018)
Online Consumer Behaviour	Abou-Shouk and Khalifa (2017); Chopdar, Korfiatis, Sivakumar, and Lytras, (2018); Jensen and Wagner (2018); Katta and Patro (2017); Park and Tussyadiah (2017),
Online Decision Making	Abdallah and Jaleel (2018); Fadhilla and Farmania (2017)
Online Purchase Intention	Abou-Shouk and Khalifa (2017); Ettis (2017); Aldousari, et al., (2016)
ORI	Chou and Hsu (2016); Jiménez and San-Martín (2017); Pappas et al., (2017)
Online Loyalty	Gracia et al., (2015);l Bhat and Singh (2018); Carlson et al., (2015), Delić et al., (2017).
Shopping Cart abandonment	Huang et al. (2018)
e-WOM	Duarte et al. (2018)
Online Impulse Buying	Akram et al. (2018); Liu et al., (2013)
Mobile App Usage	Kang (2014), Ng (2016), Shaw and Sergueeva (2017), Thakur and Srivastava (2014); Urumsah (2015)
Online Branding	Barreda et al., (2016)

2.8 Research Gaps

Although the concept of PV is not new to the marketing field, the conventional PV theories are developed in traditional, in-store market; thus, may be ineffective in capturing the true nature of M-VAL (Huang et al., 2019; Karjaluoto, et al., 2019). Although these conventional models were tested empirically in traditional and electronic markets, one should note that these market settings differ from M-Commerce setting (Pura & Gummerus, 2007). According to DeSarbo, Jedidi, and Sinha (2001), conventional PV research models dismiss consumer and services heterogeneity. As business models become increasingly complex, consumers perceive value in different ways (Chi & Kliduff, 2011). The existing models are discussed in the context of traditional, in-store consumption scenarios. Most researchers have extended the research landscape from in-store consumption to service and online businesses (see El-adly, 2018; Williams & Soutar, 2009), while other studies have explored mobile services based on multidimensional models (see Karjaluoto et al., 2018; Yang et al., 2018). Meanwhile, some have identified mobile PV dimensions in varied contexts (see Huang et al., 2019; Karjaluoto et al., 2019). Therefore, none of the CPV scales developed for traditional in-store businesses such as PERVAL, SERV-PERVAL, GLOVAL can be used for measuring M-VAL.

As the existing marketing literature and CPV scales may not thoroughly describe how M-Commerce provides value beyond the traditional or E-Commerce platforms, there is a continuous need to rethink, reinvestigate, and re-conceptualise the PV to determine what is perceived as valuable amidst consumers. Some studies highlighted what consumers perceived as valuable from M-Commerce, although the technical aspects were the main focus (see Büyüközkan, 2009) or the studies were mainly based on the implementation of traditional models of PV in the context of M-Commerce (see El-adly, 2018; Williams and Soutar, 2009). In spite of the growing body of literature on the importance of mobile shoppers (M-shoppers), particularly in terms of better benefits (see Chen, Hsu, & Lin, 2010; Moon, Javaid, Kiran, Awan, & Farooq, 2018), reduced cost (see Moon & Lee, 2014), as well as hedonic (Huang et al., 2019; Moon et al., 2018) and experiential aspects (Huang et al., 2019; Moon et al., 2018) of m-shopping; the limited conceptualisation of elements into relevant and appropriate dimensions should be

addressed. Thus, identifying the factors of the conceptualisation of mobile CPV dimensions and model taxonomy is crucial. Overall, the necessity for multidimensional PV construct is important to identify the heterogeneity of PV from M-Commerce. This also poses the requirement to devise a measurement scale for PV in the context of M-Commerce. In short, there is a need to define M-VAL because uncovering PV dimensions can be the key to address challenges in the industry due to high costs of conversion and acquiring new consumers (KPMG, 2019). The analyses should go beyond the technical aspects of M-Commerce by developing a multidimensional PV scale to ensure that M-Commerce can offer impressive value proposition. In addition, it is then become critical to investigate how such dimensions of M-VAL impacts CE and RI through CE in M-Commerce context as existing literature provides evidence based on in-store or E-commerce context (Overby & Lee, 2006).

As discussed above, very little information is known about PV from M-Commerce in the M-Commerce setting. Ubiquity localisation, personalisation, and convenience have been identified as the key aspects of PV (Åkesson, 2007; Clarke & Harrisonburg, 2001), while some other models (see Alsheikh & Bojei, 2013; Pihlström & Brush, 2008) adopted traditional theories as their foundation. Clearly, the existing theories are dominated by technical and functional aspects. With exploratory and scale development studies are absent, most of the empirical studies are based on the traditional foundations of CPV. Therefore, this warrants the need for the development of construct for M-VAL.

The gap in the literature is detected regarding which value dimensions in general and what value dimensions of m-shopping in specific have significant impact on CE, as well as how they drive RI. The CE is critical in M-Commerce setting and strategies to devise CE methods can be more effective and methodical if the impact of value dimensions on them is measured. Value-based CE can be beneficial for M-Commerce companies as effective CE activities can increase interaction and RI exponentially. However, no empirical study has assessed the impact of CPV dimensions on CE and RI within the M-shopping context, particularly in the Malaysian travel market. Value-based CE is beneficial for M-Commerce companies as effective CE activities can increase interaction and RI exponentially. As possible M-VAL dimensions are still untapped, the

empirical investigation to understand the impact of M-VAL dimensions on CE and RI is absent in the literature. There is also a gap on assessing the nature of CPV-CE link in the context of M-Commerce. Hence, the impact of various dimensions of M-VAL on CE must be measured to bridge the gap. As depicted in Section 2.7, CE has dual effect on CPV and RI. In light of M-Commerce, the literature is sparse on the mediating role of CE on CPV-RI link, especially in the absence of conceptualisation of M-VAL dimensions to determine the CPV-CE-RI link with the mediating role of CE remaining unknown.

Thus, this research addresses multiple knowledge gaps in the extant literature. Firstly, existing CPV dimensions were developed for traditional market context and therefore does not describe how M-Commerce provides value beyond the in-store or E-Commerce platforms. Present study concetualises the construct of M-VAL. Secondly, existing CPV scales are not suitable to measure M-VAL as such scales are focussed on tapping value from traditional market setting. The scale which considers all those aspects which are required to measure M-VAL holistically is missing. The current study addrsses this research gap by developing a scale to measure the same. Thirdly, it is then become critical to investigate how such dimensions of M-VAL impacts CE and RI through CE in M-Commerce context which is a definite research gap. All in all, current study develops M-VAL construct, a scale to measure such construct and identify its impact on CE and RI in M-commerce context.

2.9 Chapter Summary

To summarise, this chapter presents the review of literature in alignment with the three RQs outlined in Chapter 1. This chapter sheds light on the theory of PV by reviewing several major approaches, empirical studies, and key terms; thus, resulting in underpinning of the significant research gap in PV literature. Next, Chapter 3 outlines the conceptual framework based on theoretical foundation to bridge the research gap and formulate the study hypotheses.

CHAPTER 3

CONCEPTUAL FRAMEWORK

3.1 Chapter Overview

The research gaps are highlighted in Chapter 2 as a result of systematic and critical review of the relevant literature. Chapter 2 provides foundation for this chapter, which presents the conceptualisation of M-VAL scale. Chapter 3 starts with a discussion on the conceptual foundation, followed by a review of empirical studies, and consequently, the conceptual framework. Next, this chapter formulates the main hypotheses in accordance to the RQs and based on the key theories.

3.2 Conceptual Foundation & Underpinning Theories

The theoretical foundation for M-VAL conceptualisation is grounded in two sources of evidence. The first is comprehensive literature review related to CPV, while the second is qualitative study inclusive of netnographic analysis of approximately 1000 discussion review threads posted on Google Play (Kozinet, 2002). Additionally, multiple definitions of CPV across multiple disciplines were systematically analysed in order to provide theoretical support for M-VAL definition upon proposing the conceptualisation.

Key theories related to PV are discussed in Section 2.3 of Chapter 2, while the existing scale development studies related to PV in several contexts are discussed in Section 2.5 of Chapter 2. Based on this theoretical discussion, the conceptual foundation of M-VAL scale is elaborated. The conceptual foundation of M-VAL is in line with the main aspects of the core PV theories, which denotes the benefit and sacrifice components or the components of give and get of PV (Holbrook & Hirschman, 1982; Zeithaml, 1988). The conceptualisation reflects the theoretical evidence derived from multidimensional CPV literature - a context linked with higher order in nature (see Grewal et al., 1998; Holbrook, 1994; Lapierre, 2000; Sheth et al. 1991; Woodruff, 1997).

Each dimension was synthesised by combining both aspects, such as benefits and sacrifices, into a dimension. For instance, the conceptualisation of the term ‘information value’ represents the combination of benefit and sacrifice aspects related to the information aspect. Similarly, Sheth et al. (1991) highlighted the same conceptualisation

for the development of the theory of consumption values. The M-VAL includes the overall assessment of consumers and not just a single aspect.

The present conceptualisation has a strong conceptual foundation both on customer value in general (see Holbrook, 1999; Mathwick et al., 2001; Overby & Lee, 2006; Sheth, 1991) and on customer value in retail aspect (Babin, Darden, & Griffin, 1994; Sweeney & Soutar, 2001; Rintamäki et al., 2007). The perception of value is linked to the use of M-Commerce apps that acts as a shopping platform. Hence, empirical studies that define the conceptualisation of M-VAL are included in the methodology section because the existing models are incomprehensive and inadequate to conceptualise the dimensions and the model taxonomy of mobile CPV. Overall, the 10 unique dimensions of PV from M-Commerce are discussed below, followed by a critical review of the existing models, as well as empirical evidence of perceived benefits and sacrifices of shopping using mobile devices.

3.3 Conceptual M-VAL Dimensions

Information value: For mobile consumers, app is a shopping platform, where self-information search is critical for decision making in the absence of salesperson or demonstrator. Information quality is crucial role in such environment (Kaatz et al. 2018; Chi, 2018; Lee & Han, 2017). Since various online shopping platforms are visited by consumers for information search prior to purchase, one with comprehensive information is preferred. According to Liao and Shi (2017), appropriate web content results in better experience, while Tseng, Cheng, Li, and Teng (2017) claimed that language variety is crucial for global platforms to enable multinational consumers engage in shopping. Arranging product portfolio (Kaatz et al. 2018) and facilitating information search (Holmes, Byrne, & Rowley, 2014) are other key factors. These factors prevent confusion among consumers (Pappas et al., 2017) and enhance online shopping procedure. The empirical studies reported that these elements are more relevant and critical for m-shopping, when compared to desktop-based shopping, as the former enables m-shopping at anytime and anywhere – signifying effective communication of information. Next, these dimensions were grouped based on similarity under the proposed dimension of information value. This was defined as

‘online consumers’ assessment of perceived benefits received from information provided by online retailer verses perceived cost of information search or perceived risk of possible inappropriate decision based on misinformation by mobile-retailer (m-tailor) - termed as information value derived from M-Commerce.

Interface value: Mobile channel interface of m-tailor is as good as a store of offline retailer, from which consumers can seek the same value. Navigation design greatly influences value perception (Delić et al., 2017; Rezaei et al, 2018) as it dictates flow experience to facilitate easy sailing throughout the m-shopping process (Sohn, 2017) with low perception of performance risk (Baganzi & Lau, 2017; Park & Tussyadiah, 2017; Thakur & Srivastava, 2014; Yuan, Liu, Yao, & Liu, 2016). The TAM-based variable called perceived usefulness has been tested by researchers empirically and it definitely forms beneficial perception among online shoppers (Bonn et al., 2016; Chen, Hsu, & Lu, 2018; Delić et al., 2017; Eze & Poong, 2017, Matemba & Li, 2018; Rezaei & Amin, 2013; Roy & Moorthi, 2017; Saprikis, Markos, Zarmpou, & Vlachopoulou, 2018; Sohn, 2017; Sun et al., 2017; Yuan et al., 2016). Perceived usefulness denotes the perception of online users on how a particular element of online system can enhance job performance or in this context, shopping performance. Perceived usefulness in the context of online shopping is validated by researchers more as an element of interface quality instead of adoption. However, the factor that distinguishes M-Commerce from E-Commerce is the optimisation of web store with the most important role is having effective and efficient interface. Studies depict that the perception of consumers can be influenced by several interface-related aspects, such as responsive design and synchronicity (Kaatz et al., 2018), web atmospheric, (Ortiz et al., 2017), efficient web atmosphere (Sastry & Rao, 2017; Zhao & Wan, 2017), and app functionality (Lee & Han, 2017; Kaatz et al. 2018). The grouping of elements on quality interface led to the proposal of interface value dimension, defined as the trade-off between perceived benefits gained from usage of quality interface while m-shopping and perceived cost of erroneous interface or perceived risk from faulty interface - termed as interface value derived from M-Commerce.

Customisation value: Although the flow of traffic is high on mobile apps, firms are finding it difficult to convert intention into actual sales. For offline shopping, visitors rarely visit shops without purchase intentions, when compared to online shopping website visits. Those visiting may register the actual sales if they find the experience customised to their need and shopping style. Hence, personalised experience, customisation value, and contextual information emerged as value dimensions in the context of online shoppers (Celik, 2017). Tseng et al., (2017) found personal focus as generator of self-expression value. Cross-selling and upselling became successful by some M-Commerce giants via customised interfaces that reckon consumers' habits. This can be web personalisation based on the shoppers' attributes or personalisation of information or personalised services. Based on grouping of such similar elements under customisation value, it is defined as benefits consumer perceived from m-tailors through personalised shopping experience provided by m-tailors, which in turn, reduce perceived risk of selecting inappropriate sales offering.

Gamification value: According to Goi (2016) and Perception (2017), most influential perception elements are mobile image recognition; app with augmented reality and video content. Interactive and attractive features (Jung, 2018), as well as entertainment (Lim, 2015b), are factors that improve value. Media richness significantly influences online consumers' perception and it includes app design, atmospheric interface, entertainment, and flow (Huang & Benyoucef, 2013; Maity & Dass, 2014). It was disputed first if entertainment is preferred over quality or service, but recent empirical studies have emphasised on the perceived benefits derived from gamification aspects. Besides, hedonic motivation and pleasurable shopping experience are the key elements in generating PV in recent literature. This dimension is conceptualised as gamification value and defined as the value of pleasurable shopping derived from perceived benefits of enjoyable and exciting m-shopping by avoiding perceived cost of boredom and hedonic demotivation - termed as gamification value from M-Commerce.

Gratification value: The pleasure received from the satisfaction or achievement of the desire is gratification, whereby in the context of m-shopping, experiential gratification is a source of PV (Rezaei et al., 2018). The features or innovativeness in shopping

provided by m-tailors affect consumers' gratification (Delić et al., 2017; Madan & Yadav, 2018; Saprikis et al., 2018; Thakur & Srivastava, 2015), emotional ambivalence (Huang et al., 2018), and compatibility (Jiménez & San-Martín, 2017). With particular context of mobile apps, faulty coding or design can result in erroneous app performance. At times, products mentioned on the web catalogue would be out of stock or unavailable in the quality consumers seek. This element of scarcity adversely affects consumer gratification (Akram et al., 2018). As such, gratification value is defined as the emotional value derived from M-Commerce after weighing in aspects that enhance experiential gratification.

Credibility value: The success of M-Commerce is in the confirmation of transaction and not in online search for decision making. Profit is reaped by firms when transaction is executed by customers. As such, customers become more cautious although online payments are widely adopted by customers. Trustworthiness is vital in developing positive perception about privacy and security (Baganzi & Lau, 2017; Kim, Kim, & Park, 2017; Madlberger, 2017; Marriott & Williams, 2018; Ng, 2016; Rezaei et al., 2018). This also extends to risk-related authenticity of the products catalogued on the website, dealers, warranty, and aftersales service related to the purchases. m-tailors privacy policy is a key aspect of perceived risk (Chopdar et al., 2018; Kaatz et al. 2018; Liébana-Cabanillas, Marinkovic, Ramos de Luna, & Kalinic, 2018) as robust policy protects the privacy of consumers, thus enabling their trust towards e-tailors. As the interaction is non-human, privacy aspects are vital to ensure that consumers can shop in peace. Various security concerns, mainly related to payment security, are an antecedent of perceived risk. These elements form a dimension related to the overall credibility of m-tailor. Thus, this value dimension is defined as consumers' overall assessment of credibility of m-shopping by considering perceived trustworthiness against perceived security and privacy concerns - termed as credibility value.

Social value: Brand reputation and brand image are some factors that shape the perception in online context (Chi, 2018). Brand image, social factors (Jimenez, 2017), and social value (Gan & Wang, 2017) have a crucial role in forming consumers' perception towards online shopping. System robustness and interface attribute to

trustworthiness, brand familiarity, brand image, and vendor reputation (San-Martín, 2017), which make a strong foundation for trusting e-retailers by new consumers buying probably for the first time. Brand equity, formed by loyalty, association, perceived quality, and image, affects perception as preference is given to e-tailors with better brand equity or with branded products on the catalogue. Social value has an important role as well (Jimenez, 2017; Sun et al., 2017). When brands are unknown, consumers refer to online reviews. Negative consumer reviews affects perception negatively (von Helversen, Abramczuk, Kopeć, & Nielek, 2018), while social influence and social interaction form the perception in both positive and negative ways (Pauzi et al., 2017). In terms of perceived cost, the element of socialising is missing, in which shopping online and practitioners determine ways to include social commerce aspect in online shopping. Elements related to brand and social values were grouped and the conceptualised dimension is defined as the value derived from both branding and social aspects while m-shopping.

Convenience value: This proposed dimension is identical with dimensions conceptualised and validated by past researchers as a factor of traditional CPV; but when it comes to M-VAL, two main aspects of convenience have been tested by many researchers. Most studies have emphasised on perceived ease of use as the main factor in forming PV in desktop- and mobile-based shopping (Bonn et al., 2016; Eze & Poong, 2013; Roy & Moorthi, 2017; Saprikis et al., 2018). As the phenomenon of m-shopping has been well adopted, perceived ease of use offers effective functioning, and hence, greater convenience browsing (Madlberger, 2017), length of time spent while shopping (McLean, Al-Nabhani, & Wilson, 2018), time saving (Kaatz et al. 2018), ease of ordering (Lee & Han, 2017), and ease of checking out (Pham & Ahammad, 2017). Online shopping convenience, the term that covers access, search, evaluation, transaction, and post-purchase service, has been explored as it forms a major aspect of perceived convenience value (Abdallah & Jaleel, 2018; Jiang, Yang, & Jun, 2013; Pham, Tran, Misra, Maskeliunas, & Damaševičius, 2018). This is the second major component of this dimension. Scholars (see Abdallah & Jaleel, 2018; Assarut & Eiamkanchanalai, 2015; Carlson et al., 2015; Duarte et al., 2018; Fadhilla & Farmania, 2017; Mahapatra, 2017; Shaw & Sergueeva, 2017) asserted that online convenience is crucial in forming

purchase intention and various other consequences through PV. Other aspects involve accessibility (Katta & Patro, 2017), comfort (Purwanto & Kuswandi, 2017), and facilitating conditions (Shaw & Sergueeva, 2017). As such, convenience value is defined as the convenience gained via m-shopping by enhancing perceived benefits, such as shopping from anywhere and anytime, along with simultaneous lower perceived cost, such as slow internet or length of time spent online - termed as convenience value.

Economic value: Popularity of m-shopping is ascribed to discounts offered and elimination of channels between manufacturer and consumers. Many online sales, auctions, and festive offers promote online buying and discounts (Saricam & Erdumlu, 2017; Sinha & Singh, 2017), coupons (Reichhart, Pescher, & Spann, 2013; Sarkar & Khare, 2017; Zheng, Lee, & Cheung, 2017), and low-cost products (Gupta & Arora, 2017; Sun et al., 2017) largely perceived as benefits by online shoppers. Perceived payment risk (Park & Tussyadiah, 2017) and financial security (Wu et al., 2017) are part of perceived cost or risk linked with economic aspects in online shopping. The dimension is defined as the financial gains perceived by online shoppers from buying online after ensuring increase in perceived benefits, such as discounts and right-priced products, and minimum perceived cost or perceived payment risk.

Visual value: Aesthetics and tangibles are vital elements of traditional CPV that affect consumers' PV (Tsai, 2017; Wu et al., 2017). In the context of m-shopping, media richness (Li, Dong, & Chen, 2012) and website atmospherics (Hasan, 2016; Lim, 2015; Pham & Ahammad, 2017; Sreeram, Kesharwani, & Desai, 2017) share similar role. Such factors not only provide pleasurable shopping experience, but also facilitate better decision making by ensuring richer images of products and information of specification. It distinguishes e-tailors from competitors. Atmospheric colour (Ettis, 2017; Faisal et al., 2017), visual rotation (Blazquez Cano, Perry, Ashman, & Waite, 2017), visual stimuli (Kahn, 2017), and web store appeal (Abdallah & Jaleel, 2015; Liu et al., 2013) are crucial for PV in terms of visual elements. Similarity, visual complexity (Sohn, 2017; Sohn, Seegebarth, & Moritz, 2017), and congruence (Sohn, 2017) are part of perceived cost. Thus, visual value denotes value derived from perceived benefits of m-stores' visual aspects against visual complexity or visual value from M-Commerce.

Overall, the definition of M-VAL is formulated as follows:

The assessment of overall received benefits versus risks incurred to obtain the right information, effective interaction, appropriate customisation, enjoyable gamified browsing, gratification, social aspects, convenience, discounted products, and impressive visuals while shopping on mobile devices.

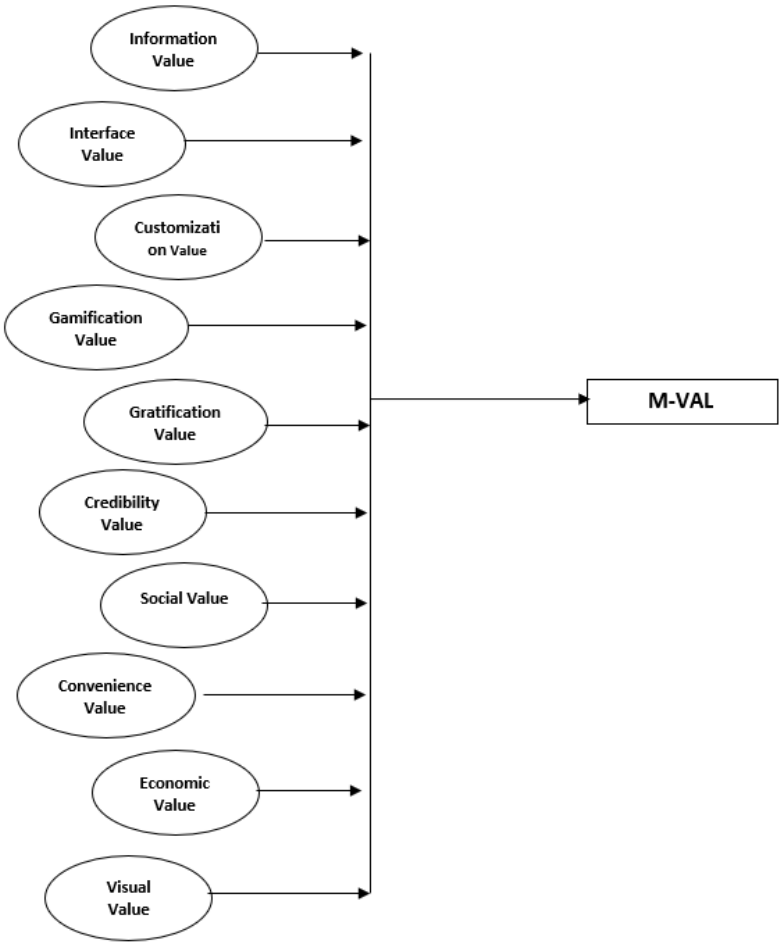


Figure 3.1: The Proposed M-VAL Scale Dimensions

3.4 Hypotheses Development

After proposing the M-VAL scale dimensions, the conceptual framework was developed based on independent variables (IVs) and DVs, as well as mediators or moderators, if any. The nomological validity of the final scale was assessed by including predictors and consequences of the scale construct. In light of RQ3, RI and CE were selected as DV

and mediator for the link of M-VAL dimensions with RI, respectively. Hypotheses formulation based on the variables are presented below.

3.4.1 CPV as a predictor of CE

The CE has attracted attention from many researchers and professionals since the past years (see Barger, Peltier, & Schultz, 2016; Brodie et al., 2013; Dessart, Veloutsou, & Morgan-Thomas, 2016; Vivek et al., 2012). Factors that impact CE have been identified by researchers, such as service convenience, fairness, and perceived quality (Roy, Shekhar, Lassar, & Chen, 2018); value in use and customer trust (Roy, Balaji, Soutar, Lassar, & Roy, 2018); consumer involvement (Harrigan et al., 2017); brand attachment, self-congruity, and self-extension tendency (Rabbanee, Roy, & Spence, 2020); and product experience (Harmeling, Moffett, Arnold, & Carlson, 2017).

The review of existing literature on CPV and CE linkages broadly portrays dual perspectives of value drives engagement and engagement drives value. The CPV has been proven as antecedent of CE (Doorn et al., 2010) and consequence of CE (Vivek et al., 2012). Numerous studies have established links among various CPV dimensions and CE. Some instances refer to hedonic dimensions (Holbrook, 1999; Marbach et al., 2016) and utilitarian dimensions (Groeger, Moroko, & Hollebeek, 2016). In analysing the correlations among CE, PV, and satisfaction; many researchers considered CPV and satisfaction as the consequences of CE (see Mollen & Wilson, 2010; Hollebeek, 2013; Brodie et al., 2013). Consumers engage with the intention to achieve their pre-determined goals in terms of personal values (Khalifa, 2004), which can result in CE capturing certain elements of customer value. Hence, some elements, such as utilitarian and hedonic values, can be termed as CE antecedents. Consumers prefer actions that result in enhanced and desired consequences, while concurrently reducing undesired ones. Thus, their behaviour in terms of CE is influenced by personal values.

Moving further, Hollebeek (2013) uncovered the association between CPV and CE in the context of online consumers, while claiming that CE generates greater CPV for hedonic, than for utilitarian brand. Studies have also examined the link between second forms of CE and CPV. Rohrbeck, Steinhoff, and Perder (2010) explored customer collaboration and virtual customer integration consisting of various value elements,

including social recognition, curiosity, entertainment, and price discounts. According to Shah (2004), consumer engages with product or brand based on their perception of enjoyment from purchase, recognition within community, ideologies, identity and affiliation, as well as the desire to create. According to Fuller (2010), in the context of virtual projects, CE is derived by interest in innovation, compensation, and involvement in product improvement.

In the context of M-Commerce, engagement leads to PV, which results in satisfaction and consequently in loyalty (Kim et al., 2013). In their model of mobile user engagement, Kim et al. (2013) highlighted reverse relation; whereby when more satisfaction customers get, they are more likely to engage and create value. Dong and Sivakumar (2017) supported a similar relationship between satisfaction and engagement.

The CE in the context of M-Commerce has a critical role to create useful and engaging apps, so as to resolve numerous business issues. According to Sterling (2014), consumers prefer spending more time on mobile apps than desktop-based internet or television. However, when it comes to consumption of mobile apps, most of the apps received no or less than 100 downloads (Lim et al., 2014, p.40). This is true in the case of app store (iOS apps) and Google Store (Android apps). For instance, 400,000 apps out of 600,000 apps in Apple store received no download. As for Android apps, 80% of them received less than 100 downloads. M-Commerce, being highly competitive, has the number of apps to rapidly increase with low margin per sales, thus creating a tough environment for app developers (Lim, et al, 2015). Value-based CE is beneficial for M-Commerce companies as effective CE activities can increase interaction and RI exponentially. The conceptualisation of M-VAL warrants the need for empirical investigation to determine the impact of M-VAL dimensions on CE.

In the virtual environment, engaged consumers are those who visit the website or app frequently, spend substantial time on the pages, as well as interact and keep themselves updated about the apps (Calder, Malthouse, & Schaedel, 2009). In mobile setting, CE occurs when users of mobile device interact with mobile devices or apps to meet their needs (O'Brien & Toms, 2008). Such engagement is motivated by various objectives and activities of consumers (Kim et al., 2013). Expectations of consumers from mobile

apps are escalating and apps with several benefits or proven usefulness to consumers are being used as well as retained. Competition generated through increased alternatives and advances in technology results in such phenomenon (Mc lean & Wilson, 2016). Hence, the following is proposed:

H1 (i -x): M-VAL dimensions positively influence consumer engagement

Referring to Figure 3.1, 10 dimensions of M-VAL were embedded into the conceptual model. However, this conceptual model was subjected to purification and validation in Sections 5.3.1 and 5.3.2 (see Chapter 5), respectively, resulting in the final scale structure in Section 5.3.2.9 of Chapter 5. Specific hypotheses related to the final M-VAL scale dimensions are listed in Section 5.3.2.10.1 based on the theoretical foundations of extant literature.

3.4.2 RI as a Consequence of CE

The CE enhances loyalty by engaging customers via multiple ways (Rabbanee et al., 2019). As CE creates deeper and meaningful customer-company relationship, managing CE has gained strategic importance in firms striving to build long-term relationships with customers (Roy et al, 2018). According to Roderick et al. (2011), CE leads to two types of consumer retention. The first is rational loyalty, which is the outcome of satisfaction, purchase intention, and recommendation intention. The second leads to emotional attachment that includes brand confidence, belief, pride, and passion. Literature on conventional environment that dismisses mobile or internet commerce informs that CE results in repeat purchases (Reitz, 2012; Vivek et al., 2012).

Recent studies in virtual environment support such findings and depicts that M-shoppers who are engaged into mobile app usage can become more committed to company/brand with rare discontinuance (Kim & Baek, 2018). Marbach et al. (2016) asserted on the need to develop the linkage between quality and electronic consumer engagement (e-CE). Certainly, one cannot generalise the findings of desktop-based shopping for m-shopping phenomenon. A positive CE-RI link was also verified in the context of social networking sites (Cheung, Zheng & Lee, 2012), online communities (Algesheim et al.,

2005), and E-Commerce (Balaji, Jha, Sengupta, & Krishnan, 2018; Viswanathan, Malthouse, Maslowska, Hoornaert, & Poel, 2018).

Thakur (2016) claimed that CE is crucial in predicting customer loyalty, satisfaction, and convenience as it retains customers and avoids app neglect (Deolite, 2018). Companies adopt many CE ways, such as free coupon, clustering, content management, product review, push notification, live chat, social commerce, customer account, personalisation, incentivised visit, and interactive video. Kim et al. (2013) asserted that mobile CE leads to continual use of mobile apps. Consumers discontinue app if they are unhappy during the first usage without exploring the absence of their engagement with apps. The RI is a consequence of CE in mobile apps (Ho & Chung, 2020). Thus, the following is proposed:

H2: Consumer engagement positively influences repurchase intention

3.4.3 CE as a Mediator

Past studies in this field suggest that CPV can influence consumers' decision-making process, including selection, evaluation, and purchase, which consequently affect RI (Baker, Parasuraman, Grewal, & Voss, 2002; Fiore & Kim, 2007). According to Gummerus et al., (2012), perceived benefits from shopping have a relationship with CE that subsequently influences relationship outcomes, such as satisfaction, loyalty, and repurchase.

Customers perceiving more benefits and less sacrifice tend to remain highly engaged, thus fostering an array of positive relationship outcomes, including repurchase, recommendations, and loyalty (Lee et al., 2019; Parihar, Dawra, & Sahay, 2019; Rather, Hollebeek, & Islam 2019). Transaction benefits are functional in nature, while products/services are linked with long-term aspects of value; reflective of customers' lifetime value generated from active engagement with brands that yield multiple relationship exchanges via RI (Alavijeh, Esmasili, Sepahvand, & Davidaviciene, 2018; Kim & Ko, 2012; Kumar & George, 2007).

In E-Commerce context, CPV is a factor with direct effect on RI, whereas CE has a mediating role for online consumers (Reitz, 2012). Positive relationship has been

identified between website cues and RI for online shopping (Pee et al., 2018; Rather et al., 2019; Tang & Zhang, 2018), wherein elaboration of such studies can be undertaken by including CE (Harmeling et al., 2017; Liu, Lee, Liu, & Chen, 2018).

Atmospheric cues in virtual environment boost CE (Bilro, Loureiro, & Ali, 2018; Demangeot & Broderick, 2016). Such cues form PV for consumers in terms of visual, hedonic, and aesthetic aspects, thus enhancing CE among online shoppers, and consequently, serving as an important mediator that connects PV elements with RI. Studies on mobile app have determined the impact of multiple dimensions, such as penalisation, ubiquity, and interactivity, on CE and customer loyalty (see Alalwan, 2020). These studies highlight the mediating role of CE in linking perceived benefits with loyalty in m-shopping context.

Consumer perception is dynamic and reassessing this is crucial to identify how and what dimensions of perception change over time. The CPV changes by market, industry, and demographics. The literature that connects CPV, CE, and RI in the context of M-Commerce is in scarcity as only a few studies have assessed varying geographical areas and industries. Some prescribed that CPV has a significant impact on loyalty and can boost RI (Ozturk et al. 2016; Wu et al., 2016; Zhang et al., 2017). Dovaliene et al. (2015) found that the cognitive aspects of CE had insignificant impact on CPV, but context-specific CE impacted CPV significantly. Value-based CE benefits M-Commerce firms as effective CE activities increase interaction and RI. Investigation of value dimensions in general and what value dimensions of M-shopping in specific can significantly impact CE and how it drives RI is in need. To what extend CE mediates the impact of M-VAL on RI is untapped. Thus, factors driving CE and if CPV dimensions can affect CE of M-shoppers demand exploration.

The framework reflects the theoretical assumption that M-VAL dimensions, such as perceived benefits and value of mobile apps or M-Commerce as a whole, are the key factors that affect CE with mobile apps, while CE affects consumers' RI from M-Commerce. It is expected that the dimensions of M-VAL scale are correlated with CE, while CE mediates the relationships between M-VAL dimensions and RI.

H3(i -x): Consumer engagement mediates the relationships between M-VAL dimensions and repurchase intention

3.5 Conceptual Model

The above-mentioned hypotheses are shown in the following conceptual model.

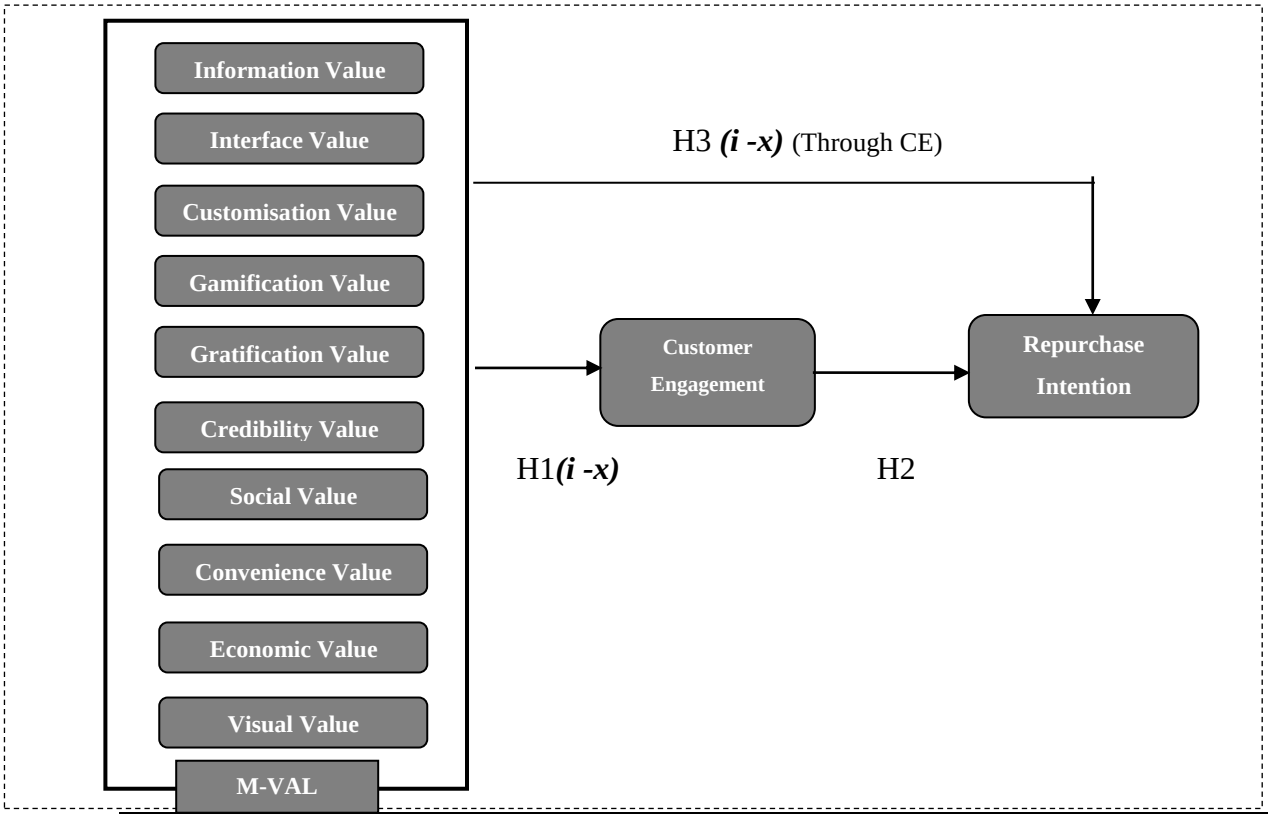


Figure 3.2: Conceptual Framework

3.6 Chapter Summary

This chapter presents the conceptual framework that bridges the research gap detected in Chapter 2. Chapter 3 conceptualises the M-VAL scale based on the theoretical foundations discussed in Chapter 2 and presents a framework for the study by formulating a set of hypotheses. As the scale structure has neither been confirmed nor tested yet, the hypotheses related to the final scale dimensions are presented in Section 5.3.2.10.1 (see Chapter 5) for assessment of nomological validity, as well as to address RQ3. It is now important to clarify and describe the research process deployed to answer the RQs. As such, the next chapter outlines the research methodology of this thesis.

CHAPTER 4

METHODOLOGY

4.1 Chapter Overview

The conceptual framework shown in Chapter 3 displays the link between this study and the literature. The M-VAL scale and a set of hypotheses are presented as well. As for this chapter, it outlines the research methodology executed to address the three RQs stated in Chapter 1, along with the justification and choice of the research method. To address the RQs, the mixed method approach was deployed in two main phases. This chapter first discusses research paradigm, research methodology, research strategy, and research design for the entire study, inclusive of both phases. The next section presents the steps of scale development procedure. Further sections outline various considerations, justifications, and selection of research methodology aspects based on Studies 1 and 2. Study 1 is divided into sub-studies A and B, whereas Study 2 is divided into sub-studies C and D, as illustrated in the schematic diagram displayed in Chapter 1. The following sections describe Studies 1 and 2 covering survey design, sample, sampling techniques, questionnaire design, as well as data collection and analyses methods. This is followed by sections that discuss common methodological considerations for both studies, such as ethics, facilities, resource statement, and data storage. Finally, a summary ends this chapter.

4.2 Research Paradigm

This section discusses various approaches of research paradigm in detail and an in-depth discussion to justify the appropriateness of the selected approaches.

The consideration of research paradigm is crucial to execute any type of research activity. Saunders and Thornhill (2003) stipulated that “a scientist normally work within a theoretical framework – a paradigm that determines problems regarded as crucial, the way these problems are to be conceptualised using appropriate methods of enquiry, the relevant standards of judgments, etc.” (p. 205). Many philosophers agree on the notion of potentially conducting a research using different frameworks, while raising concerns about the level of trust and credibility regarding the knowledge generated using various

paradigms (Neuman, 2012). The three aspects of the paradigm are described as follows: (1) Ontology, as defined by Neuman (2012), is "an area of philosophy that deals with the nature of being, or what exists, the area of philosophy that asks what reality is and what the fundamental categories or reality are" (p. 111). (2) Epistemology, as defined by Khazanchi and Munkvold (2003), refers to "a theory of knowledge that deals with the nature of knowledge, its scope, and provides a set of criteria to evaluate knowledge claims and to establish if such claims are warranted". (3) Methodology is the procedure of generating knowledge (Kothari, 2004).

After examining all the three approaches and reviewing the methods adopted in prior studies, one can say that all the three approaches are empirical and there is no one right approach for conducting a study after considering the systematic nature of the approaches. However, the most suitable paradigm has to be selected based on the ROs stated in Chapter I to meet the study goal.

This study developed a valid and reliable measurement scale of the M-VAL construct. Prescriptions from the scale development literature (see Churchill, 1979; DeVellis, 2012; Netemeyer, Krishnan, Pullig, Wang, Yagci, Dean & Wirth, 2004) were adhered to and primary data were gathered for analysis through the stages of scale development process to develop a valid and reliable scale. From the ontological approach, this study is founded in the agenda of uncovering real phenomenon related to consumers' perception within the m-shopping community. In light of this, relativism was adopted via interpretive and critical research approaches, thus selection of positivist paradigm in this study. However, another aspect to note here is that the aim of this study is to investigate a generalizable explanation of reality aligned with the epistemological position within the positivist paradigm. Although the epistemological notion on the way social world is from the respondents' perspective gathered from interpretive and critical research approaches, further justification of the suitability of positivist approach lies in the generalisability of findings.

4.3 Research Methodology

This section discusses various approaches of research methodology to select the most appropriate approach for this study, along with in-depth discussion to justify the selection in light of suitability.

Saunders and Thornhill (2003) defined research methods as follows: "… methods that researchers use to perform research operations". This includes multiple stages of conducting research viz data collection, data analysis, and result evaluation. Termed as research design, it was defined by Churchill (1979) as a study plan for collecting and analysing data. However, research methodology, or research approach, is "a way to systematically solve research problem". According to Kothari (2004), it denotes "science of studying how research is done scientifically". Research methodology has holistic and inclusive scopes that cover aspects related to logic behind selection and justification of selection by rejecting other methods. This section explains research approach, research method, and later, research design adopted for this study. Justifications for selecting an approach are based on the following four points:

The mixed method approach was selected in this study for data collection; inclusion of both qualitative and quantitative data. In the qualitative approach, words, images, etc., are gathered using specific strategies. Meanwhile, quantitative or hard data are collected in number form via survey, experiments, etc. However, most studies revolve around the quantitative approach. Development of scale is facilitated by complimenting the review of literature by using other qualitative techniques. The positivist paradigm is composed of variables and hypotheses, wherein the method of quantitative research relies on the principles of positivism. As such, this study was deployed from the light of post-positivism paradigm with formulation of hypotheses, wherein the suitability of quantitative method is justified. The qualitative approach of literature rivew was employed to develop a set of hypotheses. The hypotheses in this study are related to construct development – also the goal for employing the qualitative approach. A quantitative study reveals the relationships among variables by testing the proposed hypotheses.

This study employed both deductive and inductive approaches, in which explanatory and exploratory approaches were deployed, thus the adoption of qualitative and quantitative schemes. Further details are explained step by step in the next section to describe the scale development procedure.

Table 4.1: Research Methodology of Current Study

Parameter	Explanation
Study purpose	To develop a valid and reliable measurement scale, besides testing the scale, the conceptual model, and the hypotheses based on the conceptual model
Types of Questions	Based on items generated from the literature and qualitative study to measure the construct. All items are close-ended questions or statements.
Data Collection Method	Mixed method approach
Concepts	Model was developed using independent and dependent variables distinct from each other.
Measures	Measures were taken from item pool generated via literature review and qualitative study. The measures are in combination of existing measures from literature and new measures. New measures were identified using netnography.
Research procedure	Scale development procedure was adhered to two main studies with two sub-studies for each main study.
Data type	Seven-point Likert scale was used for the options of questions/ measures of the statements. Hence, the gathered data are presented in numeric form.
Theory	Both inductive and deductive approaches were used in this study.
Sampling Methods	Convenience sampling was adopted citing its suitability when population is huge and random sampling is impossible. It is also suitable for scale development studies to collect designated sample

	size.
Data Analysis	The analysis required at different stages of scale development procedure was followed. Principal component analysis (PCA) was employed at scale purification stage; CFA was used for scale validation; and SEM for testing the scale to assess the hypothesised correlations.

Sources: Adopted from Neuman (2012) and Schiffman and Kanuk (2010)

Both inductive and deductive approaches were used in this study. The former was deployed to conceptualise and develop the scale, whereas the latter was used to purify, validate, and test the scale. According to Oates (2006), deductive approach is one of the dominant approaches in the field of natural sciences and when it comes to information system and social sciences, the approach has been widely adopted. For stages that are sequential, as suggested by Robson (2011), the deductive approach is suitable, similar to the stages formulated for this present research.

The first stage is hypotheses deduced from theory. A conceptual framework was developed to assess the relationships among M-VAL construct dimensions, CE, and RI. Drawing from the theory of PV, theory of consumption value, together with marketing studies in mobile CE and mobile consumer behaviour, a set of hypotheses was proposed. This was to provide nomological validity evidence for the newly developed M-VAL scale.

The second stage is operationalising the hypotheses. To express the hypotheses in operational terms, items of the scale were adopted from the literature and generated from the qualitative study to measure M-VAL construct of the developed conceptual model. Thus, the measures of M-VAL were developed. The third stage is examination of inquiry outcome. Data were analysed using qualitative approach. Construct validity, PCA, and CFA were deployed to test the proposed model.

The fourth stage is modification of the theory. This study has defined the meaning of PV in the context of M-Commerce by uncovering its appropriate meaning. The mixed

method approach led to formulation of a theory. The approach is often advantageous to follow (Saunders & Thornhill, 2003).

4.4 Research Strategy

This section introduces the concept of research strategy, discusses various approaches of research strategy in detail, selects the most appropriate strategy for this study, and provides justification on the suitability of the selected strategy.

The selection of the research strategies is generally associated with the research approach selected for that specific study; however, the choice has to be selected based on ROs and RQs to ascertain the appropriateness of the selected research strategy.

The experiment approach was defined by Oates (2006) as "a particular kind of research strategy that aims to isolate cause and effect by manipulation of what is thought to be causal, or independent, variable and measurement of its effect on the DVs" (p. 128). This is a classical form of the research and generally used in fundamental sciences. The strategy is conducted in a laboratory and it involves careful observation of outcomes, as well as effect of the factors added or removed in the experiments. As this research setting was complicated; related to social science and to uncover causal relationship, this approach was rejected. Qualitative study is used to as a tool of inductive approach followed by the widely used and widely accepted research strategy in social science, and in particular to marketing research, is the survey method. Furthermore, a large body of studies from management and information system fields that had conducted empirical research employed the survey method as their research strategy. Considering its suitability to the approach, it is a widely used strategy for deductive approach and is used within the positivist paradigm (Neuman, 2012).

Netnography was used for qualitative study. For quantitative study, data were collected systematically from M-Commerce users. According to Oates (2006), "survey research proceeds deductively". This means; hypotheses are developed and variables are conceptualised first, and then, questionnaire is organised based on those developed to collect data. The survey strategy employs some tools, such as structured interviews, observations, and questionnaires, to gather data. In light of the current ROs, surveying

emerged as the most appropriate strategy. The theoretical framework of this study fits well with the positivist paradigm. Data were collected using self-administered questionnaires by circulating them to the same respondents for Study 1 and online for Study 2.

4.5 Research Design

In order to achieve the ROs, this section charts the plan for this study in the form of research design. This section describes the appropriate design for this study and provides justification for the design selection. Burns and Grove (2001) asserted that success of any research relies on well-defined goals, while the method/design developed to meet such goals is called research method or research design. The three main types of research method are descriptive, exploratory, and explanatory. The selection of any one or a combination of more than one depends on the study purpose.

This study is composed of two phases: Phase 1 includes construct formation, definition, item generation, and expert judging. This phase presents the initial scale for further purification and testing. Next, Phase 2 comprises of scale purification, validation, and testing. This phase presents the valid and reliable measurement scale. Phases 1 and 2 are termed Studies 1 and 2, respectively. Study 1 is divided into sub-studies A and B, while Study 2 is divided into sub-studies C and D. Explanatory design denotes descriptive research, while exploratory design has the edge over other two. Descriptive design is inclined to observe style design; trying to define attitude, behavior or opinion by a group of respondents. Exploratory design focuses on generating ideas and developing insights. The investigation of influences of factors, understanding reasons, as well as deciding strength and direction of such impact or correlation to uncover predictive effect can be executed by using explanatory design (Malhotra, 2012). Dictated by ROs, two designs are devised for this study; exploratory and descriptive.

Initial understanding of the construct of interest may be enhanced by designing an exploratory study. This study had deployed the exploratory research, mainly to attain theoretical understanding of the M-VAL construct, along with its dimensions and elements. This stage generated the initial item pool for further investigation. Hence, systematic literature review and qualitative analysis were carried out.

In Study 1, item pool was generated based on the adopted definition derived from literature review and qualitative study, so as to present the initial scale through expert judging process. Next, Study 2 purified and validated the initial scale presented in Study 1. Scale purification and validation in Study 2 included hypotheses testing via descriptive research design. To investigate scale dimensionality, quantitative techniques (PCA and CFA) were employed. Besides, SEM was applied to test the interrelationships among M-VAL dimensions, CE, and RI. As this testing was part of assessing nomological validity of the scale, the descriptive research design was used as it involved the analyses to test the proposed model. Additionally, this study adopted the cross-sectional research design widely used in descriptive research. It was adopted to develop a reliable and valid M-VAL scale. The scale development literature prescribed the use of more than one sample to assess the psychometric properties of new measures, in order to enhance scale generalisability (Churchill, 1979; Netemeyer et al., 2004).

4.6 Scale Development Procedure

This section, first, reviews the related scale development approaches, synthesises the best practices among such approaches, and presents steps to be followed along with justification and rule of thumb for this study. To achieve the ROs, this section introduces the concept of scale development, the stages in scale development detail, the appropriate design for this study, and justification of the appropriateness of the selected design. The four steps are elaborated in the following:

Scale development exercise is typically executed to measure a phenomenon that may exist based on the researcher's belief, but not directly observable (DeVellis, 2012). The measurement instrument, known as a scale, is defined by DeVellis (2012) as "a collection of items combined into a composite score and intended to reveal levels of theoretical variables not readily observable by direct means" (p. 11). The scale development procedure is not merely a set of activities, but meticulously designed stages to ensure that the final scale is reliable and valid. The context of this study is business to consumer relationship in M-Commerce setting. The paramount objective of this study is to develop a multi-item scale of M-VAL; the first phase to develop the scale. Steps formulated by Churchill (1979) and Anderson and Gerbing (1982) were deployed to

develop the scale, whereby the process includes conceptualisation of the scale, followed by scale refinement and purification, and finally, scale validation based on the steps suggested by Churchill (1979) and recommended by Morgado, Meireles, Neves, Amaral, and Ferreira (2017).

Table 4.2: Steps in Scale Development for this Research

Purpose	Item Generation	Scale Construction	Scale Purification	Scale Validation
Method	Literature review, Qualitative study, and Generate Initial Pool of items	Redundancy removal, Item elimination, Prior categorisation of dimensions, Re-assessment using panel judges, and Final Assessment	Data collection N= 365 Exploratory Factor Analysis (EFA), Dimensionality assessment, Analysis of scree plot, Refining item pool, and Item to total correlation examination	Pre-test Data collection N = 516, CFA Construct validity, Convergent Validity, Discriminant Validity, and Nomological validity
Analytical Tool	NVIVO 10.0		IBM SPSS 24.0 (EFA)	IBM SPSS 24.0 and AMOS 24.0 (CFA and SEM)
Criteria	Face validity and Readability	Content validity and Readability	Dimensionality and Construct reliability (CR)	Measurement model fitness indices, Convergent validity, Discriminant validity, and Predictive validity
Expected Outcomes	Item pool	Initial scale items	Factor Model	Measurement Scale and Final Scale

The consequent stages involved final assessment of the instrument, collection of data, scale purification, validity assessment, and reliability assessment. This section describes all the steps in detail. The primary stages of scale development can be stated as follows

according to highly cited literature on scale development (see DeVellis, 2012; Spector, 1994).

4.6.1 Step I – Construct Definition

First, a scale developer should examine any existing instrument that measures the construct as interest (Spector, 1994; Zhang & Wildemuth, 2005). Second, Spector (2011) stated that the scale developer may choose items from several instruments "as a starting point in writing an initial item pool" (p. 16). However, if such instrument measuring the construct of interest does not exist, then alternating ways of generating items need to be deployed. One of such ways refers to the existing instruments that measure the construct, which are closely related to the construct of interest.

According to Choemprayong and Wildemuth (2009), adding some of such items in the item pool is acceptable. Ryan and Bernard (2000) claimed that "ideas related to generating items may derive from reading the literature on whatever research problem has been captured from personal experience, from reading newspapers, from interviews with experts, etc." (p. 295). Necessary steps were taken as prescribed by DeVellis (2012) and Spector (1994), including clearly defining constructs based on robust theoretical foundation, defining construct scope with tentative dimensions, operationalising construct definition, and conducting qualitative analysis. These are elaborated in Section 4.2.1.2 of Chapter 4.

4.6.2 Step II - Generating Item Pool

Irrespective of the origin of the items, several issues need to be considered by a scale developer. Some of the aspects are detailed and justified in the following:

Double-barrelled question should be avoided and each item should express only one idea (DeVellis, 2012; Ryan & Bernard, 2000; Spector, 1994). An exhaustive list of items should be included in item pool and such items should fit the definition of the construct of interest (DeVellis, 2012; Zhang & Wildemuth, 2005). Items should be as short and uncomplicated as possible (DeVellis, 2012; Ryan & Bernard, 2000), while concurrently, exceptionally lengthy items should be avoided (DeVellis, 2012). Colloquialisms,

expressions, and jargon should be avoided (Spector, 1994), while reading difficulty level should match that of the respondents (DeVellis, 2012; Spector, 1994). According to Babbie (2010), items should neither be too specific to the construct nor too general. They should overall match specificity of the construct. If a scale developer foresees any concern of bias, then validation items can be included upon availability of respondents (DeVellis, 2012; Spector, 1994).

Whether all items should be positively worded or some negatively worded items to be included to avoid any kind of bias is a matter of concern. In order to avoid acquiescence bias, one should include an even number of positively and negatively worded items (Ryan & Bernard, 2000; Spector, 1994). However, according to DeVellis (2012), to embed both positively and negatively worded items, there is a chance that reversals in item polarity may confuse respondents. The number of items to be included in initial item pool is another matter of concern. There is no recommendation of specific number of items. According to DeVellis (2012), the advantages of having a large item pool are provision of insurance against poor internal consistency and more flexibility in selecting items for final scale as per developers' choice. Although there is no unity on the amount of items in the initial pool, DeVellis (2012) recommended having considerably more items in the initial pool to be used in the final instrument.

Choemprayong and Wildemuth (2009) suggested to confer with experts in the field to generate or derive items, while DeVellis (2012) recommended expert to review the entire initial item pool. Despite the absence of clarity on the profile of experts or the description of activities to be performed by them at this stage of scale development, broadly, there is a consensus that expert involvement maximises content validity of the items selected for the item pool. According to DeVellis (2012), the items should be open to minimum for expert judging if the scale development is for a totally new construct. All the listed steps were applied to generate a reliable, exhaustive, and large initial item pool to measure M-VAL construct.

4.6.3 Step III – Designing the Scale

This is a critical stage involving transforming the item pool generated from the past stage into a survey instrument for refinement. The initial survey facilitated the respondents to evaluate the pool items. Considering the nature of this study, commonly used response categories (e.g., argument or frequency response) are unsuitable as opposed to evaluation response category as it measures respondent's attitude and perceptions. This can be performed by asking for evaluation rating for each item (Spector, 2011).

There are many arguments for response choices. Several scale developers have used seven-point Likert scale, while some have used five-point Likert scale. Some researchers have cited appropriateness of interval scale of 1 to 10 to minimise respondent error. According to Nunnally (1978), a psychometric instrument can use between 5 and 9 categories for each item. While developing a scale, inclusion of more than fewer choices is recommended. Thus, the seven-point Likert scale was adopted in this study.

As prescribed by Spector (2011), item phrasing should depend on "the type of judgment or response people are asked to make". Writing instructions sets the tone for the respondents by giving them appropriate context and direction of thinking. Respondents should think in a certain way before responding as the scale is developed for a specific measurement. Or else, respondents may give very general answer or may even be confused, thus leading to either error or outliners or omissions. Some scholars (see DeVellis, 2012; Spector, 2011; Zhang & Wildemuth, 2005) asserted that instructions provide details to respondents on how to use the instrument. It offers a reference frame according to the construct, thus helping them to get engaged appropriately for evaluation of items.

4.6.4 Step IV – Full Administration and Analysis

The fourth stage involved data collection and analysis to finalise the scale structure, dimensions, and items. This starts with deciding on both sample size and composition, administering the instrument, conducting item analysis, altering items based on set criteria, as well as performing Exploratory Factor Analysis (EFA) and CFA (DeVellis, 2012; Ryan & Bernard, 2000; Spector, 2015; Zhang & Wildemuth, 2005).

4.7 Study I – Scale Conceptualisation

Study I denote item generation, elicitation procedure, expert judging, and items rewording, if required. Item generation was executed via review of literature and qualitative analysis. This study is divided into sub-studies A and B. Sub-study A comprises of item generation through literature review, while sub-study B is related to item generation using qualitative analysis.

4.7.1 Sub-study A – Item Generation

Sub-study A is about generating items through literature review. It consists of theoretical conceptualisation of M-VAL scale and generation of items through review of relevant literature.

4.7.1.1 Conceptualisation

Conceptualisation includes domain specification, item pool generation by literature review, qualitative analysis, and expert item judging. The generation of initial pool of items was carried out via mixed method approach that combined both deductive and inductive approaches. According to Kapuscinski and Masters (2010), deductive approach is generation of items from existing scales and extant literature, while inductive approach develops items from qualitative study to ensure the accommodation of respondents' view. Deductive approach demands clear understanding of literature and is suitable when a relevant theory exists (Hinkin, 1995). Detailed steps are specified in Section 4.2.1.1 of Chapter 4.

4.7.1.2 Item Generation

Systematic literature review was executed by reviewing articles from prestigious databases, thus resulting in the selection of most accepted, established, and promising factors. The literature review was followed by Tranfield, Denyer, and Smart's (2003) three-stage procedure: planning, execution, and reporting. The papers were taken into sample based on definitional, operational, conceptual, and theoretical similarities. The reporting of this review and conceptualisation were carried out as suggested by Zauner et al. (2015) being it precise, clear, and critical in its style. More details on the procedure are elaborated in Section 4.2.1.1 of Chapter 4.

4.7.2 Sub-study B – Qualitative Study

Sub-study B comprises of generation of items using qualitative analysis. In this study, netnography was deployed for item generation.

4.7.2.1 Netnography

The netnography method is used to perform qualitative analysis, in order to supplement item pool generation. The netnography was employed after considering several advantages over in-depth or focus interviews when applied specifically in the context of M-shoppers. Online shoppers at large and M-shoppers in specific consider various reviews prior to actual purchase and most of them express their feedback, satisfaction, concerns, dissatisfaction, and complaints by writing reviews on web portals, apps, as well as social and online forums. A fair amount of effort and time is spent by purchasers to validate their judgements, form perceptions, and finally, express their genuine post-purchase views. Netnography uses textual data, videos, and images, and later, switches among various techniques such as participant and non-participant observations, e-mail interviews, and forum discussions (Xun & Reynolds, 2010); thus improving insight quality that can be obtained into consumer perception reflected in all such forms of review (Belk, 2017). According to Langer and Beckman (2005), this is a powerful method and is specially suitable for online and mobile consumer research work, as it considers online real-time richer data pool to get update on shoppers' behaviour and perception. Netnography is preferred in this study over in-depth interviews or focused group interviews due to its naturalistic approach. Respondents may alter their views and concerns during an interview as a result of several aspects, such as bias, worry, tension, and other emotional factors. Besides, an interviewer can cause several errors or bias (Costello, McDermott, & Wallace, 2017)**.** As this is related to mobile purchases, the best form of expression comes as soon as purchase is executed in the form of reviews expressed online. Moreover, the said method is short, focused, cost-efficient, and less time consuming when compared to other methods (Costello et al., 2017). Lastly, the final hypotheses on the scale dimensions were developed.

4.7.3 Expert Judging

The purpose of expert feedback or judging is to capture their opinion on item quality and how well each item reflects the overarching construct. Some scholars (see DeVellis, 2012; Ruel, Wagner, & Gillespie, 2018) depicted that expert feedback can be obtained by researchers by appointing judges and asking them to assess item validity via open-ended or Likert scale questions. It is a common practice to appoint experts comprising of subject matter experts or professors, industry professionals, methodologists or even indented respondents. However, according to Hollebeek (2013), items generated for the development of a new scale should be judged minimum as it can eliminate items at the early stage. Experts give their opinion based on the existing literature or subject knowledge; thus it is also important to give them clarity on the conceptualisation of the scale and details about each dimension.

In this study, an expert review survey invitation (see Appendix I) was sent out to two marketing faculty members, two app developers (industry experts), and a frequent app user. A clear definition of M-VAL and its constructs was presented to the panel at the beginning of the survey to avoid misunderstanding of the concept. The panel was requested to assess items readability and their representativeness, to comment on those, and to provide suggestions for items refining. A five-point Likert scale was used to rate reliability, whereby 1 and 5 represent 'poor' and 'excellent', respectively, on the scale. Richnins (2004) claimed that the assessment of repetitiveness ensures that the item conveys the meaning of research construct as defined, while providing content validity check. For this assessment, the panel was requested to use five-point Likert scale with 1 and 5 representing 'not very representative' and 'very representative', respectively. Items rated low by all panellists were removed, but items rated low by a panellist were retained for the next purification test. A list of final items was used for purification in Study 2.

4.7.4 Items Rewording

There is a possibility of generating similar or identical items, which can be grouped under a common item with a reworded name. Hence, it is necessary to re-word the item name found in the literature to ensure suitability. In the case of items generated using

qualitative study, the items were captured from respondents' feedback and so might be in informal language, thus the need for re-wording of items. As for this present study, whenever necessary, rewording was performed and reported accordingly.

4.8 Study II – Scale Purification, Validation and Testing

Study I was executed to develop items and to present the initial scale. In Study 2, the scale was purified, validated, and tested. This section presents data analysis procedures and tools for sub-studies C and D. The initial step is preliminary data analysis that included data cleaning, coding, examination of accuracy, outlier detection, analysis of missing data, and normality assessment. This step is crucial prior to multivariate data analysis (Hair, Black, Babin, & Anderson, 2010; Tabachnick & Fidell, 2007). These preliminary data analysis steps are explained in the following.

4.8.1 Sub-study C – Item Purification and Confirmation

4.8.1.2 Sample Size

According to Choemprayong and Wildemuth (2009), scale development should administer the instrument "in conditions that are similar to the real data collection as possible" (p. 283) in terms of sampling plan and data collection procedure. Spector (2011) contended that "it is helpful if the respondents are as representative as possible of the ultimate population for which the instrument is intended" (p. 29). However, he himself argued, "this is not always possible and many instruments are developed initially on college students because they are readily available". A researcher also should consider the ultimate aspects of the availability of the respondents.

There are ample of arguments and recommendations on the number of respondents to be taken for scale development. Nunnally (1978) recommended 300 people as the adequate number of respondents, while Spector (1994) and Ryan and Bernard (2000) prescribed a range of 100 to 200. DeVellis (2012) stated that if the number of respondents is too small, it will cause various issues during data analysis. Although no specific number of respondents is stated, it underscores the importance of large sample size.

The sample size was selected based on the following approach. In 2019, there were 19.5 million smartphone users in Malaysia and 47% of them made purchases using their

phone according to a report published by Small and Medium Enterprises in Malaysia (see http://sme.org.my). With population of around 9 million, 95% confidence level, and 5% margin of error; the sample size based on calculation using the following formula. Both confidence level and margin of error were assumed as prescribed in past studies (see Goodman, & Berlin, 1994; Murphy, Myors, & Wolach, 2008; Sahai, & Khurshid, 1996) to determine the Z-score using Z-score table.

Sample Size = (Z-score)2 * StdDev*(1-StdDev) / (margin of error)2

These numbers were then used in the above formula: ((1.96)2 x .5(.5)) / (.05)2 = (3.8416 x .25) / .0025 = .9604 / .0025 = 384.16, thus resulting in 385 respondents as the sample size for this study. The 'Minimum Sample Size Based on the Number of Observed Variables, Constructs, and Items' communalities were adapted from Hair et al. (2010).

Table 4.3: Recommendations for Sample Size

Minimum Sample Size	Number of Items / Observed Variables	Number of Construct	Item Communalities
100	3 or more	Five or less	0.6 or higher
150	Not important	Seven or less	0.5 / modest
300	Not important	Seven or less construct	Below 0.45
500	Fewer than 3 observed measures	Large number of constructs	Some lower communalities

Table 4.4: Sample Size of Popular Scale Development Studies

Popular scale development study	Purpose	Item Number	Sample Size
Parasuraman, Zeithaml, and Berry (1988)	Initial item purification	97-item instrument	200
Choi and Sirakaya (2005)	Initial item purification	125 items	308
Hollebeek et al. (2014)	For EFA and CFA	10 items	800

According to Cosco, Kok, Wister, and Howse (2019), depending on the main ROs of the scale development, the sample size should range between 250 and 1000. Therefore, sample size of around 385 can be the most appropriate.

4.8.1.3 Sample Composition

Working professionals from 25-45 age group were selected as sample. They make up 48.75% (15.1 million) of Malaysia's population and around 69.00% of Malaysian workforce, according to the Malaysia's Department of Statistics. As reported by PricewaterhouseCoopers (PWC), 86% of this population are employed and 80% of them are m-shoppers. Globally, 59% of working professionals use smartphones for m-shopping with millennials recording the highest booking via travel apps using phone (www.theedgemarkets.com). Millennials are the main users of travel M-Commerce; the main component of Malaysian population who are well-equipped with internet on smartphones and the ability to pay. Based on usage, spending power, and willingness to pay; working professionals were contacted from selected organisations and respondents were selected based on their frequent use of mobile travel booking apps. The travel industry covers flight and hotel booking, transport and related rental, tour packages, etc.

4.8.1.4 Sampling Technique

Convenience sampling was used to identify frequent users of travel industry apps. Considering the huge population size and unavailability of the exact contact details, probability sampling was almost impossible to use as it required more formal access to the population. On the contrary, convenience sampling, with predefined rules to gather data, is easier, more appropriate, cheaper, and less time consuming (Salganik & Heckathorn, 2004)**.** Attempt was made to ensure sample representativeness to support demographic and socio-economic data in predicting the required population. As this exploratory study had developed the scale, convenience sampling was suitable and valid (Emerson, 2015).

It is prerogative of this study to avoid unprejudiced data by selecting the right method of sampling as it was almost impossible to collect data from all the targeted population in Malaysia to achieve the purpose of this study after considering both timeframe and cost. Probability sampling demands access to all target population members, along with sampling frame; thus neither possible nor appropriate to deploy the probability sampling method for this study - everyone in the population has a probability-based stochastic process to choose from and predictable probability of sampling. This ruled out other

classifications under the probability sampling technique. For non-probability sampling, many options are available, such as purposive sampling, judgmental sampling, snowball sampling, and convenience sampling. Some researchers have used snowball and judgmental sampling methods for scale development studies, while many others have used convenience sampling. Convenience sampling was selected for this present study due to ease of selection and the liberty offered to the respondents to participate in the survey or otherwise (Saunders & Thornhill, 2003). Convenience sampling reduces data collection time and cost because the sample is located spatially close to the data collection venue.

4.8.1.5 Questionnaire Design

The questionnaire is a popular tool used in survey, along with several other research strategies including action research and case study design (Saunders & Thornhill, 2003). A questionnaire includes "all techniques of data collection in which each person is asked to respond to the same set of questions (items) in a predetermined order" (Saunders & Thornhill, 2003). This definition depicts that questionnaire includes structured interview, interview via phone call, and printed questionnaires.

Different questionnaire types are discussed as follows: (1) interviewer-administered questionnaire that includes telephone questionnaires and structured interviews. (2) Self-administered method based on three ways: delivery and collection of questionnaire, postal questionnaire, and web-based questionnaire. As for the survey items used, the two types are open- and close-ended questions. The former offers freedom to respondents on giving any answer to the question, while the latter restricts the respondents to choose one or more responses from the options of a fixed set of responses given.

Nunan, Malhotra, & Birks (2020) suggested that personal interview should be used to collect data when the study applies complex and lengthy questions. On the contrary, mail and online questionnaires are appropriate for simple questions. In developing a reliable and valid construct scale, data collection was performed in person during the first phase, while online Google Form was deployed to gather data for scale validation and testing. In both cases, self-administered questionnaire was used due to its suitability.

According to Oates (2006), “the crucial issue is not which form is better, but which form is most appropriate for a specific situation”. Saunders and Thornhill (2003) suggested that close-ended questions are suitable for online survey. There have been arguments about the merits of open versus close survey questions (Neuman, 2012). Hence, it is crucial to consider the ROs in selecting the type of questions. As this study focused on ‘what’ rather than ‘how’, closed questions were designed to collect data.

The questionnaire developed in this study was based on the above considerations, as well as by incorporating some aspects discussed in scale development stages. The questionnaire has four parts. The first part is related to brief information for the respondents to easily communicate during the survey, which includes the main objectives and general instructions about completing the questionnaire as a self-administered tool. The second part has several warm-up questions and items related to contextualisation based on the scope of this research. The third part of the questionnaire contains scale items selected from the item pool. For the part of sub-study C, initial scale items were used; whereas purified scale items were deployed for sub-study D part. In addition, items related to other two variables selected for nomological validity were included at this stage. The last part of the questionnaire had demographic questions, such as gender, age, income, and education. The questionnaire used in sub-study C is attached in Appendix II and the questionnaire used in sub-study D is attached in Appendix III.

As Likert scales were originally designed as ordeal scales, there is a debate on the suitability of the usage of Likert scale to perform factor analysis based on the assumption of interval data. According to Clason and Dormody (1994), Likert scale can be considered as interval data if one assumes well-constructed an equal distances between the values of the scale. Much debate also lies on the usage of Likert scale because it offers a mid-point response. The arguments on both sides are strong whether to offer a mid-point or otherwise; but according to Lee and Baskerville (2012), it has little effect on reliability and validity. The advantage of mid-point is that it offers respondents some space to arrive at a decision instead of forcing them to choose between agreeing and disagreeing. However, Raaijmakers (2000) emphasised that midpoint response must be defined with clarity and as precisely as possible. For

example, it can be positioned as “neither agree nor disagree”, “undecided”, “don’t know”, and “no opinion”. This present study used seven-point Likert scale. Based on the considerations discussed in Section 3.4, the stages of scale development were cautiously followed while designing the instrument.

4.8.1.6 Data Collection

There are two types of data, namely primary and secondary data (Kothari, 2004). Primary data are data generated from respondents directly for a specific research projects, while secondary data are already available or previously collected dataset for a purpose that differed from the purpose of the current study (Ko & Myers, 2008). Researchers need to decide on which type of data is required as input to meet ROs. Chen and Hirschheim (2004) claimed that studies related to information system are inclined to be more positivist, cross-sectional, survey-oriented, and quantitative.

There are various primary data collection methods, including questionnaires, interviews, direct observations, focus groups, etc. (Kothari, 2004). As far as this study is concerned, its main objective is to develop a new scale, whereby the quantitative approach is suitable to clarify the phenomenon through data collection in primary quantitative form for stringent quantitative analysis appropriate to test hypotheses (Kothari, 2004). Quantitative analysis results are quantifiable and deductive; thus ensuring the predictability of facts from the sample. Hence, quantitative analysis was employed in this study to disseminate its discovery based on the selected sample outcome.

In this study, the self-administered questionnaires were distributed to respondents for completion. The method offers several advantages, such as wide population distribution, low cost, wide population coverage, avoiding the probability of interview prejudice, and broader handling of the research population, although there is a chance of prejudiced reporting due to errors in design quality and wording (Keith, 2003). According to Keith (2003), self-administered questionnaire comprises of mainly closed questions. Oppenheim (1992) depicted that it is appropriate to deploy closed question, as it can be compared between a group of respondents or individuals, easy to code and process, and less time to complete than open questions. In this present study, seven-point Likert Scale

was used to capture the respondents' perceptions of M-VAL in the context of Malaysian consumers using travel apps.

Data collection was carried out mainly in the Klang Valley, also called as the greater Kuala Lumpur, due to its large urban agglomeration. This area has the largest number of mobile internet users in Malaysia. As Malaysians from almost all cities are working here, sample representativeness is retained. The convenience sampling was used to recruit respondent based on the researcher’s convenience.

4.8.1.7 Common Method Bias

Common Method Variance (CMV) is a serious problem that could jeopardise the validity of research findings (Williams, Hartman, & Cavazotte, 2010). Bias generated by CMV is commonly known as Common Method Bias (CMB), which may occur when the estimated correlations among constructs are inflated. According to Malhotra, Schaller, and Patil (2017), CMV produces a systematic co-variation above the true relationship among the scale items. It is important to address this aspect as CMB may lead to either incorrect estimates of reliability and convergent validity constructs in the study or erroneous parameter estimates related to both the magnitude and the significance of the relationships among constructs (Podsakoff, MacKenzie, & Podsakoff, 2012).

There are several sources of CMV that mainly include a long questionnaire instrument (Krosnick, 1990; Podsakoff et al., 2012), double-barrelled items, ambiguity in items, complexity of items, lack of experience among the respondents resulting in their thinking that the topic of survey is difficult, low involvement demonstrated by respondents in the survey topic, tendency of the respondents on displaying agreement or disagreement on assertive survey items, the way respondents apprehend on being assessed, the way respondents presume the topic implicitly, the need of showing behaviour as per socially acceptable norms, limited ability of respondents to respond to the items, the reluctance of respondents to self-disclose, behaviour towards extreme responses, and willingness of respondents to answer several questions in series consistently (Baumgartner & Steenkamp, 2001; Podsakoff et al., 2012; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986).

Turning to this present study, several sources of CMV could exist, such as complexity of items, ambiguity in items, double-barrelled items, and items that require retrospective recall. As this is a scale development study, the survey instrument has several items that make the questionnaire long, coupled with some technical terms that the respondents may be unfamiliar. Besides, a large pool of data is required, which may be another source of CMV if such data are collected at the same time. In order to address such CMV in this study, Preventative Remedies were sought.

It is not all the time possible to keep a survey instrument short when it comes to scale development study. Besides, the multi-item scale measurements can be perceived as repetitive for studies, such as this present one. Hence, it is worthwhile to reduce the common scale properties by reversing the wording of some scale items, presenting the scale items in diverse formats, as well as using various types of scale response options and anchor labels (Podsakoff et al., 2003; 2012). These steps can avoid respondents from giving similar responses, thus using their responses to one question to answer the next questions (Podsakoff et al., 2012). The scale development procedure in this present study is thorough and the steps overcome some issues, such as ambiguity in items, complexity of items, items that require retrospective recall, and double-barrelled items. Table 4.5 lists the preventive remedial actions taken to reduce CMV.

Table 4.5: Common Method Bias: Sources and Remedial Actions

Possible CMV Source	Preventive Remedial Action Taken	Recommended by
Long Questionnaire	Reversing the wording of some scale items Using various types of scale response options and anchor labels Presenting scale items in diverse formats	Podsakoff et al. (2003, 2012)
Irrelevant Respondents	Filtering questions are placed in the beginning to ensure clear identification to ensure if the respondent is indeed a user of mobile apps. Only relevant responses were taken into account for analysis purpose	Baumgartner and Steenkamp (2001)
Technical Questions	Questionnaire was contextualised for specific mobile app, and then, common terms were used	Podsakoff et al. (2003, 2012)

	Pre-testing of the questionnaire to remove unclear or technological jargons	
Large Sample	Data were collected in two phases Data were collected from varied sources and not at the same time from the same gathering	Krosnick (1990); Williams et al., (2010)
Time of Data Collection	Data were collected in two phases The first phase of data collection was conducted from October to December 2019 The second phase of data collection was performed from February to May 2020	Krosnick (1990); Williams et al., (2010)
Other item-related issues	Scale development procedure was followed to ensure clear, concise, easy to understand items	DeVillis (2012)

4.8.1.8 Data Cleaning

Missing value analysis: According to Tabachnick and Fidell (2007), missing data is also known as "one of the most pervasive problems in data analysis", hence the importance for a researcher to work with a set of data that is complete without any missing value. They recommended several approached to prevent the occurrence of missing value, such as ensuring clear and unambiguous items, checking on responses, etc. However, this is not a critical concern for this present study as the questionnaires were completed before the researcher. The questionnaires were checked before acceptance and the respondents were requested to complete the questionnaire in case of missing data. In fact, a few missing values are permissible (less than 5%) considering the large sample of data analysis as missing value can be accidentally missing in some cases. According to Kline (2011), "the pattern of missing data is more important than the amount missing". It is then of prime importance to identify if the missing observations are in systematic pattern or in any specific pattern. The first case poses a more serious concern than the second case, mainly because a systematic pattern of missing data can adversely affect the results. If the missing data pattern is not systematic, "the incomplete cases differ from cases with complete records for some reasons, and therefore, the results based on cases with complete records may not generalise to whole population" (Hair et al., 2010). Hence, it is important to address missing data that are more in quality and systematic in

nature. There are several distinct methods for doing so, which Tabachnick and Fidell (2013) suggested that "at best, the decision is among several bad alternatives".

Deleting case or variables: According to Tabachnick and Fidell (2013), it is a good decision if "only a few cases have missing data and they seem to be a random subsample of the whole sample". In such cases, one simple way to deal with it is to delete either the case or the variable in concern.

Estimating missing data: There are many methods to address missing data estimation. Two popular schemes for such estimation are prior knowledge and mean substitution. Other approaches include multiple imputations, regression, and expectation-maximisation. This present study dealt with missing observations by using prior knowledge and mean substitution. Mean substitution is a well-accepted option for missing data estimation by calculating the mean value of the data. Prior knowledge is an approach suitable only for a few missing values in a large sample (Tabachnick & Fidell, 2013).

Test of outliers: Outliers are scores that differ from the rest. This is an important aspect regarding data screening. The two types of outliers are univariate and multivariate. The first type is when the case is extreme on a single variable, while the latter is when extreme scores are noted on more than a variable. Multivariate outliers may be detected when the pattern on a score is atypical. According to Kline (2011), univariate outliers can be found with "the common rule being scores more than three standard deviations than the mean may be outliers". However, as the pattern of multivariate outliers is unusual without individual scores, identifying such outliers is more difficult. The Mahalanobis distance (D) statistics can be applied to detect outliers, "indicating the distance in standard deviation units between a set of scores for an individual case and the sample mean values for all variables, correcting for intercorrelations" (Kline, 2011: p. 54). For large samples, univariate outliers can be identified with Z-scores exceeding 3.29 ($p<0.01$). This study deployed the Z-score to detect univariate outliers.

Examination of accuracy: This step removes inconsistent and incomplete responses from the dataset. This preparation and screening of data is critical prior to main data analysis. Upon collection of data in both pilot and main studies, it is important to ensure data

accuracy. According to Kline (2011), dealing with and resolving issues are “fundamental to an honest analysis of the data”. Tabachnick and Fidell (2013) emphasised on two reasons on why data preparation is a crucial step. First, SEM uses several estimation methods that make specific assumptions related to data distribution, while considering the same is important as violation of such assumptions may influence results due to bias. Second, issues with data might result in the computer programme related to the analysis failing to demonstrate logical solution. These warrant for proper preparation of data, as such data issues may cause misleading conclusions and result in a faulty model.

Examining data quality: It is vital to look into data cleaning to ensure that the findings are error free, accurate, and replicable. Issues with the quality of data, such as missing data and outliers, are explained above. Other aspects that need to be tackled are linearity and extreme multicollinearity (Beavers, Iwata, & Lerman, 2013). As for this present study, data quality was assessed by adhering to prescriptions given by scholars (see Hair et al., 2010; Ko & Myers, 2008; Meyers, Gamst, & Guarino, 2006).

Barlett’s test of sphericity: The eligibility of applying factor analysis to data can be gauged by inspecting correlation matric, Bartlett’s test of sphericity, and Kaiser-Meyer-Olkin (KMO). Bartlett’s chi-square must display significance at p value of 0.05 or less, which makes data eligible to proceed for factor analysis (Tabachnick & Fidell, 2007). This present study adhered to this recommendation.

The KMO test of sampling adequacy: A KMO value of .60 or higher is recommended prior to factor analysis (Tabachnick & Fidell, 2007). This present study adhered to this recommendation.

Inspect correlation matrix: For correlation matrix, numbers at the level of .30 or higher should be included (Tabachnick & Fidell, 2007). This present study adhered to this recommendation.

4.8.1.9 Factor Analysis

This is a critical stage as it facilitates deriving scales and sub-scales from the factors. The items loading into the factors constitute measurement of the construct of interest. According to DeVellis (2012), “factor analysis is an essential tool in scale development”

(p. 158). He added that factor analysis can assist "demine empirically on how many constructs or latent variables or factors underlie a set of items". The two types of factor analysis are PCA and CFA. According to Kline (2013), when there is no prior established scale or sub-scale in the construct of interest, principal factor analysis should be carried out before CFA. On the contrary, if prior scale exists, CFA can be performed directly.

The factor extraction method used: Factor extraction is deployed to determine the independent latent variables by describing variability among the observed variables, which are correlated in terms of comparatively lower number of unobserved variables. Several methods are available to conduct factor analysis, such as PCA, unweighted least squares, generalised least squares, maximal likelihood, principal axis factoring, alpha factoring, image factoring, etc. However, according to Hair et al., (2010), the main two categories of factor extraction method are common factor analysis and component analysis. According to Conway and Huffcutt (2003), the use of PCA is warranted "to reduce the number of variables by creating linear combinations that retain as much of the original measures' variance as possible", while Netemeyer et al., (2004) suggested common factor analysis to be used when the purpose is to uncover the underlining dimensions for a set of items. There are arguments over preference of one method over the other. Many recommended common factor analysis for scaling literature (Hair et al., 2010; Netemeyer et al., 2004), while others argue that the use of PCA is growing among researchers (Conway & Huffcutt, 2003) due to the complicated nature of common factor analysis. Although both methods provide identical results, they are completely different. Hence, both methods were adopted in this present study for factor extraction, as recommended by Conway and Huffcutt (2003).

Number of factors extracted: Number of factors retained or deleted is a critical decision in PCA as errors at this stage may lead to erroneous conclusions and scales. Such mistakes are due to selection of too less or too many factors. The method(s) used to make such decision is crucial.

Multiple approaches are available to decide on the number of factors extracted, which can be broadly classified into classical and modern approaches. Classical approaches

include scree plot, which refers to visual representation of eigenvalues of factors. Another old approach is *Kaiser* Rule of less than one. Meanwhile, several modern techniques include variance explained criterion (heuristic cut-off values vary at 0.8-0.9 to as low as 0.5, depending on goals), parallel analysis, Very Simple Structure (VSS) criterion, Velicer's Minimum Average Partial (MAP) test, etc. These techniques are categorised as visual and analytical techniques.

This study deployed the *Kaiser* Rule of less than one and scree plot - a combination of analytical and visual methods. In the first method, Eigen value was considered as the assessment criteria and the rule is the significant factors are factors with an eigenvalue greater than 1. The amount of variance accounted by a particular factor is shown by Eigen value; the factor should be retained if the value exceeds one. Generally, around 20 to 50 factors are sufficient to perform this assessment.

As for screen test, the decision to retain items is taken based on the resulting curve shape. For instance, the representation of the number of factors retained is depicted where the curve begins to straighten. Hair et al. (2010) stated that another method is the amount of variance. Notably, if the variance is 60% or greater than the total variance, it decides the number of factors that can be extracted. This present study used a combination of these methods to decide on the total number of factors to be extracted.

Rotation method used: There are various rotation methods available and the importance of using a rotational method is that it facilitates in obtaining a simpler and more meaningful factor structure (Hair et al., 2010). The main categories of this method are orthogonal and oblique rotations, in which both have sub-categories. Under the category of orthogonal rotation, Varimax is the most widely used approach; while promax is the popular technique under the oblique rotation category. According to Hair et al. (2010), there is no rule of thumb to adopt a particular rotation method. This present study deployed the oblique rotation method based on the prescriptions given by Conway and Huffcutt (2003), mainly because it yields a simple and realistic factor structure.

Uni-dimensionality of measures: Dimensionality of the construct is another important aspect to be considered in scale development studies. According to Netemeyer, Bearden, and Sharma (2012), “it is almost impossible to develop good measures of a construct

without the knowledge of the construct's dimensionality". Uni-dimensionality of items suggests that "they are strongly associated with each other and represent a single concept" (Hair et al., 2010). Factor analysis plays a critical role in determining "the number of factors and loading of each variable on the factor(s)" (Netemeyer et al., 2012). Some techniques of assessing the scale's dimensionality are PCA, coefficient alpha, and item-total correlations (Anderson & Gerbing, 1988; Netemeyer et al., 2004).

Maximum likelihood: It is a common practice to use principal axis factoring and maximum likelihood, whereby both methods try reproducing correlation matrix. According to Fabrigar, MacCallum, Wegener, and Strahan (1999) and Nunnally (1978), maximum likelihood is recommended when the data are normally distributed. This present study adhered to this recommendation.

Theoretical convergence and parsimony: Items in the final scale without distinct results can lower reliability level and exert a negative impact on parsimony goal. Several pre-established criteria that determine simple factor structure are absence of cross loadings, acceptable reliability levels, sufficient factor loading of .40 and above, as well as theoretical convergence (Clark & Watson, 1995; DeVellis, 2012; Fabrigar et al., 1999; Gorsuch, 1997; Hair et al., 2010; Kline, 2013; Osborne & Costello, 2005; Tabachnick & Fidell, 2007; Tinsley & Tinsley, 1987; Worthington & Whittaker, 2006).

Item-based analysis: This is about assessing several characteristics of each item by the scale developer, which is performed after administering the instrument to a sample population. It includes various initial evaluations, such as item variances, item-total correlations, item means, item standard deviations, and factor analysis (DeVellis, 2012; Spector, 2011). According to DeVellis (2012), if respondents give a broader range of responses, then those items are more capable of discriminating against respondents with different levels of the construct being measured. Therefore, this part involves assessment of item variances based on the range of responses of each item.

Weak loadings: This present study followed the prescription for weak loadings (≥.32) (Hair et al., 2010).

Cross loadings: As stated in the above sub-section.

Inter-item correlations: Item total correlations are the representation of correlation of a particular item with all the other items in an item set (DeVellis, 2012). The two types of such correlations are corrected and uncorrected correlations. The former measures the item total correlation among all the items without including that item. Meanwhile, in the later, it measures correlation among all items with inclusion of the particular item. This suggests that uncorrected item total correlations inflate the reliability by considering a certain item twice, thus the prescription to use corrected item total correlations. They identify items with high item total correlations, thus useful in measuring concepts under investigation.

Three-item factors: This present study follows the recommendation of at least three-item factors.

Commonalities of items: This present study adhered to the recommendation of communalities of items (≥.40) (Hair et al., 2010). Correlation analysis was performed for each item and dimension.

4.8.1.10 Results Presentation

The practice of not reporting aspects related to stages of scale development procedure is highlighted by Carpenter (2018), thus offered several suggestions to avoid such common pitfalls. Omissions in the past studies range from construct naming to data analysis steps. In the early stages, reporting must be linked to the logic of construct naming, constructs conceptual definitions, and content validity. Later, aspects related to factor analysis details, such as sampling adequacy assessment, software used, factor extraction methods, communalities, normality, and assessment of reliability, must be reported. Other factors in data analysis stage are eigenvalues, communalities, and percentage of variance accounted for all factors.

4.8.2 Sub-study D – Scale Validation and Testing

4.8.2.1 Data Collection

Purified scale was obtained in sub-study D and the full questionnaire was developed based on the purified scale items. Items related to mediator CE and DV RI were embedded into the survey questionnaire. The responses were gathered from 516

respondents. All data collection procedure, sampling technique, sample composition, and sample recruitment script are same as Sub-study C.

4.8.2.2 Data Analysis

4.8.2.2.1 Demographic Analysis

The percentage analysis, supported by graphical representation, describes the attributes of demographic data. Each attribute is explained to convey data representation and characteristics.

4.8.2.2.2 Reliability Assessment

Neuman (2012) defined measurement reliability as "the numerical results an indicator produces do not vary because of the characteristics of the measurement process or the measurement instrument itself". The three types of measurement reliability are described in the following:

Stability reliability: Reliability across time is specified by this. Here, re-testing is performed to estimate the indicator of stability reliability level for the same group of respondents. Saunders and Thornhill (2003) stated that stability reliability can be statistically gained by "correlating data collected with those from the same questionnaire collected under as near equivalent conditions as possible". Stability reliability has some drawbacks, such as difficulties in encouraging respondents to answer the same survey tool after a period of time, uncertainty over time lapse between two tests, etc.

Equivalence reliability: This is applied when multi-item or several indicators are used to measure a construct. This reliability is also known as internal consistency. This parameter offers consistency across indicators, whereby Neuman (2012) stated that "reliable measure gives the same result with all indicators". This parameter determines if all observers agree among one another. Considering the issues of testing, internal equivalency can be applied to replace the combination of alternative forms of reliability and stability (Netemeyer et al., 2004). Internal consistency reliability is "the degree to which responses are consistent across the items within a measure" (Netemeyer et al., 2004). The commonly used measure to assess internal consistency of a scale is Cronbach

alpha. Hair et al. (2010) depicted that alpha value of 0.7 and less is poor, 0.7 and above is acceptable, while 0.9 is excellent (Kline, 2011).

There are other types of reliability that are related to each separate item. This contains inter-item correlations and item-to-total correlation. Item-to-total correlation measures "the correlation of the item to the summated scale score", while inter-item correlation measures "the correlation among items" (Hair et al., 2010). These tests identify if the items are inconsistent with other items, thus should be deleted. Reliability assessment comes under analysis to purify the measures. Apart from these testing, other reliability test includes composite reliability and average variance extracted (AVE) derived from CFA.

4.8.2.2.3 Measurement Model Assessment

The link between latent construct and observed variables is explained by measurement model (Hair et al., 2010). The three criteria to assess measurement model are assessment fit, significance of parameter estimates, and construct validity.

4.8.2.2.4 Normality Assessment

The assessment of normality is an analytical assumption test to assess if a set of data collected from targeted population has normal distribution (Driscoll, Appiah-Yeboah, Salib, & Rupert, 2000). The two ways of conducting this assessment are numerically and graphically. Numerical analysis delivers generalised statistics that is expressive and theoretically driven, such as Kurtosis and Skewness (Park, 2015). Meanwhile, graphical assessment displays how unplanned variables are distributed or presents the deviation between dramatic and experimental distributions. The measure of symmetry for data distribution is skewness. Skewness that exceeds 0 denotes distribution biased to the right and more is observed to the left (Park, 2015) with the value of normal distribution measured between -1 and +1 (Bachman, 2004). However, Kurtosis measures the planeness and the uttermost of data distribution.

Skewness is deployed in statistics to assess the asymmetry of a probability distribution of an arbitrary variable with respect to its mean score. It expresses the number and the

direction of skew; skewness can be positive, negative or undefined. The data are totally asymmetrical if the skewness is 0. The following lists the common guidelines:

- If skewness is smaller than -1 or greater than 1, the distribution is severely skewed
- If skewness falls between -1 and -0.5 or between 0.5 and 1, the distribution is moderately skewed
- If skewness is between -0.5 and 0.5, the distribution is approximately asymmetric

4.8.2.2.5 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a step further after EFA that identifies the factor structure of factors extracted in EFA. It is a necessary step in scale development (Anderson & Gerbing, 1988; Netemeyer et al., 2003). It is a multivariate statistical programme used to assess the extent to which the measured variables represent the number of constructs. Researchers can specify the number of factors required in the data associated with potential variable. The statistics obtained from CFA assesses how well the match of theoretical standards of these factors to the actual data. This technique either confirms or rejects measurement theory (Hair, Gabriel, & Patel, 2014). The primary objectives of CFA include construct verification, psychometric assessment of events, test measurement invariance, and test method effects (Brown, 2000). Various reasons provide justification for using CFA in this particular stage of the study. First, it assesses the subscale uni-dimensionality as a pre-requisite to reliability and construct validity (Anderson & Gerbing, 1988; Hair et al., 2010; Netemeyer et al., 2003). Second, it confirms or rejects the specified factor model from EFA. Third, it identifies items that may threaten scale dimensionality (Hair et al., 2010). Finally, construct reliability (CR) is assessed by executing CFA.

4.8.2.2.5.1 Significance of Parameter Estimates

According to Hair et al. (2010), the relationship between indicators and their intended latent construct is explored by measurement model, while the fundamental issues related to the same is assessed using parameter estimates assessment. Item loading is interpreted

in terms of statistical significance and magnitude. The assessment states that an item performs adequately if its factor loading size exceeds 0.5 or ideally above 0.7. If the parameter estimates are insignificant (< 0.5), then the item should be removed. Items with high loading may indicate redundancy that reflects in lower model fit and such item should also be removed (Netemeyer et al., 2004). The important issues to be considered in item loading are size of item loading and standardized loading. These are required to maintain the consistency of size of item loadings with the proposed model. The standard loadings should fall between -1.0 and 1.0, as problem(s) with the model is indicated by loadings out of this range (Hair et al., 2010).

4.8.2.2.5.2 Construct Validity Assessment

Validity assesses the accuracy of the research and when it comes to construct validity, it assesses accuracy of measurement. According to Hair et al. (2010), construct validity denotes "the extent to which a set of measured items actually reflects the theoretical latent construct those items is designed to measure". The four components of construct validity are face and content validity, discriminant validity, convergent validity, and nomological validity. The measurement of discriminant and convergent validity is performed using CFA, while SEM is used to conduct nomological validity assessment. The four components are explained in the following:

Face validity is the easiest and a basic form of validity assessment that tests if the items measure the construct adequately. According to Netemeyer et al. (2004), the scientific community contributes to judgment on face validity. They added that face and content validity are part of translation validity. The main purpose of content validity is to ensure that the measures of items represent the conceptual definition or full contents of the concept. Content validity was defined by Hair, Bush, and Ortinau (2003) as "assessment of the degree of correspondence between the items selected to constitute a summated scale and its conceptual definition". Face and content validity of items generated in item pool had been assessed by a panel of experts, as elaborated in Section 4.7.3 of Chapter 4.

Convergent validity measure refers to the high variance shared by all variables in the study of a particular latent variable in common (Hair et al., 2010). Convergent validity

can be estimated by three measures; factor loadings, communality, and AVE. Table 4.6 shows the rule of thumb for the three estimates, as prescribed by Hair et al., (2010).

Table 4.6: Convergent Validity Measures

Convergent Validity Measures	Rule of thumb
Factor Loading	➢ 0.5
Communality	➢ 0.3
Average variance Extracted (AVE)	➢ 0.5

Factor Loading: This considers the size of loadings as it has a critical role in estimating convergent validity. Variables with high factor loadings display that they converge on the same construct.

Communality: According to Hair et al., (2010), this represents "how much variation in an item is explained by the latent factor and termed as 'the variance extracted of the item'".

Average Variance Extracted (AVE): This estimate reflects 'the mean variance extracted for the items loading on a construct' and functions as a summary indicator of convergence.

Composite reliability assessment: Known as CR, it measures internal consistency. Netemeyer (2003) stated that this is similar to Cronbach's alpha. It was assessed in this study using reliability assessment.

Discriminant validity: Confirms if a construct is unique and truly distinct from other constructs, yet linked to each other (Hair et al., 2010). The three methods to measure this are: correlation between constructs, comparison of constrained model, and AVE. In the first method, correlation between two constructs is assumed as one, and according to Hair et al. (2010), if "the fit of the two-construct model significantly differs from that of one-construct model, then discriminant validity is supported". In the next method, constrained model is compared with unconstrained model. In the constrained model, parameter between two constructs is estimated to be one, but the parameter is freely estimated in unconstrained model. Anderson and Gerbin (1982) asserted that if the Chi-square value of unconstrained model is significantly lower than that of constrained model, then discriminant validity is supported. In the third technique, rigorous test is

performed as prescribed by Claes and David (1981). Discriminant validity is achieved if the AVE for each construct exceeds the square of two-construct correlation.

4.8.2.2.6 Structural Equation Modelling

According to Tabachnick and Fidell (2014), the SEM is "a collection of statistical techniques that allow a set of relationships between one or more IVs and one or more DVs to be examined."

A group of statistical techniques is included in SEM. These techniques explain the relationships among IVs and DVs by using CFA, causal analysis, and path analysis. This present study executed SEM based on the six stages of analysis proposed by Hair et al. (2010). These six steps are listed in the following.

The first step is defining the individual construct. The necessary element to obtain a reasonable result from SEM is having an appropriate measurement theory (Hair et al., 2010). This step involves construct operationalisation and development of pre-testing measures. This study had conceptualised the construct and other related item through qualitative study and from the literature. The second step is development of the overall measurement model. As explained in Section 5.7, this study deployed Amos 22.0 for SEM analysis and measurement model. The third step in this study design is to generate empirical results. Hair et al. (2010) stated that "among the most important steps in setting up a SEM analysis is determining and communicating the theoretical model structure to the programme". This present study employed IBM SPSS Amos 22.0 for both measurement and structural models, which are graphical.

The fourth step is assessment of validity for the measurement model. Validity tests include convergent, divergent, and discriminant validity. These have been described in Sub-section 5.5.2.5. The fifth step is specifying the structural model. In order to test the validity of the structural model, the estimated parameters were determined to ensure that the structural model is indeed valid. The final step is assessment of validity of structural model. Nomological validity was performed to assess how structural model fits the nomological net of the existing established findings. In measurement model, all

constructs need to be correlated to each other. However, in structural model, there may not be correlation among some constructs as the model is based on hypotheses.

In statistical modelling, regression analysis is a set of statistical processes and regression weighs are calculated. This was executed in this study for hypotheses testing, as recommended by Hair et al. (2010). Various considerations discussed in SEM sub-section are applied as well.

4.9 Ethical Considerations

According to Patton (2015), ethical dilemmas mostly emerge from data collection and interpretation processes, as well as from the dissemination of findings. To address the ethical concerns in this study, the research guidelines prescribed by Curtin University's Human Research Ethics Committee was adhered. The researcher started the field work only after the research approval was granted by the Ethics Committee (approval number: HRE2019-0293). To fulfil the ethical considerations underlying this study, all respondents were informed of the research purpose, processes, and their role in the study. A copy of the respondent information sheet was provided and explained to all respondents prior to the interview. As informed consent is a crucial criterion in ethical procedures, a consent form was prepared for each respondent to complete, signifying their voluntary participation in the study and their right to withdraw from the study at any stage.

The researcher had successfully completed Academic Integrity Training offered by Curtin and is well aware of the Australian Code for Responsible Conduct of Research. In particular, ethical issues related to data collection and reporting were cautiously read. Hence, the respondents were well informed about the study objectives and formal consent was obtained prior to data collection. In the view of collecting data from employees of a particular organisation or students of a particular university, permission of such entity must be obtained in the form of gatekeeper letter. Turning to this study, its aim was thoroughly informed and written permission was gathered from each respondent.

Confidentially of identity is high priority, and in no case, personal attributes can be used for any other purpose nor given to other researcher or organisation. In the midst of a study, if any respondent wishes to opt out of the survey, the data should be removed and the analysis must be re-conducted to adjust the results. In the absence of minors, handicapped or special person, and animals in the research, special ethical approval was unrequired. All data were securely managed and stored, with access restricted to the researcher and the supervisors, to maintain data integrity (Miles & Huberman, 2012). Hard data consisting of notes and documents were securely stored in the researcher's office at Curtin Malaysia campus, in a locked cabinet, whereas soft data in the form of electronic documents were kept in a password-protected personal computer, with back-up copies on an external hard disc and on Curtin Malaysia's server. With the above precautions, the risk to those participating in this study is minimal.

4.10 Facilities and Resources Statement

Being an external study in social science, there is no special requirement of facilities or resources.

4.11 Data Storage

Adhering to provisions of Curtin University Research Data and primary Materials policy, a data management plan was devised using Curtin University's Data Management Planning Tool.

4.12 Chapter Summary

The step-by-step procedure is explained in detail related to scale conceptualisation, development, purification, validation, and finally, testing its impact on CE and RI of Malaysian travel app users. Data collection and analysis techniques are explained, while various measures were employed throughout this study to enhance the quality and credibility of the scale development methodology. Systematic data analysis and interpretation procedures were applied to condense data and identify emergent dimensions. Chapter 5 presents the findings on all stages of scale development in light of the RQs.

CHAPTER 5

DATA ANALYSIS AND RESULTS

5.1 Chapter Overview

This chapter presents the data analysis and reporting of results based on Studies 1 and 2, as explained in Section 1.8 (see Chapter 1). Study 1, which looked into item generation and construct formation, consists of sub-studies A and B. Sub-study A executed item generation via literature review, while sub-study B generated items via qualitative analysis using netnography technique. Study 1 operationalised the scale and formed its items, dimensions, as well as scale structure. Meanwhile, Study 2 is divided into sub-studies C and D. Besides purifying and validating the scale, the final dimensions and items were confirmed in sub-study C based on quantitative data analysis. Lastly, sub-study D ensured the validity assessment of the scale and tested the scale to assess its impact on DV and mediator. Chapter 5 reports the analyses and outcomes of Studies 1 and 2, along with the corresponding sub-studies.

5.2 STUDY 1 – Item Generation and Construct Formation

Study 1 is about item generation and construct, which led to the formation of M-VAL scale. This study addressed RQ1: 'How can Perception of Value from M-Commerce (M-VAL) be conceptualised?' and a part of RQ2: 'How can M-VAL and its relevant dimensions be measured?' The study conceptualised M-VAL scale dimensions, generated items via literature review and qualitative study, reported outcome of expert judgement, face validity, and content validity, and finally, formulated the initial M-VAL scale (dimensions and items) for purification. The research methodology, data collection procedure, and analysis plan for Study 1 are elaborated in Sections 4.6 and 4.7 of Chapter 4.

5.2.1 Sub-study A - Item Generation through Literature Review

Sub-study A conceptualised M-VAL scale dimensions, proposed corresponding connotations, generated items through literature, eliminated redundancy, and re-worded items. At the end of sub-study A, a mind map of dimensions and items generated from the literature is displayed.

5.2.1.1 Procedure

The objective of this first step is to generate a pool of items from the literature to develop a valid and reliable M-VAL scale. This step has two key parts. The first part is to clearly identify how extant scales of relevant constructs can be used to develop a new M-VAL scale. The second part is to review the latest empirical studies in the relevant domain and identify items to generate a comprehensive item pool.

The process of literature review was conducted based on the formulation known as three-stage procedure comprising of planning, execution, and reporting developed by Tranfield et al. (2003). The papers were taken as samples based on the definitional, operational, conceptual, and theoretical similarities. Meanwhile, both review reporting and conceptualisation were carried out as demonstrated as precise, clear, and critical in its style as described by Zauner et al. (2015).

First, the established models of mobile PV and their dimensions were critically reviewed. Due to the limited empirically tested CPV models for m-shopping, unlike general CPV models and dimensions, the review of these models is of less utility in conceptualising the dimensionality of M-VAL. Thus, empirical studies that outlined the benefits and sacrifices of m-shopping were sought based on CPV definition. This definitely weighed in the following basic questions: (1) What customers are looking for while shopping on mobile? (2) What do they perceive as benefits, and (3) What do they perceive as a sacrifice? On this basis, related empirical papers were searched from major academic databases that offered high-quality peer-reviewed papers and top-ranked journals. In this case, the following keywords were applied for the search: perceived value AND mobile shopping, perceived value AND mobile consumers, perceived value AND m-commerce, as well as perceived value AND mobile commerce. The alternative terms used for perceived value include customer perceived value, customer value, and perceived customer value. The search strategy mentioned above is presented in the following table.

Table 5.0: Search Strategy

Database	Date Covered	Search Strategy	Papers Obtained
Scopus	2012 - 2018	Perceived value AND mobile shopping, perceived value AND mobile consumers, perceived value AND m-commerce, and perceived value AND mobile commerce, Alternative terms used for perceived value, customer perceived value, customer value, and perceived customer value.	65
Web of Science			19
Journal Storage (JSTOR)			12
Institute of Electrical and Electronics Engineers (IEEE) Xplore			11
DOAJ			3
EBSCO			8
PRO-Quest			6
Total papers retrieved			**124**

A total of 124 papers were obtained from the search with most of the papers published from 2012 to 2018. A few papers published between 2000 and 2012 were excluded due to change of technological aspects that led to the changes in consumers' perception. Most papers were published in 2017 (35%), followed by 2018 and 2016. Next, the papers were narrowed down to 108 papers by excluding book chapters and review papers. In terms of disciplines categorisation, the papers were obtained from the following disciplines: business, information system, computer system engineering, E-Commerce, M-Commerce, and others with the highest percentage of 43% from the business discipline, followed by information system and E-Commerce/M-Commerce. Hence, nearly half of the empirical studies were from the business domain, while the other half derived from other disciplines. The main focus of the literature was on the overall M-Commerce with 62% attribution, while the other 38% focused on other sectors, namely retail, tourism, fashion, banking, payment, and others. More than half of these studies (52%) did not specify the geographical location of the research, in which the rest of the studies were conducted in Asia (dominated by China, followed by India,

South East Asia, and the Far East), Europe, and the USA. Only a handful of studies were from Africa, the Middle East, and other parts of the world.

Items in CPV definition were identified as mentioned previously, followed by their classification under the heads of perceived benefits or perceived sacrifices. Next, m-shopping was conceptualised based on the classification with the proposed connotation of each conceptualised dimension.

5.2.1.2 Construct Formation

The conceptual foundation of M-VAL is in line with the key aspects of the core concept of PV that considers the benefit and sacrifice components, as well as the components of give and get of PV. The synthesis of each dimension was carried out by including both aspects (benefits and sacrifices) in a single dimension. For example, the conceptualisation of the term 'information value' is the combination of benefit and sacrifice aspects related to information aspect. Similarly, Sheth et al. (1991) conceptualised the same while developing the theory of consumption values. The M-VAL weighed in the overall assessment of consumers' perception instead of assessing a certain aspect, such as benefit or sacrifice. Besides, the perception of value is linked to use of M-Commerce apps for shopping of products or availing of services. Thus, empirical studies, as defined in the methodology section to conceptualise M-VAL, were included because the existing models are not comprehensive in nature and are inadequate to conceptualise dimensions or model taxonomy of mobile CPV. Overall, the 10 unique dimensions of PV from M-Commerce are discussed in the following with a critical review of the existing models, as well as empirical evidence of perceived benefits and sacrifices of m-shopping apps.

Based on the justification and development of hypotheses depicted in Section 2.9.2 of Chapter 2, the proposed dimensions of M-VAL are Information Value, Interface Value, Customisation Value, Gamification Value, Gratification Value, Credibility Value, Social Value, Convenience Value, Economic Value, and Visual Value. Connotations of these dimensions are listed in Table 5.1.

Table 5.1: Proposed Connotations for M-VAL Dimensions

Dimensions	Proposed Connotation
Information Value	Mobile consumers' assessment of perceived benefits received from information provided by mobile retailer versus perceived cost of information search or perceived risk of a possible inaccurate decision due to misinformation by the app
Interface Value	The trade-off between perceived benefits gained from usage of the quality interface while m-shopping and perceived cost of erroneous interface or perceived risk from faulty interface
Customisation Value	Benefits consumer perceive from app through personalised shopping experience provided by app that reduce the perceived risk of selecting in-appropriate products/services
Gamification Value	The value of pleasurable shopping derived from perceived benefits of enjoyable and exciting m-shopping by avoiding perceived cost of boredom and hedonic demotivation
Gratification Value	The emotional value derived from M-Commerce considering aspects that enhance experiential gratification
Credibility Value	Consumers' overall assessment of m-shopping credibility by considering perceived trustworthiness against perceived security and privacy concerns
Social Value	Value derived from branding and social aspects while shopping on mobile
Convenience Value	Convenience gained by m-shopping through the enhancement of perceived benefits, such as shopping from anywhere and anytime, with simultaneous reduction of perceived cost, such as slow internet or length of time spent online
Economic Value	The financial gains perceived by M-shoppers that increase perceived benefits, such as discounts and right-priced products,

	with minimum perceived cost or perceived payment risk
Visual Value	The value derived from perceived benefits of app's visual aspects against its visual complexity

5.2.1.3 Measurement Items Generated from Literature

A total of 99 elements were identified to form the construct of M-VAL based on the review of empirical studies (see details in sub-section 4.2.2.1).

Notably, 168 items used to measure such elements were identified and gathered in the item pool. Out of the 168 items, the highest number of 49 items belonged to the dimension of convenience value, followed by credibility value with 27 items and interface value with 21 items. Next, gamification value accounted for 23 items, information value for 16 items, economic value for 14 items, social value for 11 items, and customisation value for 7 items. Thus, a comprehensive item pool of 168 items was generated in sub-study A that reflected the initial conceptualisation of 10 dimensions. Table 5.2 displays the elements of value dimensions, along with the corresponding sources.

Table 5.2: Conceptualised Dimensions and Elements of M-VAL

Dimension	Re-worded item	Sources
Information Value	Content Effectiveness	Kaatz et al. (2018)
	Content Informativeness	Chi (2018); Kaatz et al., (2018); Lee and Han (2017); Liao and Shi (2017)
	Typography	Faisal et al. (2017)
	Language Variety	Tseng et al. (2017)
	Information Search	Holmes et al. (2014); Pappas et al. (2017)
Interface Value	Design Effectiveness	Kaatz et al., (2018); Molinillo et al. (2017); Sastry and Rao (2017); Zhao and Wan (2017)
	Navigation	Delić et al. (2017); Rezaei et al., (2018); Sohn

	Effectiveness	(2017)
	Interaction Effectiveness	Kaatz et al. (2018); Lee and Han (2017)
	Perceived Usefulness	Bonn et al. (2016); Chen et al. (2018); Delić et al. (2017), Eze and Poong (2017); Matemba and Li (2018); Rezaei and Amin (2013); Roy and Moorthi (2017); Saprikis et al. (2018); Sohn (2017); Sun et al. (2017); and Yuan et al. (2016)
	Simulation Feature	Blazquez Cano et al. (2017)
	Performance Risk	Baganzi and Lau (2017); Park and Tussyadiah (2017); Thakur and Srivastava (2014); Yuan et al. (2016)
Customisation Value	Web Personalisation	Celik and Kocaman (2017); Tseng et al. (2017)
	Personalised Information	San-Martín (2017)
	Personalised Service	Celik (2016)
Gamification Value	Entertainment	Huang and Benyoucef (2013); Lim (2015); Maity and Dass (2014)
	Exciting	Jung (2018)
	Hedonic	Bhat and Singh (2018); Gan and Wang (2017); Madan and Yadav (2018); McKay-Nesbitt, Ryan, and Yoon (2018), Pappas et al. (2017); Pauzi et al. (2017); Shaw and Sergueeva (2017); Sun et al. (2017); Yim, Yoo, Sauer, and Seo (2014)
Gratification Value	Innovativeness	Knežević and Delić (2017); Rezaei et al. (2018)
	Novelty	Rezaei et al. (2018)
	Emotional	Huang et al. (2018)
	Compatibility	Jiménez and San-Martín (2017)
Credibility Value	Security	Tan and Ooi (2018)
	Privacy	Chopdar et al. (2018); Kaatz et al. (2018); Liébana-Cabanillas et al. (2018)
	Policy	Chopdar et al. (2018); Kaatz et al. (2018); Liébana-

		Cabanillas et al. (2018); Tan and Ooi (2018)
	Trust	Baganzi and Lau (2017); Kim et al., (2017); Madlberger (2017); Marriott and Williams (2018); Ng (2016); Rezaei et al. (2018)
Social Value	Reputation	Punyatoya et al. (2018)
	Brand Equity	Jiménez and San-Martín (2017); Pauzi et al. (2017); von Helversen et al. (2018)
	Social Influence	Pauzi et al. (2017); Xu-Priour, Cliquet, and Palmer (2017)
	Social Interaction	Bonn et al. (2016); Eze and Poong (2013); Madlberger (2017); Roy and Moorthi (2017); Saprikis et al., (2018)
Convenience Value	Browsing Convenience	Kaatz et al. (2018); McLean et al. (2018)
	Timeliness	Lee and Han (2017); Pham and Ahammad (2017)
	Accessibility	Kang (2014)' Lee and Han (2017); Sinha and Singh (2017)
	Payment Convenience	Kaatz et al. (2018); Katta and Patro (2017); Liébana-Cabanillas, Muñoz-Leiva, and Rejón-Guardia (2013)
	Location Convenience	Gupta and Arora (2017); Sun et al. (2017)
Economic Value	Affordability	Saricam and Erdumlu (2017); Sinha and Singh (2017)
	Discounts	Park and Tussyadiah (2017); Shang and Wu (2017)
	Payment Risk	Li et al. (2012)
Visual Value	Richness	Hasan (2016); Lim (2015); Pham and Ahammad (2017); Sreeram et al. (2017)
	Appearance	Sohn (2017); Sohn et al. (2017)
	Stimuli	Ettis (2017); Faisal et al. (2017)
	Colour	Kaatz et al. (2018)

5.2.1.4 Redundancy removal and re-wording

Redundancy or close similarity in meaning and repetitions noted among several items were removed, such as the dimension of convenience value. Each item was inspected and such redundancy was discarded. After removing all redundancy, the item pool was reduced to 106 items with 22 items belonging to convenience value dimension, 18 items belonging to credibility value dimension, 19 items belonging to interface value dimension, 13 items belonging to each information and gamification value dimension, 10 items belonging to economic dimension, as well as 7 and 4 items belonging to social and customisation value dimensions, respectively. Meanwhile, a few items were reworded as required in order to get clear interpretation, whereas a few other technical words were re-worded for better comprehension. This was executed with the help of two marketing professors. Hence, the remaining items were grouped based on similar items amongst the re-worded items. Figure 5.1 presents the mind map of M-VAL construct that contains the construct, the dimensions, and the elements.

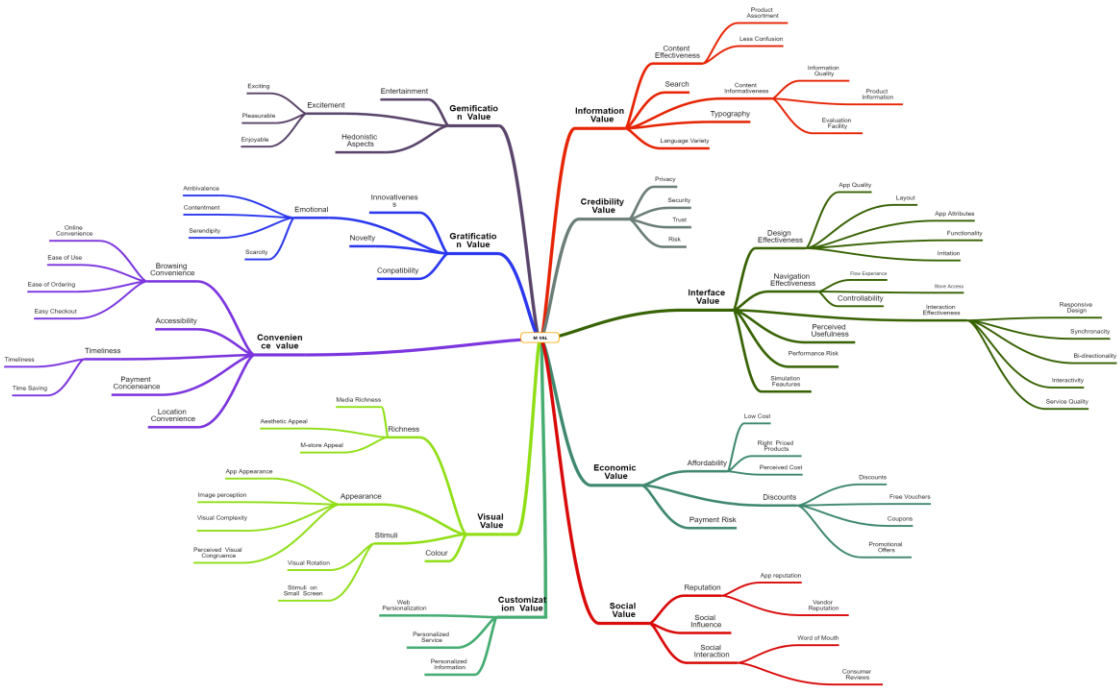


Figure 5.1: Mind Map of Items Generated Through Literature Review

5.2.2 Sub-study B – Item Generation from Qualitative Study (Netnography)

Sub-study B, the next component of Study 1, reports item generation through qualitative study. Netnography was used as the methodology and thematic analysis was performed using NVIVO software to develop themes and sub-themes. After generating the items, they were synthesised with items identified from the literature in sub-study A. At the end of sub-study B, a mind map of dimensions and items generated through qualitative is displayed.

5.2.2.1 Procedure

This study employed a form of non-participant observation called netnography; based on reviews of customers posted on the internet that contained detailed information about their perceptions, expectations, and experiences. Conceptualised by Kozinets (1997, 1998, 1999, 2002, 2006) and Kozinets et al. (2008), netnography is a novel adaptation of the conventional ethnography for the Internet treated as a virtual fieldwork site. Tourists are active on social networking forums and online travel communities, most of which are dedicated to tourism topics, such as Tripadvisor.com and Virtualtourist.com (Haldrup & Larsen, 2009). In fact, web-based studies are gaining popularity within the tourism research segment.

The selection of netnography as a method of qualitative analysis over in-depth or focused group interviews is justified in Section 3.7.2.1 of Chapter 3. Experience happens to one, wherein a researcher has no direct access (Carù, Cova, & Pace, 2014). Such experience, along with product advertisements and WOM, forms the perception among consumers in making decision for future purchases. Thus, researchers can only interpret what their subjects express orally, in writing or through their behaviour.

The procedure for sub-study B adhered to the framework initiated by Kozinets (2002) to establish research focus, community identification and selection, engagement, immersion and data collection, analysis and iterative interpretation, as well as to present findings. Accordingly, the scope and research focus were identified, along with selection of portal for data collection, selection of reviews, and reporting of analysis procedure. After that, data analysis and findings were presented.

5.2.2.2 Data collection procedure

This part covers the first three stages of netnography procedure prescribed by Kozinets (2002) framework, namely establishing research focus, community identification and selection, as well as immersion and data collection. In this section, the selection of portal for collecting online review is explained and justified. Next, the selection of apps is explained for consideration of review data collection. Thereafter, the procedures to collect and select the reviews are stated.

5.2.2.2.1 Selection of portal

The two primary online stores for downloading the apps are Google Store (for Android phones) and Apple store (for iPhones). In 2019, based on the Wall Street Journal (2018), Google Play had 70% more app downloads than Apple App Store. Despite the higher revenue in Apple, Google Play Store had more users. According to AppAnne (2019), the total download of apps from Google Play was 3.3 million; compared to 2.2 million from Apple. Such mass users represent a wide category of perceptions and also a rich source of reviews posted by multiple users that represent the target population. Hence, Google Store was selected in this study to gather data related to review thread discussions. In addition, Google Store was selected as the platform to collect sample review for it is an independent and unmoderated source of reviews. The reviews on this portal are in the public domain and there was no issue using them for analysis without special permission from any agency or special need of ethics approval.

5.2.2.2.2 Selection of Apps

The two categories of apps are free and paid apps. Generally, reviews of paid apps are considered as serious as people genuinely made those purchases. However, most apps from popular companies are freely available with a wide user base. Popular apps are those downloaded by many users, wherein one can assume that those apps offer value to consumers. According to AppAnne (2019), as of January 2019, two apps recorded 5 billion + downloads, 28 apps had 1-5 billion downloads, 305 apps with 100–500 million downloads, 450 apps with 50–100 million downloads, 3,673 apps with 10–50 million

downloads, and 24,970 apps with 1–5 million downloads. All the top category apps did not belong to M-Commerce, but search engines, social media, and games.

Travel apps are used worldwide with large consumer base from many countries. For example, a particular retail mobile app may be limited to a country, but travel app is used by people across the globe. Travel apps, such as Trip Advisor, are used by large app users across globe and so while exploring PV, review threads can be belonging to consumers from all over world. On the contrary, apps, such as Lazada and Ali Express, are used in limited region and so reviews posted on such apps have limited consumers from specific region. Travel apps were selected for this study as the scale is contextualised for travel app users for the purpose of validation and testing. Also, these apps are used by users from several countries and users are not limited to one country. Paid apps with over one million and fewer than 5 million downloads were considered and apps not related to M-Commerce such as gaming apps, map, navigation app, telecom and directory apps were excluded. From remaining, top 5 apps selected namely Booking.com, TripAdvisor, Airbnb, Trivago, Agoda.

The selection was done based on 2019 ranking provided by www.androidrank.org, which is considered as an authentic and reliable website. If an app is new or unpopular, there may not be many reviews. Merely three or four reviews are insufficient to measure perception.

5.2.2.2.3 Selection of reviews

Once the selection of app was finalised, reviews were retrieved from https://play.google.com/ - a platform for downloading Android apps. Puposive sampling technique was used for selection of reviews. The selected apps were identified in this portal and reviews were downloaded for the past one month (October 2019). Older reviews were not useful as apps are updated frequently. Besides, plenty of reviews were available and inclusion of older review would yield a huge amount of data, thus restricting analyses capacity. All reviews between September and October 2019 were downloaded. Once the reviews were downloaded and stored in a file, they were filtered

to ensure only relevant and good reviews were used as input prior to coding and subsequent analysis.

Several aspects were considered and the reviews were filtered accordingly. First, reviews related to experiential and functional aspects were prioritised, thus emphasis was given for consumer perception and expectations. Second, reviews with maximum readership and high popularity were considered as they served as representative of several consumers. These were identified by reviews with more 'like' button hits and comments. Third, reviews posted by user identification (ID) were weighed in to avoid false or promotional reviews. Similar to social networking sites, these platforms enable customers to create their personal profile in which they can share information about themselves and post comments about their experience during the stay or visit. Such information is on the internet and is accessible to all.

On the contrary, some criteria were implemented to reject certain reviews. First, several reviews were found in various other languages, including Hindi, Mandarin, Indonesian Malay, and Spanish. Only English language reviews were analysed in this study. Second, sarcastic reviews and reviews with abusive words were discarded due to their appropriateness for publication purposes. Third, reviews with a single word or short reviews were excluded as they did not provide any input for thematic analysis.

International relevance apps were considered to gain appropriate representation and not limited to a country. Reviews with valid user ID were considered instead of anonymous reviews. Although consumer user ID was visible, it was always not possible to identify gender, race or country and other demographic details of the user. Therefore, coding of reviews was not executed by gender or name.

More negative reviews were observed than positive reviews (praising), which portrayed complaints and difficulties endured by users. No mention of any particular value dimension in the review did not mean irrelevancy. If a review does not mention any economic or monetary term directly, it does not mean that the review is not reflective of that dimension. Review threads with service issues scored the highest frequency, and this was followed by complaints related to economic aspects, money, and refund. Table

5.3 lists the selection and filtering processes of the reviews based on above discussed criteria.

Table 5.3: Reviews Selection

Particular	Number
Total number of collected reviews	2899
Number of on topic messages	1306
Number of off-topic messages	1593
Number of detailed and fully described messages	1002
Short messages without any information	250
Real messages sent by customers	982
Promotional messages	80
Poor English / Other language	35
Miscellaneous reasons (foul language, etc.)	40
Total number of qualified reviews	827

5.2.2.3 Analysis procedure

Content analysis is the process of identifying, coding, and categorising the primary patterns in the data (Patton, 1990). It is defined as "the qualitative analyst's effort at uncovering patterns, themes, and categories is a creative process that requires making carefully considered judgments about what is really significant and meaningful in the data" (Patton, 1990, p. 406). Based on the code development approach driven on a past study, concepts from consumer experience literature are categorised and labelled with certain references (Boyatzis, 1998; Patton, 1990; Strauss & Corbin, 1990), thus resulting in consistency with both terminology and prior work. When content is coded more than once, stability is ascertained to determine the reliability of the coding via content analysis (Weber, 1985). As such, the identified reviews were coded serially as App User1, App User 2, and so on, in which app user reflects consumer posting a review while 1, 2, 3, and so forth are numbers in sequence.

Next, thematic analysis was executed to identify patterns of subjective and inter-subjective meanings in value perception from M-commerce context. Messages that were directly related to RQ were identified and subjected to the data analysis approach similar to grounded theory or constant comparative method (Straus & Corbin, 1990; Straus & Glaser, 1967) with the aid of qualitative data analysis software NVIVO (Kozinets, 2002). Themes relevant to the proposed conceptualisation were identified and resulted in emergent themes, which were later compared with preconceptions derived from the literature.

First, coding of data was performed discretely, also known as open coding – comparison of similarities and differences, as well as close examination of each code that represents an aspect of the phenomenon under study. Coding categories were contextualised and integrated based on the established patterns across multiple data sources. Relationships between constructs were specified based on selective coding and a higher level of abstraction was sought. As a result, the researcher was able to identify dimensions of consumer perception, their major causes, and related outcomes by interpreting those reviews.

Themes were developed based on sub-themes generated from quotes or specific words identified in the review threads. Such words found in the sample review were bolded, as shown in Section 5.2.2.4. The NVIVO (version 10.0) was deployed for data analyses, which is useful for creating codes using ROs; for writing memos on certain parts of the documents; for drawing text to code, for linking text easily to the original documents (Welsh, 2002). The following five steps of coding qualitative data using NVIVO are provided by Baralt (2012): (1) iteration and followed by open coding, (2) coding all data and developing themes, (3) establishing relationships, (4) establishing patterns, and (5) interpreting findings.

5.2.2.4 Findings

The analysis of findings based on netnographic approach related to consumer perception is discussed in the following section. Through content analysis, five dimensions of consumer perception of value were determined within the context of M-Commerce. Following the steps mentioned in the previous section, six main themes (related to

information, interface, customization, credibility, social and economic aspects) containing five dimensions and 58 items were generated from the qualitative study. Those dimensions were information, interface, credibility, social, and economic values. The dimension of interface covers aspects related to interface as well as customization theme as customization being sub-set of interface aspect.

5.2.2.4.1 Information Value

In light of information value, various sub-themes emerged and were compiled. One of the main sub-themes derived from the customers' reviews was about getting 'updated information', including the latest information or revised information. Such concerns are depicted in the following sample threads:

*"Pictures are **very outdated**... we ended up in a lousy hotel that did not allow cancellations... carpets were filthy and torn up..."*

(App User 330)

Although the customers were concerned about services, other quality aspects, and usability of apps; the main concern highlighted in several review threads was about unavailability of 'the latest' or 'revised' information. Display of updated information can hinder many negative consequences. The following lists some sample reviews with similar concerns and consumers' expectation on value.

*"The application is good except for the places their owners **don't updated this Co**, about the condition of the hotels changes I saw the pic of the hotel here it was a good but when I got there it was way different it looks like ruined place main lobby terrible were you supposed eat and drink look bad ceiling tiles coming down, it was basically bad place to stay and was at the main Blvd, I found out another small hotel it was not here better service clean office nice clean parking spot I as treated with respect, not like the other one they cancelled my reservation by the time I get there I found out just because I come late I explained my plane was delay instead called me to inform that I don't have room so I can rearrange my schedule, so it was terrible experience for my first time reservation,,, PS. **Ask the owners of the hotels to update with new pics of their places***

how they look in the moment not when they built *the plan it helps you co, and theirs too"*

(App User 192)

Various quotes taken from sample reviews indicating a certain sub-theme are 'Owners have not updated information of their listings', 'Pictures of hotels are old, when I Google, I can see new updated photos', 'Put the photos of how property look now and not when it was built', and 'This address is not current, I saw another one on Google Map'. Various aspects related to latest information was summarised as latest information on listing, latest information by app, latest information by property owners, etc.

Next, the consumers were concerned about the unavailability of in-depth information or apps with missing information that may contain inadequate description, unavailability of visuals/pictures, inaccurate information, and no detailed information. Such aspects are reflected in the following threads:

"I find the phone app lacking some important menu such as FAQ. Contact us just redirects you to the booking that you've made on this app. I wanted to ask how to apply promo code or voucher on booking because I can't find them during any of my payment process. If people have to go to your webpage in order to be able to apply their vouchers then why should they bother using this app? ... ***so much of missing information****"*

(App User 5)

The consumers expressed concern on inaccurate information that misled and forced them in sacrifices related to money, time, and effort. Inaccurate information may stem from failure to update the latest information, error in updating information, error in providing information, etc. However, deliberate provision of wrong information does not fall under this sub-theme, but covered incredibility dimension.

"it is frustrating that the app gives inaccurate location details. ***Accuracy is important*** *if on foot or using public transport to assess usefulness of location. it could be down to at least 200 metres especially when booking from another town or country. I have had bad experiences and difficulties due to location inaccuracies (being far too general).* ***Other BnB providers give exact location****!"*

(App User 118)

Another user had the following to say,

*"consistently shows **results unrelated to what i am searching**. example: bubble (or boba) tea will show cafes, coffee shops, and tea houses which are not tagged with boba/bubble tea. **this makes search results useless** aside from ratings, as you have to look at the entire menu to see if they actually carry a particular product. :("*

(App User 99)

Apparently, such consumer requirement that can be translated into PV for future purchases is associated with inadequate information on product or service, inadequate information on usage of app, or any scenario that inflicts suffering upon consumer during the purchasing or decision-making process.

Various quotes from sample reviews are as follows: 'The listing is without picture and so difficult to make booking with inadequate information', 'Many things are not in description, How do I book with half information?' 'Oh, Just photo of the lobby? Why app don't ask owners to send room and facility pictures?', 'Disappointing and inaccurate app. Do not waste your space but use Google instead', 'It is frustrating that the app gives inaccurate location details,' and 'Accuracy is important if on foot or using public transport to assess usefulness of location'.

Consumers perceived the listing variety and choices offered by the app as an aspect of value. This includes quantity of product listing, as well as variety and availability of all choices. Analysis of the reviews revealed several aspects, such as consumers' concern over some apps that did not list many products. Meanwhile, some apps offered a broad variety that made consumers confused and delayed their purchase process. Some apps listed selective products based on their own agenda and preferences. The consumers were associated with sacrifice as they could not obtain real alternatives for comparison to make accurate purchase decision. This aspect falls under comprehensive information.

*"Your app **shows only famous website reference** for hotel but not all the hotels available in any particular locality, like it must show all the available hotels because it's*

an hotel search engine not the an agent for different popular website ***I don't think you people are showing the accurate hotels and right deal*** *I will give you no"*

(App User 435)

The corresponding quotes extracted from sample threads are 'Good number selection of hotels', 'Fantastic listings and many choices', etc.

The consumers were concerned about the authenticity or truthfulness of information. Many consumers posted reviews stating that the information displayed on the apps was neither real nor genuine. For instance, several consumers found that the information displayed on the app did not match the reality when they actually checked in the hotel, such as ambiance, rates, policy, and procedures. The legitimacy of some lists was disputed by several consumers and many review threads demanded verification of the information claimed in the apps prior to catalogue listing. Many consumers found information mentioned on the apps as inaccurate. This aspect differs from the above, but may be grouped under this dimension as mismatch with real information. The following sample thread states that the address mentioned on the app differed from that mentioned on Google or other portals - a PV element.

*"****Fake listing of hotel****. I have booked one room for the new year eve in Kochi and when I reached the location, the booked guest house was nowhere to be seen and the customer care number was always coming as busy. Had lot of trouble in arranging an alternate accommodation at the last moment and paid a huge amount. now am chasing their customer service team via mails for the last 2 days but still no proper response received. Worst experience."*

(App User 571)

Another user posted,

"Please stop proposing single rooms when searching for 2 people. ***This is misleading information****... Your app is so full of distracting content that the warning is easily missed and it really really sucks if you arrive somewhere with two persons and you only have a single room"*

(App User 66)

The quotes extracted from sample threads belonging to the aspect of authentic information are ‘Seemingly very thorough checks for the listers’ legitimacy’, ‘Feeds you total garbage 40% of the time. Before following any of its directions, please check on Google’, ‘I found through Google that the hotel do not look like this at all!’, ‘I can see many reviews are moderated, why we are not allowed to read?’, ‘Only good reviews are displays, I do not feel its authentic’, and ‘It shows Misleading COSTS. The go cash is just to fool you.’

Another factor appealing to consumers is localised information. This information facilitates better and faster buying decision when the information is displayed e.g., in local currency or local language.

*“Good to use but i don't know why Philippine Peso is not included in the currency section**. So hard to book since I need to convert the price to my currency**”***

(App User 9)

*“All is great; however, the latest update has removed Pakistani Rupee from the currency list which is a huge disappointment for me… **Five stars if PKR is added back**”*

(App User 23)

Another user highlighted the concern about unavailability of language selection.

*“Why this app cannot **allow selecting different language**? Easy then for my all family to browse through the package…”*

(App User 138)

Some quotes related to these aspects are ‘Good to use but I don't know why Philippine Peso is not included in the currency section’ and ‘So hard to book since I need to convert the price to my currency’. Table 5.4 lists the quotes retrieved from reviews, common themes, and corresponding themes related to information value dimension.

Table 5.4: Information Value – Common Themes and Quotes

Information Value		
Items / Quotes from reviews	**Common Themes**	**Theme**
Owners have not updated information of their listings Pictures of hotels are old, when I Google, I can see new updated photos Put the photos of how property look now and not when it was built This address is not current, I saw another one on Google Map	Latest Information Revised information	Updated Information
The listing is without picture and so difficult to make booking with inadequate information Many things are not in description, How do I book with half information? Oh, Just photo of the lobby? Why app don't ask owners to send room and facility pictures? It is frustrating that the app gives inaccurate location details. Accuracy is important if on foot or using public transport to assess usefulness of location.	Detailed Information Pictures Visuals Accurate Information	In-Depth Information
Good selection of hotels. Fantastic listings and many choices	Many choices of selection	Comprehensive Information
Seemingly very thorough checks for the listers' legitimacy Feeds you total garbage 40% of the time. Before following any of its directions, please check on Google. I found through Google that the hotel do not look like this at all! Only good reviews are displays, I do not feel its authentic	Real information Truthful Information Legitimate	Authentic Information
Good to use but I don't know why Philippine Peso is not included in the currency section. So hard to book since I need to convert the	Multiple Currency Options Currency Converter	Localised Information

price to my currency Only English as language option?? So difficult		

5.2.2.4.2 Interface Value

Several consumers posted reviews and participated in the discussion related to unavailability of integrated interface among varying platforms, in which sacrifice was associated. The Review thread highlighted benefits of smooth connectivity among varied platforms, including and not limited to social media portals (e.g., Facebook), search engines (e.g., Google), mail domains (e.g., Gmail), e-commerce portals owned by companies, etc. An instance of such sample review thread is given below:

*"I really loved your service... But the app is getting worse day by day... Now **I am not able to login with my Google account**, every time I search, it says internet not available. Don't push people to other apps and services"*

(App User 86)

*"The app **does not allow me to open my booking in Google map** it's very frustrating... **I don't recommend it if your only using mobile**."*

(App User 161)

Quotes extracted from such sample review threads are as follows: '…. but the app is getting worse day by day. Now I am not able to login with my FB account,' and 'The app does not allow me to open my booking in Google Map it's very frustrating...'

Many apps are equipped with certain functions, such as those that offer geo-location-based information, enhance security aspects via One Time Password (OTP) and second order validation, as well as integrate with mobile device face recognition. The consumers perceived these aspects as integral and beneficial. A key attribute of a successful app is being updated regularly with the latest and innovative features. Consumers sought such beneficial innovative features, while absence of innovative feature was viewed as sacrifice. Several consumers repeated this PV element in the review discussion, as given in the following sample thread.

"very nice, smooth app ***with lots of features****. better than using the mobile site."*

(App User 20)

*"the chabots are very effective and also I liked glocalization feature…****I prefer apps with such features****."*

(App User 533)

Many consumers expressed their willingness to uninstall apps due to their inefficiency, low speed, and outdated features. The following sample review threads suggest development of consumers' perception of value in this context.

*"****Why release a major update without a lot of the functionality*** *from the previous version? Where's filter? Top things to do? Full of bugs. e.g., the location marker does not move on the map, I got to exit and enter the map again to update it. When reviewing something, it's not possible to enter month visited or type of visit, although it is displayed at the top of the review page."*

(App User 62)

Similarly, another user expressed dissatisfaction by stating the following,

"easy going to use. ***but it is not a good idea to ask for OTP through registered mobile phone if we log in from unfamiliar place*** *(like i got asked for cose when i am in Thai , my registered no is Singapore number) . usually, travellers won't activate roaming as it incurs additional charges.* ***Should follow web version of sending otp to email****. also, not smooth navigation through the app"*

(App User 348)

Efficiency and efficacy are the prime criteria sought by consumers in any kind of products or services. The M-Commerce apps are not an exception, as some consumers discussed on how they perceived apps as problematic or good based on their functionality or smoothness. Consumers expressed disappointment on using an app if the app fails to function smoothly, but sacrifices time and effort. Consumers prefer smooth functioning apps as they offer perceived ease of use and usage convenience.

*"**it's not a lightweight app**, non-tolerant to the crappy internet Indonesia has. there are too many unneeded bloats, like services that already moved to go-life but still being put there. also, the highly unnecessary Go-News, I don't care which celebrity going divorced for the sixth time or whatever!!!"*

(App User 622)

*"**Easy to search for hotels**. App does not size itself to match my screen. This previously good app is now very hard to use. after I opened a map once, the image is constantly zoomed in, and much of the app is not visible since it is off screen. Also, app will not switch between portrait and landscape mode. Nor does it let me zoom in and out except when showing the map."*

(App User 75)

*"This is the Worst app. It used to be a Great app once upon a time, but now it is the useless app. The trips tab is always empty though you have booked via this app several times. You cannot rate a trip; the customer help is non-functional (it is just there for namesake). **The app is very slow, most of the times it gets stuck or doesn't work**. Uninstalling this **inefficient app** right away*."

(App User 83)

Some quotes from the sample review threads related to these dimensions are summarised in the following: 'horribly designed app, I can't seem to download cities with the new version', 'also, not smooth navigation through the app', 'The app is very slow, most of the times it gets stuck or doesn't work', 'very nice, smooth app with lots of features. Better than using the mobile site', 'Why release a major update without a lot of the functionality from the previous version?', and 'Full of bugs. e.g., the location marker does not move on the map, I got to exit and enter the map again to update it.'

Some consumers expressed dissatisfaction for not having personalised or customised interfaces. This includes developing or suggesting pre-sorted itinerary, offering personalised booking procedures, sorting based on preferences, and modification of booking. Consumers viewed customised booking procedure as a vital benefit offered by M-Commerce apps. The next sample review thread displays this aspect.

"This app is fairly useless at the moment. When planning a trip, ***you cannot place your events into days according to your preference****. All of the events are at the top of the page and there's no option to drag them into days. It's been like this for 3 months now. Pretty average for such a well-known app."*

(App User 80)

Some quotes on these sub-themes are, 'I would like to be able to reorder my saved options in my lists' and 'the additional options when making or altering a booking all work 100% of the time.' Table 5.5 lists quotes from reviews, common themes, and corresponding themes about interface value dimension.

Table 5.5: Interface Value – Common Themes and Quotes

Interface Value		
Items / Quotes from reviews	**Common Themes**	**Theme**
…. but the app is getting worse day by day... now i am not able to login with my FB account... The app does not allow me to open my booking in Google map its very frustrating... …moreover, when I logged in from my PC, the information is lost…	Connection to Social Media Seamless Channel Integration	Channel Integration
horribly designed app, I can't seem to download cities with the new version. very nice, smooth app with lots of features. better than using the mobile site Why release a major update without a lot of the functionality from the previous version? The feature of geo-localisation and chatbot is best	Innovative Features	Features
also, not smooth navigation through the app The app is very slow, most of the times it gets stuck or doesn't work. Full of bugs. e.g., the location marker does not move on the map, I got to exit and enter the map again to update it.	Smooth Functioning	Smooth Functioning

5.2.2.4.3 Credibility Value

Various aspects of credibility were uncovered upon analysing the sample review threads, including privacy, authenticity, transparency, safety, security, familiarity, reputation, etc. Some of these aspects were related to the app itself, while others were linked with social acceptance, brand, etc.

First, the prime concern related to credibility was privacy, which had been exclusively mentioned by several consumers in review discussion posting. The consumers viewed this as a sacrificial aspect and abandoned the apps due to violation of privacy. They preferred apps that respected privacy policy. Incidences were quoted by consumers, as given in the following sample threads, whereby the apps had used personal data and traded with other companies; signifying violation of privacy policy.

"I'm uninstalling & win not this app again until TripAdvisor stops sending my data to Facebook each time, I open the app. ***I do not want my data sent to FB unless I've authorised the sharing****. Shame."*

(App User 220)

*"****Terrible privacy violation****. Google it, multiple articles state this app leaks info to Facebook. Time to use another platform."*

(App User 36)

*"****In a recent report that this app sends my user data to FB*** *without my consent, I have lost trust in this app. I have deleted the app and urge other users to do the same for your privacy's sake."*

(App User 40)

"The application is nice ***but it steals your personal details which are being sent to Facebook*** *for marketing profiling, even if you don't connect Facebook account and when you pay subscription.* ***You also are never asked for consent or informed about this****. For more details read Privacy International report."*

(App User 355)

Some identified quotes are as follows: ‘Terrible privacy violation. Google it, multiple articles state this app leaks info to Facebook’, ‘In a recent report that this app sends my user data to FB without my consent’, ‘The application is nice but it steals your personal details which are being sent to Facebook for marketing profiling’, and ‘I'm uninstalling & will not use this app again until TripAdvisor stops sending my data to Facebook each time I open the app.’

The next aspect of credibility context is transparency. Some consumers posted issues with apps regarding no transparency, whereby such incidences were recoded as sacrifices of using apps. Several others posted a range of concerns related to transparency.

First, some consumers highlighted aspects related to moderation of reviews by some app companies. These app companies tracked all reviews posted about their services by consumers and retained only the positive reviews while discarding negative comments. Some app companies replied to only positive reviews and ensured greater rating or visibility to such positive reviews. This gave false impression to others as visitors are attracted to read only positive reviews. Analysis of the review threads revealed that consumers could detect such practices as it is rare to have only positive reviews all the time. This reflected sacrifice related to non-transparent practices.

“Yelp is one of the most black-mailer and non-professional. ***They keep or remove reviews which isn't fair to anyone*** *As a business owner I had the worst experience ever.”*

(App User 766)

*“****hotel reviews no longer reliable because they are deleting poor reviews****. had some of mine deleted for the same motel that had over 20 perfect (all identical) reviews left by the same person.* ***good service but untrustworthy hotel ratings****”*

(App User 179)

Second, concerns were expressed about moderation of prices. Naturally, a pricing policy is adopted by app companies to ensure fluctuation of the prices. However, such policy must be transparent based on some criteria that are openly stated. An instance of such

criteria is that prices may be higher when closer to booking date. However, some app companies employ price algorithm that dismisses commonly accepted criteria and moderate prices automatically based on the number of times consumers visit their webpage. This occurs mostly when consumers log into the app companies that can detect re-visits.

*"**Be careful - the app might charge higher prices than shown**! On the web you might get a popup telling you that the list price is wrong and the actual price is higher**. The app is simply charging higher prices without telling.** Example "K+K Hotel Budapest" on Dec 4th 2018, 12:00 GMT+1. The booking phone support told me to live with it."*

(App User 8)

*"Price shown without GST or any other charges so that's how **they cheat customer by promising low price.** Hotel property pictures totally miss leading. Worst experience i ever had. 1st and last time. Will stick to Agoda. **Also their price is way higher than others once include everything**."*

(App User 311)

*"An app that cheats you. I looked for a hotel; **saw the price decided to book an hour later, prices increased.** This kind of nonsense drives people to other apps."*

(App User 22)

Some app companies used cookies and autoboots to moderate product display, gather customer information, and fabricate user interface. Such practices were viewed as non-transparent by customers.

*"I use Yelp for everything! However, I have noticed lately that when **I search for restaurants or food I won't get a full listing** unless I specifically mentioned a type of food. For example; burgers or Mediterranean, the listing on yelp does not list all local food show unless it's specific for a restaurant or food. I'm not sure what the difference is? **I noticed when I was sitting in front of a restaurant I wanted to visit but it was not coming up, but was listed on Yelp as a business**."*

(App User 13)

"Makemytrip fools customer. Today I booked flight ticket on the app. After entering all details of passenger the price presented was 5064. ***On pressing continue they give a deliberate pop up that price is reduced by 100 and*** *book fast before price increase. In the next step 700 convenience charge is added and by the time you realise the OTP is also auto submitted. You see the final amount and find that price was not decreased by 100.* ***It's clearly deliberate pop up given to make the customer hurry****"*

(App User 688)

In this regard, the following quotes were gathered from review threads: 'The company is using cookies and algorithm to increase price to the customer on repeated search', 'What's also great is that you can review both ways(as a host or guest) so that you know exactly what you will be getting', 'Kept increasing the price every time I searched flight ticket on a particular date within a few seconds', 'Be careful trusting the reviews... if the business doesn't advertise with them, their reviews are negatively impacted', 'Every time the reviews are deleted and removed by Yelp', 'Prices are inflated and then discounts are applied', 'It's clearly deliberate pop up given to make the customer hurry', 'Trivago is making people fool!! The hotel which Trivago is showing for 5k, can be booked in half price from Oyo!!', 'Price shown without GST or any other charges so that's how they cheat customer by promising low price', and 'MMT is just monetizing its popularity by overcharging loyal customers.'

Next, secured transactions emerged as a crucial aspect to consumers based on the review discussions. The consumers emphasised on transaction security related issues and viewed those issues as sacrifice, as given in the following review threads.

*"really group of frauds are the operator of this horrible application. I booked a hotel but didn't allot a room...****and amount was deducted...and not refunded*** *...Will file a case against this app and hotelier."*

(App User 826)

"Airbnb is a great platform to use for short term rentals. You always get so much more than a hotel for so much less costs. ***They handle all the financials making to process safe, easy, and trusted****. What's also great is that you can review both ways (as a host or*

guest) so that you know exactly what you will be getting. It helps keep the checks and balances on both sides (guests and hosts). Definitely check out their site next time you travel!"

(App User 42)

"This app is a fraud. So, I paid a certain amount of money to book a hotel in Bali. Since I have no credit card, so I paid via transfer. ***Turns out the app didn't confirm my payment and the booking was automatically cancelled.*** *I've contacted "customer service", NO ONE reply my e-mail nor answer my phone. I didn't get my money back."*

(App User 18)

*"****The company does not want you to redeem so they don't intimate where as normal cashback*** *(with restricted usage) - they will send to thousand notifications. Got cheated by them for 7500/-. Suggest not use the app. Pathetic."*

(App User 281)

Some quotes extracted from sample review threads are: 'Be careful - the app might charge higher prices than shown! On the web you might get a popup telling you that the list price is wrong and the actual price in higher.', '...turns out the app didn't confirm my payment and the booking was automatically cancelled', 'They handle all the financials making to process safe, easy, and trusted' and 'there's a virus attached to this app every time I redownload the app.'

The consumers were also particular about reputation of the M-Commerce companies; if the brands are well known or otherwise. The app users posted numerous reviews that were inclined towards usage of familiar, reputed, and popular brands.

"Airbnb is ***reputed company*** *and quite* ***popular*** *these days….as expected less hiccups and great deals!"*

(App User 589)

Many app users stated that if the apps are referred by friends or used in a wide circle of friends, they would feel confident about using such apps instead of using unfamiliar or apps not used by their friends.

*"N**o one in my friend circle is using this app**…. I took risk by looking at their promo and regretted…. guys go for **well-known company**"*

(App User 530)

Table 5.6 lists quotes retrieved from reviews, common themes, and corresponding themes related to credibility value dimension.

Table 5.6: Credibility Value – Common Themes and Quotes

Credibility Value		
Items / Quotes from reviews	**Common Themes**	**Theme**
Terrible privacy violation. Google it, multiple articles state this app leaks info to Facebook. In a recent report that this app sends my user data to FB without my consent The application is nice but it steals your personal details which are being sent to Facebook for marketing profiling	Privacy Policy Privacy Protection Data Leaking	Privacy
The company is using cookies and algorithm to increase price to the customer on repeated search. What's also great is that you can review both ways (as a host or guest) so that you know exactly what you will be getting Kept increasing the price every time I searched flight ticket on a particular date within a few seconds. Be careful trusting the reviews...if the business doesn't advertise with them, their reviews are negatively impacted. Prices are inflated and then discounts are applied. It's clearly deliberate pop up given to make the customer hurry Price shown without GST or any other charges so	Moderated Reviews Moderated Prices Cookies Algorithms	Transparency

that’s how they cheat customer by promising low price.		
...turns out the app didn't confirm my payment and the booking was automatically cancelled. They handle all the financials making to process safe, easy, and trusted. There's a virus attached to this app every time I redownload the app	Safety Transaction Security	Security
My friend circle uses this app		Familiarity
Recommended by friend This is a popular company these days		Reputation

5.2.2.4.4 Economic Value

Monetary or economic aspects are part of consumers’ perception of value for a range of products and services. Cheaper and affordable products are preferred, provided quality is not compromised, as consumers constantly seek discounts and rebates. Several consumers posted reviews related to this aspect with multiple facets, including affordability, saving, rebates, and other monitory benefits.

Affordability is a PV element identified as a result of several reviews noted in the discussion. Consumers seek affordable deals when they browse apps. Mobile commerce (M-Commerce) eliminates several channels and directly link customers with suppliers, thus providing no intermediatory cost. This is the reason why consumers look for affordable deals as their prime moto for browsing apps is to search cheaper products/services than those available in conventional market places.

“The only book now pays when you get there and free cancellations prior to 24 hr before check in date. ***One of the lowest priced pre-booking sites I've seen****. Worth the 5 star rating. Check it out, you won't be disappointed.”*

(App User 368)

"I only use this app because there's a lot of guests. ***But I think the fees are too expensive*** *(let's suppose the value without fees is $100. Airbnb charges the client $115 and you receive $97) - it's even more expensive than a common real Estate house..."*

(App User 95)

"well, I don't use Goibibo ***because it's convenience fee is too much for international travel*** *(800 INR) while VIA application site has only 200 INR convenience charge. overall, booking ticket from VIA saves a lot of money. Trust me. Goibibo now days super expensive. Go for VIA application."*

(App User 16)

In seek of affordability, some quotes extracted from the review threads are as follows: 'One of the lowest priced pre-booking sites I've seen', 'But I think the fees are too expensive (let's suppose the value without fees is $100. Airbnb charges the client $115 and you receive $97) - it's even more expensive than a common real Estate house', 'Trust me. Goibibo now days super expensive. Go for VIA application', 'quite helpful to pick lower cost flight days without blinding looking day after day', and 'They really work with you to get great prices you really wouldn't find anywhere else, like, 50% or even 30% of what you would pay normally for a room.'

Another aspect related to economic value is discounts. Consumers seek discount in the form of coupons, cashbacks, promo-code, free-bees, score points, etc. The M-Commerce apps often offer promo-codes and coupons to attract consumers, which are perceived as significant benefits by consumers. Some consumers, however, were disappointed when they did not receive any discount or cashback as promised. This developed negative perception for future purchases. Some quotes are given below:

"They really work with you to get great prices you really wouldn't find anywhere else, ***like, 50% or even 30% of what you would pay normally for a room****. Totally worth it. The coupon codes are a little confusing, but once* ***thoroughly investigated and added faithfully****, it is so so so worth it! Definitely recommended!!!"*

(App User 426)

*"this app **contains redeemable ecas**h...now my 1300 rs are stuck in this ecash thing which can't be used properly, so I'm not pleased at all and want my refund"*

(App User 52)

This section denotes other monetary benefits, such as benefits from referrals, easy refund availability, easy cancellation of booking, etc.

*"for first time users…make sure when **you refer this app to a friend**, you key in mail ID first…. I **enjoyed promo code benefit**, but just for first time!"*

(App User 133)

Some corresponding quotes are 'I am trying to book bus ticket and trying to avail discount codes available at time but the system showing that coupon doesn't exist', 'this app contains redeemable ecash', 'you sometimes get 10% off just for booking on your phone', and 'the discounts that arrive with the app the more I use the better'. Table 5.7 lists quotes retrieved from reviews, common themes, and corresponding themes related to economic value dimension.

Table 5.7: Economic Value – Common Themes and Quotes

Economic Value		
Items / Quotes from reviews	**Common Themes**	**Theme**
One of the lowest priced pre-booking sites I've seen. But I think the fees are too expensive... It's even more expensive than a common real Estate house. quite helpful to pick lower cost flight days without blinding looking day after day They really work with you to get great prices you really wouldn't find anywhere else.	Affordable Deals Relatively Cheap Cheaper than Direct Booking	Affordable
I am trying to book bus ticket and trying to avail discount codes available at time but the system showing that coupon doesn't exist this app contains redeemable e-cash you sometimes get 10% off just for booking on your	Discounts Coupons Cashback	Discounts

phone. the discounts that arrive with the app the more I use the better		
I referred this app to friend and earn a promo code	Referral Benefits	Other monetary Benefits

5.2.2.4.5 Convenience Value

The first aspect in this category is utility. In terms of usability or utility aspect, consumers had posted positive comments on their ability to use the app almost all the time when one has data and mobile device accessibility. Besides, there is no location restriction unlike e-commerce or desktop-based commerce. Portability of mobile devise is perceived as a benefit in using M-Commerce apps. Next in the aspect of usability is ease of use. Apps that can be used easily, conveniently, and effortlessly are preferred by consumers. Issues that affect ease of use were highlighted in the review discussions,

*"Absolutely ruined this app... **not user friendly at all**.... Before you could go on and download a city guide to your phone so easily. Now it's trying too hard to be like Instagram, showing public posts I don't want to see and using hashtags! Despite trying for about 30minutes I can't seem to download a city to my phone to use it offline, but did it in a minute on my wife's iPhone. Wish I could go back to the old app!"*

(App User 71)

*"Go back to basics. Over the years the app has been ruined by the Devs. **Messy, inconsistent, heavy**. I'm sorry guys but I'm switching to Foursquare. Edit January 2019: how did you manage to make it even worse than it was! change the dev team and **rebuild what was a valuable instrument**!"*

(App User 41)

*"Good app, **but increasingly difficult to use**. Cystine type is more a ridiculously long list. Make sub categories of you must, but please stop adding clutter. Porterhouse steak*

is just a steak. Prawn is simply seafood, as is oyster, lobster, crab and crab cake. Pad Thai is clearly Thai so no need for yet another entry. Please have a tidy up so we can actually find eats with some ease again."

(App User 98)

*"**Very helpful. It is very easy to use**. Whenever I need to plan a trip, I go for TripAdvisor. It includes a lot of other things too like hotel room booking, restaurants and many more."*

(App User 550)

Instances of quotes related to this sub-theme are: 'I like this apps, useful for me as travellers for leisure or business, easy to use', 'Simple, easy to use with the right set of options to manage my itinerary and travel plans', 'It's a great app! Very user friendly' 'I like having everything in one convenient place :)', and 'Extremely user friendly.'

Next in the usability aspect is saving efforts. This is rather a broad aspect that may comprise saving of efforts in search of products, travelling, physical efforts, queueing, transaction, etc. Some consumers had emphasised on the benefits of using mobile apps for booking in several review threads.

*"Payment Options - Only accept credit card, the payment process is so bad, I've tried more than twice and still not work!!! **So much of extra work to do!** I can't also use bank transfer for payment"*

(App User 165)

*"**it is not very user friendly**. it does not send you an e-ticket to your phone. if you try to input your phone number, the app messes up. you cannot access the ticket from the app either, so I have no idea how customs and TSA will believe me that I have a ticket based on just a booking confirmation number. I would give app this 0* if I could!"*

(App User 44)

Some quotes from sample thread are listed as follows: '... And wat nonsense only dbs/posb card holders only', 'What happen If we don't have any balance in acct but only

able to pay only by cash how????', 'Only accept credit card, the payment process is so bad', and 'Everything good except when I want to make payment, it cannot take my debit card.'

One key concern among users of mobile booking apps is cancellation of the booking if situation arises. Many issues were linked with cancellation, such as postponement of booking, refund, procedures for refund, transfer of booking to another booking, transfer of booking to another person, etc. Consumers recognised both benefits and sacrifices associated with cancellation, as well as the ability or provision for making changes in the booking or easy cancellation is perceived as a key benefit aspect.

*"**it works fine until you need assistance from the customer support.** then the nightmare begins. also if you're a host and you get fake complaint from a guest (for whatever reason, like they try to get refund based on lies), well... good luck."*

(App User 62)

*"**Very bad cancellation service.** I was very frequent customer of makemytrip for last few years. But when you run into issues you get real face of customer relationship. Due to app payment issue my cab booking happened twice. When i saw msg i instantly cancelled one and ask them for full refund. They stated that since you have cancelled the booking we can't refund you money. I never expected same from big company like makemytrip. I will no longer intend to be their customer just for trivial issue*."

(App User 313)

Some of the related theme quotes are as follows: 'Very bad cancellation service' and 'Due to app payment issue my cab booking happened twice.'

Some consumers had highlighted the benefits of using M-Commerce apps in terms of uniquity, availability, and usage ability from anywhere and at any time. The first element identified in this aspect is quick booking and quick exit, which saves time. On the contrary, when the app was time consuming or caused a delay, it was regarded as perceived sacrifice by many consumers. The review thread about various formalities, technicalities, and usability aspects revolved around saving or wasting time.

*"**Time Consuming** - Unusable on my phone, app just freezes and takes so long that android asks me if I want to quit app. Restarting phone did not help."*

(App User 483)

*"**This app is a time saver**! We travel frequently and this app is a big help for us. I am given options that I would have spent hours comparing. It's easy, consistent and concise in the hotel descriptions. Everything you need to plan a trip is on this website. I wouldn't know or want to do without it!"*

(App User 89)

*"It's a great app! Very user friendly**. A wonderful time saver** to having to get to the computer online. (I rate this by the app experience and not the company experience as a whole. 5 stars for them as a company) (I also rate and say all this from a host perspective.) They still have some glitches to sort out on it though. One specifically is with the Calander. Guest reservation cancellations do not clear from the calendar. Also there seems to be some Calander sync glitches with other platforms"*

(App User 19)

*"The most idiotic app ever... **Waited for so long for my acct to be approval**... And wat nonsense only dbs/posb card holders only... What happen If we don't have any balance in acct but only able to pay only by cash how???? rob bank is it and trf them to our acct... Pls improve the system and have some consideration to used easier option for the users to use this app in longer run... Else just shut this app... Thank u"*

(App User 21)

Some key quotes from the sample thread are given as follows: 'This app is a time saver! We travel frequently and this app is a big help for us', 'A wonderful time saver to having to get to the computer online', and 'you must make it easy to quickly enter present location and destination and immediately give a quote for the cab fare.' Table 5.8 lists quotes retrieved from reviews, common themes, and corresponding themes related to convenience value dimension.

Table 5.8: Convenience Value – Common Themes and Quotes

Convenience Value		
Items / Quotes from reviews	**Common Themes**	**Theme**
I like these apps, useful for me as travellers for leisure or business, easy to use. Simple, easy to use with the right set of options to manage my itinerary and travel plans. It's a great app! Very user friendly. I like having everything in one convenient place.	Ease of Use Anytime Anywhere	Utility
Only accept credit card, the payment process is so bad, Everything good except when I want to make payment, it cannot take my debit card. Very bad cancellation service. Dueto app payment issue my cab booking happened twice.	Multiple Payment Option Easy Cancellation	Saves Efforts
This app is a time saver! We travel frequently and this app is a big help for us. A wonderful time saver to having to get to the computer online. you must make it easy to quickly enter present location and destination and immediately give a quote for the cab fare.	Saves Time Quick Booking Quick Exit	Saves Time

Figure 5.2a displays mind map of items and dimenstions generated from qualitative study. Wordcloud as a outcome of NVIVO analysis is as per in Figure 5.2b. The M-VAL is a construct made up of stated dimensions and corresponding sub-themes. A word cloud is presented to visualise the summary of the qualitative thematic findings.

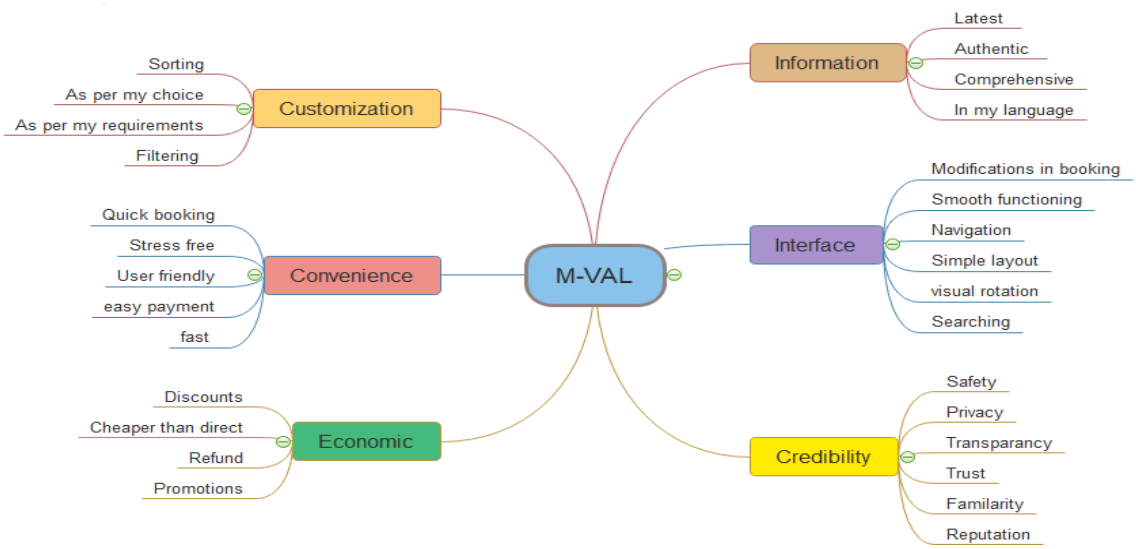


Figure 5.2a: Mind map of Items Generated from Qualitative Study

Figure 5.2b: Word Cloud of Thematic Findings

5.2.3 Synthesis of Items

The final item pool was generated by combining the items identified from the literature review and the qualitative study via netnography. The total items accumulated to measure M-VAL were 174; 106 and 58 items generated from literature review and qualitative study, respectively. The next step was to combine and synthesise the item pools in order to remove redundancy, if any.

The objective of synthesising the items is to obtain comprehensive yet precise item pool by minimising the number of items aligned to M-VAL definition. This is mainly performed by emphasising on its distinction from the conventional definition of CPV. If an item from the qualitative study shared similar meaning with an item derived from the literature although expressed in a different way, the item was retained but with contextualisation to the M-Commerce context. However, if the item generated from qualitative study is already present in the literature as it is, the item was dropped to avoid repetition or redundancy. Items generated from the qualitative study that measured similar constructs but not aligned to M-VAL definition were discarded. Several authors had adopted and contextualised items from the existing literature. Since such contextualised items accounted for a large number of items in pool, the researcher had decided to retain only those items that were primary and foundation for contextualisation for other studies. Modified items were dropped, while the main items were retained to measure M-VAL. Nonetheless, some exceptions were made. For instance, some items were contextualised and modified for topical research, thus reflective of changes in market or consumer behaviour. In this case, it is crucial to retain contemporary items instead of merely retaining conventional items.

The above-mentioned process resulted in 65 preliminary items, which were later subjected to expert validation for consideration of content and face validity.

5.2.4 Expert Judging

Upon synthesising the item pool generated from both literature review and qualitative study, the next step was to validate the pool through expert judgement. The two-step validation process was followed namely face validity and content validity. The method

initiated by Anderson and Gerbing (1991) was executed to assess content validity, as described in Section 4.7.3 of Chapter 4.

A panel of five experts was formed, as discussed in Section 4.7.3 of Chapter 4. An expert review survey was prepared (see Appendix I) and distributed to the panel of judges. Clear definitions of M-VAL and other related dimensions were presented to the expert panel to avoid ambiguity over concept under study. The panel was requested to assess items readability, their representativeness and comment, apart from providing suggestions to refine items. The five-point Likert scale was deployed to rate reliability, in which 1 and 5 represent 'poor' and 'excellent', respectively, on the scale. According to Richnins (2004), the assessment of repetitiveness ensures that the item conveys the meaning of research construct as per definition, besides providing content validity check. For this assessment, the panel was requested to use five-point Likert scale with 1 and 5 signifying 'not very representative' and 'very representative', respectively. A final list of 47 items was used for purification in Study two, as displayed in Table 5.9.

The panel of experts provided various suggestions on acceptance and rejection of items, modification of sentences without changing the meaning, contextualisation of some items, readability, etc.

5.2.5 Initial Scale

Based on the scale development procedure, the initial scale was conceptualised and formed; in which the items were finalised for purification. Table 5.9 lists the items selected from item pool for purification.

Table 5.9: Initial Scale Items Used for Purification

No	Code	Items
1	IF1	The travel app provides in-depth information about travel products (e.g., hotel description, photos etc.)
2	IF2	The travel app provides authentic information about travel products
3	IF3	The travel app provides information in localised format (e.g., booking amount local currency, booking information in preferred language etc.)
4	IF5	The travel app provides information on wide variety of travel products (e.g., many hotel options are listed to choose from)

5	IF6	The travel app displays latest (updated) information about travel products
6	IT1	The travel app has attractive interface design.
7	IT2	The travel app provides easy navigation.
8	IT3	The travel app provides seamless channel integration among website, app, across different devices.
9	IT4	The travel app can be connected with my social media (e.g., Facebook, Instagram)
10	IT5	The travel app functions smoothly (e.g., without hiccups, slowdown, too many pop-ups)
11	IT6	The travel app has innovative features such as the ability to work offline, feedback system, geo-localisation
12	IT7	The travel app uses refreshing colours in app pages
13	IT8	The travel app has simplicity of layout
14	CV1	I receive travel recommendations from the travel app
15	CV2	The travel app offers booking services as per my requirements
16	CV3	The travel app offers personalised tips to me
17	CV4	The travel app facilitates sorting of the information as per my priorities
18	CV5	The travel app facilitates booking procedure as per my preferences
19	GA1	My experience of using this travel app is enjoyable
20	GA2	The travel app offers exciting features
21	GA3	Travel booking through this travel app is fun
22	GA4	Travel booking through this travel app is interesting
23	GA5	The travel app offers entertaining experience while booking
24	GR2	Booking through the travel app makes me feel good
25	GR4	I have a good time browsing through the travel app
26	CR1	My transactions through the travel app are safe
27	CR2	The travel app displays its privacy policy
28	CR3	Booking through the travel app is free from uncertainty
29	CR4	The travel app provides transparency in all transactions
30	CR5	The travel app keeps my personal details safe

31	CR6	The travel app has a good reputation
32	CR7	The brand of this travel app is familiar to me
33	CR8	The travel app belongs to a well-known company
34	SV1	The travel app is widely used in my friend circle
35	SV2	Booking through the travel app offers me a social recognition
36	SV3	I have started using this travel app because of the recommendation from friends
37	CN1	The travel app facilitates quick booking
38	CN2	The travel app facilitates booking from wherever I am
39	CN3	The travel app facilitates quick exit once booking is done
40	CN4	The travel app offers multiple payment options (e.g., credit card, online banking etc.)
41	CN5	The travel app facilitates booking whenever I need to do it
42	CN6	The travel app is handy in respect to all locations
43	CN10	The travel app can be accessed 24hours/7 days
44	EV1	I can book affordable deals while booking through this travel app
45	EV2	The travel app offers discounts on booking
46	EV5	The travel app offers benefits for referring a friend
47	EV6	Booking through the travel app is cheaper than the booking directly through hotel / airline company

5.3 Study 2 – Scale Purification, Validation and Testing

Study 2 is about item purification, confirmation, validation, and testing of M-VAL scale. This study addresses a part of RQ2: 'How can M-VAL and its relevant dimensions be measured?' and RQ 3: 'How do M-VAL and its relevant dimensions impact CE and RI?' This study reports purification of M-VAL scale items via PCA, confirms the items through CFA, and tests its impact using SEM on selected dependent and mediating variables. At the end of this Study 2, the final M-VAL scale is displayed. In precise, Study 2 is composed of two parts; sub-studies C and D. This encompasses full administration and item analysis of M-VAL scale as prescribed in past studies (see

DeVellis, 2012; Ryan & Bernard, 2000; Spector, 2015; Zhang & Wildemuth, 2005). The research methodology is elaborated in Section 4.8 of Chapter 4.

5.3.1 Sub-study C – Item Purification

Sub-study C is a component of Study 2, as described in Section 1.8 of Chapter 1. In total, 388 questionnaires (see Appendix II) were distributed to M-Commerce app users in Malaysia with 365 valid and reliable responses received or 94% of response rate. Sub-study C looked into purification of items through PCA using IBM SPSS 24 software. Next, the purified M-VAL scale was further purified with CFA. Sub-study C reports a series of analysis procedures and corresponding results to address the study objective. At the end of sub-study C, the purified dimensions of M-VAL scale are presented for further analysis.

5.3.1.1 Tools and methods used

The next stage in scale development process, which is item purification, was emphasised by Churchill (1978) for data analysis. As such, various statistical tools and techniques were deployed to establish the feasibility of the proposed M-VAL scale, as well as to establish its measurement model and various validity aspects. The data were analysed using IBM SPSS, mainly because this software programme is well accepted, established, and widely employed among researchers across the globe (Zikmund, 2003; Awang, 2015). For this study, version 24 of IBM SPSS was applied to screen the dataset in terms of identifying missing data, testing for normality, non-response bias, CMB, etc. Next, PCA was performed to purify the items based on the procedure described in Section 4.8.1.12 of Chapter 4.

The data analysis of quantitative data required a series of pre-analysis steps, including data editing, screening, and coding, as well as treating missing data. These were followed by normality assessment, CMB, and finally, data analysis to verify the model and hypotheses testing. According to Hair et al. (2010) and Tabachnick and Fidell (2007), preliminary data analysis should be conducted prior to multivariate data analysis. The preliminary data analysis steps are identifying missing data, determining accuracy, and detecting outliers. These steps are elaborated in Section 3.8.1.11 of Chapter 3.

5.3.1.2 Data Coding

The purpose of coding is to allocate a unique code to each question so that the code can be used in further analysis, instead of lengthy statement of item. Each answer can be coded (Malhotra et al., 1996) and such coding may be carried out before or after data collection (DeVaus, 1995).

All items were pre-coded while finalising the initial scale in Study 1. Hence, the items were coded prior to data collection. Items embedded in the proposed M-VAL scale were pre-coded at the stage of item pool generation and finalisation of initial scale. Unique number was allocated to each item, along with short form of the corresponding dimension such items were placed at content validity phase. Number allocation was performed sequentially based on item sequence, which was random. Hence, the sequence of items has no importance in terms of priority in measuring the dimension. For example, IF is the code for information value, while the first item in this dimension is coded as IF1, and followed by IF2, IF3, etc. This was applied for all dimensions. This way all the items were allocated unique code facilitated convenience for data analysis and management. The word code was not repeated across dimensions, but the numbers were repeated for each dimension. For instance, items in next dimensions, such as Interface value, were coded as IT1, IT2, etc.; whereby IT differed from IF but the numbers were repeated. The coding is explicitly stated in Study A during item pool generation.

The responses were coded manually by allocating unique number sequentially to each questionnaire, along with the allocation of date on which response was recorded. Coding for responses was simple as the numbers were allocated serially on first come first recorded basis. The SPSS spreadsheet file was coded in accordance to the number corresponding to each question.

5.3.1.3 Data Screening and Cleaning

Data were collected manually after the respondents had completed the questionnaires, which were distributed manually. Although request was made to the respondents to respond to all items, some might ignore this request and leave the survey incomplete. This scenario was dealt by inspecting each questionnaire upon submission. The

respondents were asked to complete the survey if missing values were noted. Three respondents dismissed this request and their responses were excluded from analysis.

Since the data were entered manually into SPSS, there was a possibility of manual error and missing values in the dataset during data entry. This situation was addressed by adhering to the prescription given by Bennett (2001), which is to screen the spreadsheet. As a result, seven responses were missing and the corresponding questionnaires were tracked and updated. This ensured no missing value and the spreadsheet was ready for further analysis. Meanwhile, outliers were addressed at a later stage.

In order to capture relevant and appropriate data, some filter questions were inserted at the start of the questionnaire. Some screening questions embedded in the questionnaire are: 'Which travel app(s) you have personally used for your travel booking(s) in the past? You may tick more than one'; and 'You use a travel app for booking which of the following service(s)? Please mark as many as relevant'. These questions ensured that the respondents had indeed used the M-Commerce app, which all did so.

The questionnaire ensured that contextualisation was carried out so that the respondents could relate to their past experiences while completing the survey, provided they know the meaning of each item and its context. A contextualisation question was added, 'Please name the travel app which you prefer to use for most of your booking?' and further items were posed to reflect the context of this app. The objective of the survey was clearly mentioned so that the respondents understood its meaning and purpose.

5.3.1.4 Test of Outliers

Potential outliers or extreme responses can be identified using two methods; boxplot and Z-scores, as described in Chapter 4 (see sub-section 4.8.1.11). The results revealed that most of the responses fell in acceptable range of +/- 3.29, as suggested by Hair et al. (2010) for large samples. Responses to 'extremely agree' or 'extremely disagree' were viewed as normal. Following the recommendation given by Hair et al. (2010), no case was deleted and all observations were retained for further analysis.

5.3.1.5 Test of Normality

Normality assessment is conducted using skewness and kurtosis. Insignificant values of skewness and kurtosis indicate normally distributed sample. When the sample is large, skewness and kurtosis do not deviate sufficiently from normality (Tabachnick & Fidell, 2001). The rule of thumb to determine data normality is as follows. Kline (2005) asserted that data are termed as extremely skewed if the univariate skewness index value exceeds +/- 3. As for Kurtosis, these values should be greater than +/- 8.

Normality assumptions are assessed in this section based on the procedure discussed in sub-section 4.8.1.11 to ensure that assumptions of multivariate analysis are met. Recommendations by Kline (2011) to use kurtosis and skewness values were heeded. Table 5.10 tabulates the results of normality assessment. The SPSS 24 was deployed to compute skewness and kurtosis values, which ranged at -0.079 to -0.927 and -.010 to +1.036, respectively. These values for skewness and kurtosis were below |2| and |7|, respectively, as recommended by Hair et al. (2010) and West, Finch, and Curran (1995). Therefore, the results are acceptable and indicated that the data were distributed more or less normally.

Table 5.10: Skewness and Kurtosis Results of all M-VAL Items

	N	Range	Mini	Maxi	Mean	Std. Dev.	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IF1	365	5	2	7	5.32	1.031	1.063	-.404	.128	-.010	.255
IF2	365	6	1	7	5.13	1.063	1.129	-.149	.128	.291	.255
IF3	365	6	1	7	5.42	1.230	1.513	-.716	.128	.536	.255
IF5	365	5	2	7	5.67	1.096	1.200	-.473	.128	-.361	.255
IF6	365	6	1	7	5.38	1.069	1.143	-.507	.128	.278	.255
IT1	365	6	1	7	5.07	1.139	1.297	-.331	.128	.073	.255
IT2	365	5	2	7	5.40	1.002	1.005	-.364	.128	-.045	.255
IT3	365	6	1	7	5.10	1.209	1.462	-.548	.128	.504	.255
IT4	365	6	1	7	4.50	1.673	2.800	-.541	.128	-.415	.255
IT5	365	6	1	7	4.86	1.281	1.641	-.365	.128	-.098	.255
IT6	365	6	1	7	4.41	1.503	2.259	-.377	.128	-.376	.255
IT7	365	6	1	7	4.80	1.179	1.390	-.249	.128	-.200	.255

IT8	365	6	1	7	5.19	1.075	1.155	-.241	.128	-.155	.255
CV1	365	6	1	7	5.17	1.283	1.645	-.622	.128	.168	.255
CV2	365	5	2	7	5.33	1.090	1.187	-.381	.128	-.165	.255
CV3	365	6	1	7	4.90	1.258	1.584	-.354	.128	-.297	.255
CV4	365	6	1	7	5.14	1.204	1.450	-.480	.128	.059	.255
CV5	365	6	1	7	5.16	1.151	1.325	-.466	.128	.062	.255
GA 1	365	6	1	7	5.36	1.077	1.160	-.573	.128	.519	.255
GA 2	365	5	2	7	5.00	1.165	1.357	-.231	.128	-.493	.255
GA 3	365	5	2	7	4.96	1.147	1.317	-.122	.128	-.482	.255
GA 4	365	5	2	7	5.07	1.178	1.388	-.316	.128	-.497	.255
GA 5	365	6	1	7	4.77	1.306	1.705	-.341	.128	-.123	.255
GR2	365	5	2	7	5.18	1.070	1.145	-.111	.128	-.466	.255
GR4	365	4	3	7	5.23	1.052	1.108	-.079	.128	-.599	.255
CR1	365	5	2	7	5.36	1.104	1.220	-.365	.128	-.274	.255
CR2	365	6	1	7	5.15	1.300	1.691	-.642	.128	.350	.255
CR3	365	6	1	7	5.10	1.199	1.439	-.416	.128	-.113	.255
CR4	365	5	2	7	5.23	1.140	1.299	-.158	.128	-.602	.255
CR5	365	6	1	7	5.11	1.221	1.491	-.433	.128	.104	.255
CR6	365	5	2	7	5.48	1.086	1.179	-.335	.128	-.492	.255
CR7	365	4	3	7	5.56	1.048	1.099	-.329	.128	-.572	.255
CR8	365	5	2	7	5.46	1.093	1.194	-.406	.128	-.235	.255
SV1	365	6	1	7	4.39	1.348	1.816	-.421	.128	.111	.255
SV2	365	6	1	7	5.09	1.292	1.670	-.476	.128	.046	.255
SV3	365	6	1	7	4.50	1.589	2.525	-.420	.128	-.436	.255
SV4	365	6	1	7	4.65	1.452	2.107	-.500	.128	-.056	.255
CN1	365	5	2	7	5.57	1.073	1.152	-.551	.128	-.164	.255
CN2	365	4	3	7	5.68	1.010	1.020	-.393	.128	-.593	.255
CN3	365	4	3	7	5.62	.997	.993	-.331	.128	-.528	.255
CN4	365	6	1	7	5.42	1.255	1.575	-.927	.128	1.036	.255
CN5	365	5	2	7	5.64	.967	.936	-.425	.128	-.100	.255
CN6	365	5	2	7	5.86	1.055	1.113	-.726	.128	-.064	.255
CN10	365	6	1	7	5.61	1.083	1.174	-.561	.128	.173	.255
EV1	365	5	2	7	5.630	1.085	1.179	-.597	.128	.109	.255
EV2	365	5	2	7	5.49	1.106	1.223	-.423	.128	-.225	.255
EV5	365	6	1	7	4.88	1.531	2.344	-.618	.128	-.029	.255
EV6	365	5	2	7	5.46	1.123	1.260	-.434	.128	-.208	.255
N	365										

5.3.1.6 Multicollinearity

The next step was to check multicollinearity by analysing all M-VAL items. Table 5.11 lists the results of multicollinearity test. The values of Variance of Inflation Factor (VIFs) indicated absence of multicollinearity issue as all VIF values were less than 10, which was the prescribed threshold by Kline (2005). Most scholars recommended stringent measures, such as VIF < 5 or VIF < 3 (Hair et al., 2010). Referring to Table 5.11, most of the items had high to very high stringent measure of VIF < 3. Although the VIF of two items was slightly above 5, it was still below 10 threshold value (Kline, 2005).

Table 5.11: Assessment of Multicollinearity

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.270	.243		-1.114	.266		
	IF2	.475	.041	.489	11.520	.000	.508	1.967
	IF3	.087	.037	.104	2.378	.018	.479	2.090
	IF5	.046	.047	.049	.979	.328	.362	2.762
	IF6	.108	.046	.112	2.362	.019	.408	2.450
	IF7	-.005	.038	-.005	-.119	.906	.463	2.159
	IT1	.021	.047	.024	.456	.648	.344	2.909
	IT2	.018	.055	.018	.332	.740	.321	3.112
	IT3	-.015	.042	-.017	-.344	.731	.376	2.659
	IT4	.002	.031	.003	.058	.954	.374	2.673
	IT5	.024	.035	.030	.676	.500	.476	2.100
	IT6	-.004	.031	-.006	-.131	.896	.462	2.164
	IT7	.000	.045	.000	.003	.998	.348	2.872
	IT8	.034	.049	.035	.692	.489	.354	2.826
	CV1	-.015	.039	-.018	-.380	.704	.395	2.529
	CV2	-.050	.052	-.053	-.968	.334	.304	3.291
	CV3	-.055	.040	-.067	-1.377	.169	.384	2.602
	CV4	-.012	.042	-.014	-.275	.784	.377	2.650
	CV5	.075	.049	.084	1.541	.124	.311	3.214
	GA1	-.008	.051	-.008	-.158	.875	.318	3.148

	GA2	-.058	.052	-.066	-1.108	.269	.261	3.834
	GA3	.055	.061	.061	.891	.374	.197	5.067
	GA4	-.008	.058	-.009	-.140	.889	.207	4.834
	GA5	-.001	.045	-.001	-.024	.981	.282	3.550
	GR2	.081	.053	.085	1.541	.124	.305	3.279
	CR1	-.008	.051	-.008	-.151	.880	.304	3.293
	CR2	-.003	.036	-.004	-.084	.933	.451	2.219
	CR3	-.010	.047	-.011	-.201	.841	.301	3.323
	CR4	-.043	.050	-.048	-.867	.386	.305	3.281
	CR5	.002	.045	.003	.054	.957	.318	3.145
	CR6	.036	.056	.037	.634	.526	.263	3.809
	CR7	.062	.059	.063	1.059	.290	.258	3.869
	CR8	-.028	.047	-.030	-.594	.553	.369	2.706
	SV1	.015	.034	.020	.457	.648	.474	2.108
	SV2	.090	.040	.113	2.255	.025	.364	2.747
	SV3	-.005	.033	-.007	-.145	.885	.363	2.755
	SV4	-.038	.032	-.054	-1.207	.228	.460	2.174
	CN1	.046	.059	.048	.786	.433	.242	4.132
	CN2	.013	.061	.013	.209	.835	.256	3.911
	CN3	-.010	.056	-.010	-.185	.853	.316	3.167
	CN4	-.025	.037	-.031	-.677	.499	.447	2.235
	CN5	.003	.062	.003	.049	.961	.273	3.668
	CN6	.122	.052	.124	2.340	.020	.324	3.085
	CN10	.036	.054	.038	.661	.509	.284	3.516
	EV1	-.079	.053	-.083	-1.501	.134	.297	3.371
	EV2	.075	.068	.081	1.102	.271	.170	5.878
	EV5	-.007	.027	-.010	-.240	.811	.557	1.795
	EV6	.041	.062	.045	.669	.504	.204	4.900
	GR4	-.039	.053	-.040	-.748	.455	.317	3.158

5.3.1.7 Common Method Bias

The self-administered survey poses the potential drawback of CMB or CMV (Podsakoff et al., 2003). This bias arises when data are collected for both DVs and IVs from a single informant (Podsakoff & Organ, 1986) – a major measurement error source that can impact the validity of conclusions related to casual measures (Bagozzi & Yi, 1991; Nunnally, 1978; Podsakoff et al., 2003).

Ample of preventive measures can be performed to avoid CMB, as elaborated in Section 4.8.1.10 of research methodology chapter. Harman's single factor test is one of the most used and accepted tools to determine the presence of CMB in sample data (Podsakoff & Organ, 1986; Podsakoff et al., 2003). According to Podsakoff et al., (2003), this technique assumes that one factor may account for most of the co-variance in selected variables if common variance is present. The PCA of items selected in a study may generate more than one factor, while the presence of more than a distinct factor with relatively less variance is explained by the first factor insist that the sample dataset has no CMB (Podsakoff & Organ, 1986; Podsakoff et al., 2003).

5.3.1.8 Descriptive Statistics

This section describes the demographic profile of respondents in terms of gender, age, education, income, and race. Demographic data were captured at the end of the survey as some respondents considered disclosure of demographic information as sensitive. This part of the survey was voluntary as the research scope excluded demographic variable as a moderator. All respondents provided their demographic information as it was stated explicitly that the survey is purely for academic purpose and all information will not be disclosed to third party.

Table 5.12: Demographic Profile of the Sample

Gender	**Frequency**	**Percentage**
Female	179	49
Male	186	51
Age Group	**Frequency**	**Percentage**
Below 25	7	1.9
25 to 30	56	15.3
31 to 35	108	29.6
36 to 40	87	23.8
41 to 45	70	19.2
46 and above	37	10.2
Race	**Frequency**	**Percentage**
Chinese	150	41.1
Indian	91	24.9
Malay	82	22.5
Others	42	11.5

Education Level	Frequency	Percentage
Primary School	1	0.3
Secondary School	2	0.5
Certificate / Diploma	70	19.2
Bachelor's Degree	194	53.2
Professional Certificate	15	4.1
Master's Degree	82	22.5
Doctorate	1	0.3
Income	**Frequency**	**Percentage**
2499 and below	12	3.3
2500 to 4999	70	19.2
5000 to 7499	89	24.4
7500 to 9999	74	20.3
10,000 and above	120	32.9
Total	**365**	**100**

Table 5.12 tabulates the descriptive analysis results. From 365 respondents, 49% and 51% were male and female respondents; signifying balanced gender for this analysis. Most of the respondents belonged to the 31-35 age group (n=108, 29.6%) and followed by 70 respondents at 41-45 age group. The lowest percentage was the age group of 25 and below (n=7, 1.9%), followed by 37 and 56 respondents at the age groups of 46 and above (10.2%) and 25-30 (15.3%), respectively. The remaining 23.8% (87) of the respondents belonged to the 36-40 age group. The sample was appropriate in this respect, as depicted in the methodology section. Based on the survey, most of the respondents were Chinese (n=150, 41.1%), followed by Indian at 24.9% (91) and Malay at 22.5% (82). As this study employs convenience sampling, it is possible that the sample size is dominant of particular attribute. The least were from the ‘other’ category (n=42, 11.5%). As for education level, 194 respondents (53.4%) had Bachelor’s degree, while those with certificate/diploma, master’s degree, and professional degree holders were represented by 19.2% (70), 22.5% (82), and 4.1% (15) of respondents, respectively. The least were from primary school, secondary school, and Doctorate categories represented by 0.3% (1), 0.5% (3), and 0.3% (1) of respondents, respectively. In terms of income level, most of the respondents (n=120, 32.9%) earned RM 10,000 and above, followed by RM 5000-RM 7499, RM 7500-RM 9999, and RM 2500-RM

4999 by 24.4% (89), 20.3 % (74), and 19.2% (70) of respondents, respectively. The least respondents (n=12, 3.3%) earned RM 2499 and below. The sample reflected the composition and attributes given in methodology section.

5.3.1.9 Reliability

Internal consistency of sub-scales is assessed to ensure that the individual items or indicators of the scale measure the same construct and are highly-intercorrelated (Hair et al., 2010). As such, reliability was assessed and item analysis was performed for each of the eight dimensions of M-VAL construct. The rule of thumb recommended by Hair et al., (2010) is that inter-item correlation and intercorrelations should exceed 0.50 and 0.30, respectively, along with 0.70 as the lowest limit for Cronbach's alpha. For reliability assessment, item-total correlation, inter-item correlation range, and Cronbach's alpha were calculated. Referring to Table 5.13, the item-total correlations values ranged between 0.818 and 0.935.

The results showed that all item-total correlation and intercorrelations values exceeded 0.50 and 0.30, respectively. The values of Cronbach's alpha for all eight dimensions demonstrated high-level internal consistency for each dimension. Hence, all values had met the threshold of 0.70 (Netmeyer et al., 2003).

Table 5.13: Reliability Assessment of M-VAL Dimensions

No	Factor	Items	Alpha	Remarks
1	Convenience Value	7	0.913	Excellent
2	Gamification Value	7	0.935	Excellent
3	Credibility Value	8	0.918	Excellent
4	Interface Value	8	0.870	Good
5	Information Value	5	0.855	Good
6	Customisation Value	5	0.867	Good
7	Economic Value	4	0.818	Good
8	Social Value	4	0.821	Good
	OVERALL	48	0.969	Excellent

5.3.1.10 Factor Analysis

Assessment of appropriateness of the collected data is a prior requirement to execute PCA, whereby this assessment is related to three aspects: sample size, KMO test, and Bartlett's test of sphericity. Sample size selection and its sufficiency are elaborated in sub-section 4.8.1.2. According to Hair et al., (2010), the minimum sample size is five times as many responses as the number of items analysed. The satisfactory data size for PCA was 295 for 59 items. The sample size of 365 in this study met the requirement of PCA.

The next aspect was assessment of the extent of intercorrelations among items determined via KMO. The KMO provides support for sampling adequacy, which ranges at 0-1, with a minimum value of 0.60 (Tabachnick & Fidell, 2007). The KMO result was 0.953 for the entire dataset in this study; thus suggesting suitability as depicted by using PCA. Table 5.14 presents the results.

The third aspect was examination of the correlation among the variables, which was performed using Bartlett's test of sphericity. The result that yielded correlation matrix $\chi 2 = 11166.461$ ($p < 0.01$) signified the presence of large correlations among the variables. The results fulfilled the condition for data appropriateness in light of PCA.

Table 5.14: KMO and Bartlett's Test

KMO and Bartlett's Test		
KMO Measure of Sampling Adequacy.		.953
Bartlett's Test of Sphericity	Approx. Chi-Square	11166.461
	df	820
	Sig.	.000

Next, the standard PCA procedure was carried out, along with PCA and Varimax rotation. The commonly accepted criteria are Eigen value $\geqslant 1$ and factor loading $\geqslant 0.40$ (Hair et al., 2010; Kothari, 2004) to explore M-VAL. The EFA was re-run through iterative procedure, whereby items loaded below 0.40, and/or with cross-loading on more than a factor had been deleted. This procedure was executed in past studies (see Rabbanee et al., 2019; Sarah, Goi, Chieng & Khan, 2020). Table 5.15 lists the items that were dropped and the corresponding reasons for doing so.

Table 5.15: Deleted Items During EFA

Code	Item	Reason
IT2	The travel app provides easy navigation	Cross loading
IT8	The travel app has simplicity of layout	Cross loading
GR4	I have a good time browsing through the travel app	Low factor loading
CR7	The brand of this travel app is familiar to me	Low factor loading
CR8	The travel app belongs to a well-known company	Low factor loading
CN4	The travel app offers multiple payment options (e.g., credit card, online banking, etc.)	Cross loading

Typically, items with factor loading above 0.40 but below 0.50 are weakly loaded factor and do not strongly measure or represent the corresponding construct. As such, the following three items were deleted one at a time; GR4, CR7, and CR8. Prior to that, it was ensured that content validity was not threatened and similar items were present in the corresponding dimension.

Additionally, three items were recorded for cross loading with other factors, namely: IT2 that cross loaded with CN factor, IT8 that cross loaded with several other factors, and CN4 that cross loaded with IT and another factor. These items were deleted through iterative process. On top of that, four more factors were observed as cross loaded; CR10, IF5, EV1, and CR6. However, after looking at the factor meaning and its representation for the corresponding factors, these four items were retained to protect content validity of the scale. The decision made for these factors was taken during CFA.

Finally, an eight-factor model with 41 items was extracted and named Convenience Value (CN), Gamification Value (GA), Credibility Value (CR), Interface Value (IT), Information Value (IF), Customisation Value (CV), Economic Value (EV), and Social Value (SV). These factors reflected the initial conceptualisation.

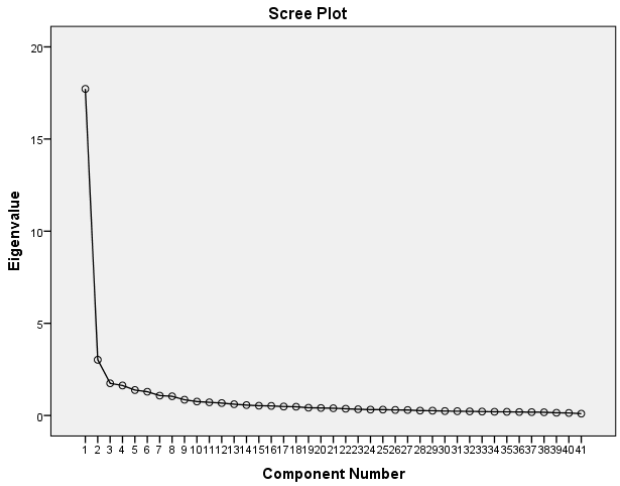


Figure 5.3: Scree Plot of M-VAL Factors

The eight factors accounted for 43.218% of total explained variances. Factor 1 CN had six items and accounted for 17.720% of total explained variance. Factor 2 GA with six items accounted for 7.371% of total explained variance. Factor 3 CR, accounting for 4.256% of total explained variance, consisted of six items. Factor 4 IT with 6 items accounted for 3.967% of total explained variance. Factor 5 IF consisted of 5 items and accounted for 3.366% of total explained variance. Factor 6 CV had 5 items and accounted for 3.145% of total explained variance. Factor 7 EV with 4 items accounted for 2.631% of total explained variance. Factor 8 SV had 3 items that accounted for 2.539% of total explained variance. Figure 5.3 illustrates the scree plot of M-VAL factors, in which the drop can be noted from the 8th factor. The alpha values for all factors ranged at 0.818-0.935, which showed satisfactory level of consistency among the items (see Table 5.16). All findings presented in tables had been based on the entire dataset.

Table 5.16: Rotation Matric

Items	Factors							
	1	2	3	4	5	6	7	8
CN2	.786							
CN3	.758							
CN5	.717							
CN6	.717							
CN1	.680							
CN10	.591		.403					
GA4		.793						
GA3		.791						

GA5		.736						
GA2		.689						
GA1		.661						
GR2		.601						
CR5			.769					
CR4			.716					
CR3			.708					
CR1			.678					
CR6	.402		.623					
CR2			.596					
IT6				.736				
IT7				.676				
IT3				.637				
IT1				.629				
IT4				.623				
IT5				.557				
IF3					.704			
IF1					.693			
IF2					.677			
IF5	.427				.608			
IF6					.541			
CV4						.669		
CV3						.650		
CV5						.596		
CV2						.556		
CV1						.544		
EV6							.784	
EV2							.766	
EV1	.491						.574	
EV5							.526	
SV3								.832
SV2								.741
SV1								.732
Eigen Value	17.720	3.022	1.745	1.626	1.380	1.289	1.079	1.041
% of Variance	43.21%	7.371%	4.256%	3.967%	3.366%	3.145%	2.631%	2.53%
Cronbach's Alpha	0.913	0.935	0.918	0.870	0.855	0.867	0.818	0.821
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalisation[a]								
a. Rotation converged in 8 iterations								

After item purification, the purified scale is ready for further analysis. This purified version is similar to the initial scale shown in Table 5.9 except for several discarded items. After finalising the purified scale and considering the retailed items despite their record of cross loading, the following were uncovered:

First, cross loaded items that were retained had their meaning and content validity considered; signifying that the items were part of both constructs combined as higher order construct. This was performed during the next stage - scale confirmation. Second, some factors, which were conceptualised during initial dimension conceptualisation, had overlapped and were combined into a single factor after PCA. Overlap of dimensions was noted for gamification and gratification as these dimensions were conceptualised separately, as well as the overlap of interface and visual dimensions. Despite the overlap, these factors were conceptually distinct from one another and this notion is supported by the panel of experts during expert judgement procedure. Third, factor loading for several items from each dimension appeared to be moderate. Items with factor loading above 0.7 were considered strong, while those above 0.8 were viewed as ideal for factor representation and measurement. In this study, nonetheless, some factors had moderate factor loading ranging at 0.50-0.65. This poses a possibility of cross loading of one factor among a few dimensions in small factor loading (<0.3), but left unseen in PCA results at > 0.40.

Some scholars recommended retaining factors with high factor loading (> 0.60) to yield better outcomes. Despite these aspects, such factors cannot be removed as they pose threat to context validity of M-VAL scale. Besides, the meaning of factors, as well as conceptual and theoretical positioning, was distinct.

The observations indicated the presence of scale structure with higher order dimensions comprising of a few first order factors as sub-dimensions. The items were retained despite being cross loaded because the items could be part of a common higher order dimension. Concurrently, factors distinct in conceptualisation, but identified as outcome of factor analysis, were accommodated. These considerations are explained in the following section.

5.3.2 Sub-study D – Confirmation of Scale Structure, Validation and Testing

Sub-study D is a component of Study 2, as described in Section 1.8 of Chapter 1. After distributing 550 questionnaires (see Appendix III) to M-Commerce app users in Malaysia, 513 valid and reliable responses were returned (93.27% response rate). In sub-study D, purified items from sub-study C were further processed using CFA, validity assessment, and SEM to measure the impact of M-VAL scale on dependent and mediating variables using IBMS SPSS AMOS 24 software. At the end of sub-study D, the final M-VAL scale is presented, along with its impact on the selected variables.

5.3.2.1 Tools and methods used

In the next stage of scale development process for data analysis, various statistical tools and techniques were employed to establish the feasibility of the proposed M-VAL scale, as well as to establish the measurement model and other validity aspects. The IBM SPSS AMOS version 24 was deployed for CFA and SEM, which have been widely applied for data analysis (see Anderson & Gerbing, 1982; 1988; Hair, Anderson, Tatham & Black, 1995; Kline, 2005). It is a combination of various statistical techniques to assess correlations between DVs and IVs (Tabachnick & Fidell, 2001).

The SEM was employed in this study due to its ability of analysing relationships among variables through various tests, such as variance and co-variance estimation, linear regression, hypotheses testing, etc. (Jöreskog & Sörbom, 1996). The construct at hand can be assessed via SEM through CFA resulting in provision of scope to modify the theoretical model (Anderson & Gerbing, 1988). Another key aspect of SEM is that it provides overall model fit indices, which in turn, enables one to evaluate the best model to fit the dataset. According to Hair et al., (2010) and Tabachnick and Fidell (2007), preliminary data analysis should be conducted prior to multivariate data analysis. The preliminary data analysis includes identification of missing data, accuracy examination, and detection of outliers.

5.3.2.2 Coding

The purpose and method of item coding are explained in sub-section 4.3.1.2 (sub-study C). As the data were collected online for this study using Google Form, the responses

were coded automatically by Google Form along with allocation of time strap that recorded the date and time of response submission. Coding for responses was simple as numbers were allocated serially on first come first recorded basis. The SPSS spreadsheet file was coded based on the number corresponding to each question.

5.3.2.3 Data Screening and Cleaning

Once data collection was successfully completed, the researcher downloaded a .TISS file from Google Scholar that contained all the responses. This was then converted to excel spreadsheet for editing purpose, so as to avoid omission, blank space, and consistency. According to Zikmund (2003), data editing is an integral part of data processing and analysis stge.

Force validation was embedded in the questionnaire, in which it was compulsory for the respondents to complete the entire questionnaire before clicking the submit button. However, the potential of missing data is still present due to technical and IT glitch. For instance, some respondents might have cancelled the Google Form prior to submission or interrupted by electricity/system/Internet connectivity issues while completing the survey. Such a situation may be addressed, as suggested by Sekaran (2000), by screening the spreadsheet. As a result, eight questionnaires were incomplete, thus discarded from the spreadsheet. This ensured no missing value and the spreadsheet was ready for further analysis.

5.3.2.4 Test of Outliers

Outliers or extreme responses can be identified using boxplot and Z-scores, as described in sub-section 4.8.1.11. The results showed that most of the responses were placed in an acceptable range of +/- 3.29, as prescribed by Hair et al. (2010) for large samples. Some respondents might choose “extremely agree” or “extremely disagree”, which was viewed as normal and not unique. Thus, based on that suggested by Hair et al. (2010), no case was deleted and all observations were retained for further analysis.

5.3.2.5 Multicollinearity

Next, multicollinearity was assessed by analysing all M-VAL items. Based on Table 5.17, all VIF values indicated absence of multicollinearity issue as they were below 10, as suggested by Kline (2005).

Table 5.17: Multicollinearity Assessment

Coefficients			
Model		**Collinearity Statistics**	
		Tolerance	**VIF**
1	Information	.399	2.509
	Interface	.286	3.494
	Customisation	.380	2.632
	Gamification	.358	2.791
	Credibility	.461	2.170
	Social	.689	1.452
	Convenience	.365	2.743
	Economic	.438	2.283

5.3.2.6 Descriptive Statistics

This section describes the demographic profile of the respondents in terms of gender, age, education, income, and race. Demographic data were gathered at the end of the survey as some respondents considered disclosure of demographic information as sensitive. This part of the survey was voluntary as the research scope excluded demographic variable as moderator. All respondents provided their demographic information as it was stated explicitly that the survey is purely for academic purpose and no information will be disclosed to third party.

Table 5.18: Demographic Analysis

Gender	**Frequency**	**Percentage**
Female	277	54
Male	236	46
Age Group	**Frequency**	**Percentage**

Below 25	58	11.30
25 to 30	82	15.98
31 to 35	96	18.71
36 to 40	105	20.46
41 to 45	88	17.15
46 and above	84	16.37
Race	**Frequency**	**Percentage**
Chinese	196	38.20
Indian	80	15.59
Malay	178	34.69
Others	59	11.50
Education Level	**Frequency**	**Percentage**
Primary School	0	0
Secondary School	14	2.7
Certificate / Diploma	60	11.69
Bachelor's Degree	211	41.13
Professional Certificate	17	3.31
Master's Degree	177	34.50
Doctorate	34	6.6
Income	**Frequency**	**Percentage**
2499 and below	89	17.34
2500 to 4999	93	18.12
5000 to 7499	92	17.93
7500 to 9999	64	12.47
10,000 and above	96	18.71
Not willing to mention	79	15.39
Total	**513**	**100**

Table 5.18 tabulates the demographic profile of the sample. From the 513 respondents, 54% and 46% were females and males, respectively; indicating gender balance. Most of the respondents belonged to the 36-40 age group (n=105, 20.46%), while the least were 25 years old and below (n=58, 11.30%). Next, 96 and 88 respondents fell in the 31-35 and 41-45 age groups, respectively. The remaining 15.98% (82) and 16.37% (84) of the respondents belonged to age groups 25-30 and 45 and above, respectively. Most of the respondents were Chinese at 38.20% (196), followed by Malay at 34.69% (178), and Indian at 15.59% (80). The least were from the ‘other’ category represented by 11.50%

(59). In terms of education level, most of the respondents (n=211, 41.13%) had Bachelor's degree, whereas certificate/diploma, master's degree, and doctorate degree holders were represented by 11.69% (60), 34.50% (177), and 4.1% (34) of the respondents, respectively. The least were from secondary school and professional category representing 2.7% (14) and 3.31% (17), respectively, while none with primary education alone. As for income level, most of the respondents (n=96, 18.71%) earned RM 10,000 and above, followed by RM 2500-RM 4999, RM 5000-RM 7599, and RM 2499 and below represented by 18.12% (93), 17.93% (92), and 17.34% (89), respectively. The least respondents (n=64, 12.51%) earned RM 7500-RM 9999, while 15.79% (n=79) of the respondents did not disclose their income.

5.3.2.7 Confirmatory Factor Analysis (CFA)

The CFA can be performed using IBM SPSS AMOS, which is a multivariate statistical programme to identify to what extent the measured variables represent the number of constructs. The CFA is a tool that facilitates in confirming or rejecting a measurement theory (Hair et al., 2014). Once the factor structure is explored in PCA, it can be further confirmed using CFA. The difference between PCA and CFA is that the former investigates factor structure while the latter identifies factor structure extracted in PCA (Hair et al., 2010). In CFA, several parameters were used in the past to assess the overall fit of measurement model based on three categories of indices; absolute fit, incremental fit, and parsimony fit.

The category of absolute fit includes chi-square ($\chi 2$) test, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness of fit index (AGFI), root mean square residual (RMR), and standardised root mean square residual (SRMR) (Hooper, Coughlan, & Mullen, 2008). This category assesses the model fit of a priori models (McDonald & Ho, 2002). The indices are applied to measure how good a model fits the data without comparing a model to a baseline model (Jöreskog & Sörbom, 1993). The $\chi 2$ test examines the differences in covariance matrices of the model and data sample (Byrne, 1994). Generally, smaller $\chi 2$ value is better, and an insignificant p value of $\chi 2$ signifies adequate model fit. Nevertheless, this was not the only criterion because p value is generally significant in most empirical studies involving large sample size. An

acceptable value of RMSEA ranges at 0.10-0.08 (Jöreskog & Sörbom, 1996; MacCallum, Browne, & Sugawara, 1996), while some scholars prescribed a cut-off value of 0.06 (Hu & Bentler, 1999). The accepted SRMR value ranges at 0.0-1.0 and should be less than 0.08 (Hu & Bentler, 1999). Both GFI and AGFI should exceed or equal to 0.90 (Hooper et al., 2008).

Next, incremental fit includes Normed Fit Index (NFI), Non-Normed Fit Index (NNFI or Tucker-Lewis Index (TLI)), and Comparative Fit Index (CFI). According to Hu and Bentler (1999), the acceptable values for these three indices are ≥ 0.90.

Lastly, parsimony fit includes parameters of Parsimony GFI, Parsimonious NFI, and Akaike Information Criterion. The acceptable values for the first two ranges at 0-1, where values close to 1 indicate a perfect model fit although this is unexpected in empirical studies. Thus, no threshold value is recommended for these indices (Mulaik et al., 1989). Similarly, no absolute value is prescribed for Akaike Information Criterion, although a smaller value may show better fit (Akaike, 1974). $\chi 2$ /df is another parameter in this category with threshold value below 5.0 (Wheaton, Muthen, Alwin, & Summers, 1977).

5.3.2.7.1 Initial model

The initial model was constructed by embedding all items as per purified scale. The initial conceptualisation was followed to construct the scale structure. After purification, most items in gratification dimension were removed, while only one item remained in gamification dimension, as indicated by EFA. As some items from the social dimension were removed during expert judgement and EFA stage, the remaining items revolved around social approval/influence, thus renamed as social credibility. Concurrently, the credibility dimension already existed and based on the remaining purified items, this dimension was renamed as ‘system credibility’ as the credibility aspect is more related to app in light of the items. Next, the procedure described in sub-section 4.3.2.7 was executed to assess the model fit of the initial measurement model. Figure 5.4 illustrates the initial measurement model.

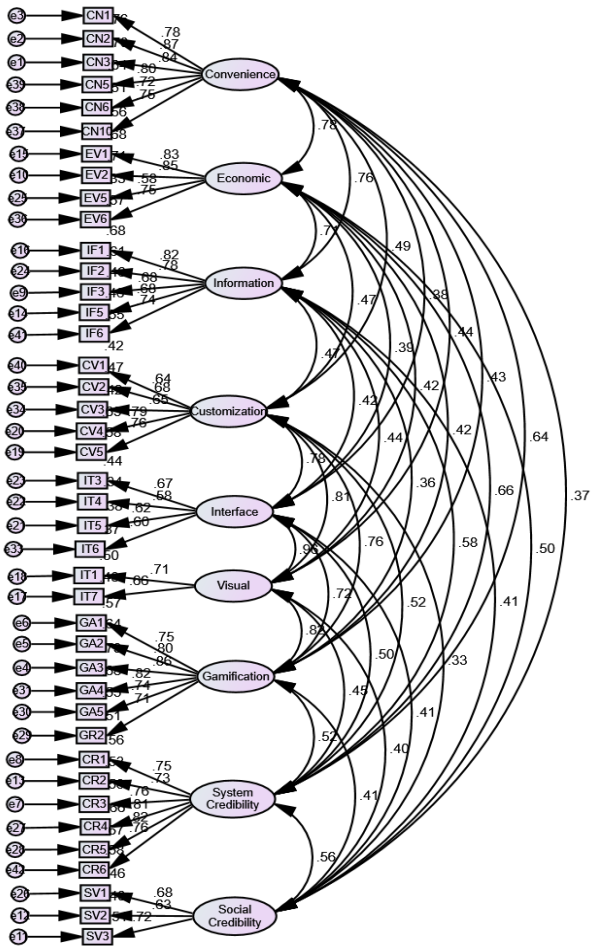


Figure 5.4: Initial Measurement Model

Table 5.19: Evaluation of Fitness of Measurement Model

Category	Index	Level of Acceptance	Index Value	Comment
Absolute Fit	Chi-Square	P-Values < 0.05	0.000	Supported
	RMSEA	< 0.08	0.065	Acceptable Fit
	GFI	> 0.90	0.787	Not Acceptable
Incremental Fit	AGFI	> 0.80	0.753	Not Acceptable
	CFI	> 0.90	0.873	Not Acceptable
	TLI	> 0.90	0.860	Not Acceptable
	IFI	> 0.90	0.874	Not Acceptable
Parsimonious Fit	Chisq / df	< 3.0	3.158	Not Acceptable

In Table 5.19, the CFA results are summarised based on the acceptance level of the corresponding tests. The chi-squared test indicates the variance between observed and expected covariance matrices. Values closer to zero indicate better fit; smaller variance

between expected and observed covariance matrices (Barrett, 2007; Gatignon, 2010). Model good fit was displayed by RMSEA value of 0.065 (McCallum et al., 1996). According to McQuitty (2004), null hypotheses can be tested accurately with confidence interval around the value measured. Meanwhile, unacceptable fit was revealed by Normed Chi-Square value of 3.158, which did not adhere to the threshold set by rule of thumb of < 3.0. The CFI value of 0.873 fell in the acceptable range of 0.0-1.0, wherein values closer to 1 signified good fit (Hooper et al., 2008). The values of AGFI, GFI, and TLI did not fall within the acceptable rage. Thus, the model did not demonstrate model fit in accordance to the rule of thumb and CFA model fit procedure was executed.

The procedure to achieve model fitness is prescribed by Awang (2015), whereby CFA for the polled measurement model was performed and the fitness indices were assessed as explained above. Next, items with low factor loading (<0.60) were deleted as outcome of iterative process. Multiple aspects, such as theoretical meaning, content validity, etc., were considered before the items were deleted. High value of modification indices (MI) indicated redundant items. Such items were identified (MI<15) and deleted as part of the iterative process. After every single item deletion, CFA was performed and model fit indices were assessed. Figure 5.5 illustrates the modified measurement model.

5.3.2.7.2 Measurement model with model fitness

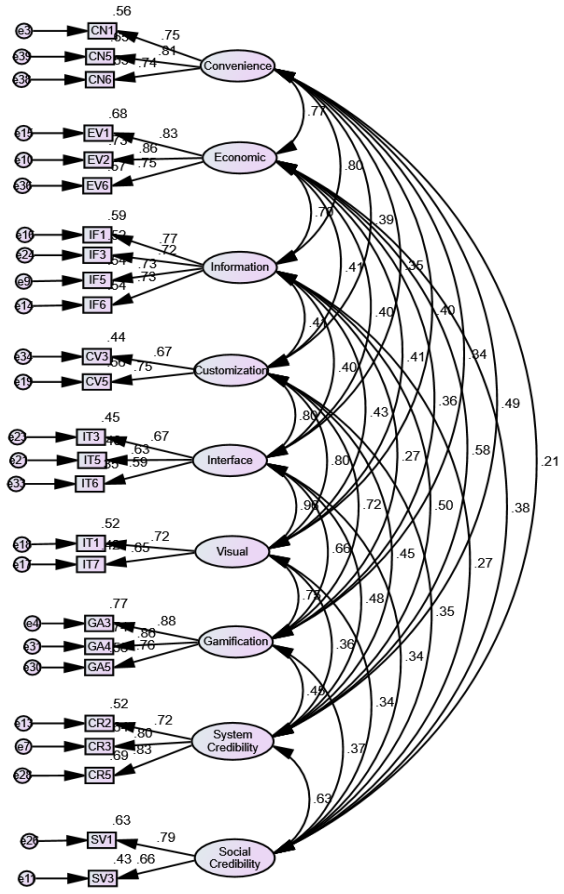


Figure 5.5: Modified Measurement Model

Table 5.20: Evaluation of Fitness of Measurement Model

Category	Index	Level of Acceptance	Index Value	Comments
Absolute Fit	Chi-Square	P-Values < 0.05	0.000	Supported
	RMSEA	< 0.08	0.054	Good Fit
	GFI	> 0.90	0.912	Acceptable
Incremental Fit	AGFI	> 0.80	0.880	Acceptable
	CFI	> 0.90	0.921	Acceptable
	TLI	> 0.90	0.926	Acceptable
	IFI	> 0.90	0.942	Acceptable
Parsimonious Fit	Chisq / df	< 3.0	2.498	Acceptable

In Table 5.20, the revised CFA results are summarised based on the acceptance level of the corresponding tests. The chi-squared test indicates the variance between observed and

expected covariance matrices. Values closer to zero indicate a better fit; smaller variance between expected and observed covariance matrices (Barrett, 2007; Gatignon, 2010). Model good fit was displayed by RMSEA value of 0.054 (McCallum et al., 1996). According to McQuitty (2004), null hypotheses can be tested accurately with confidence interval around the value measured. Next, acceptable fit was shown by Normed Chi-Square value of 2.158, which adhered to the threshold set by rule of thumb of < 3.0. Besides, the CFI value of 0.921 fell in the acceptable range of 0.0-1.0, wherein values closer to 1 indicate good fit (Hooper et al., 2008). The GFI and AGFI values fell within the acceptable range as well.

5.3.2.7.3 Validity Assessment

After executing CFA, it is crucial to assess model reliability and validity. Reliability is established using several measures, including composite reliability (CR), AVE, maximum shared variance (MSV), and average shared variance (ASV). The value within level of acceptance for these measures are Reliability (CR > 0.7, > 0.6 for a new scale), Convergent Validity (AVE > 0.5), and Discriminant Validity (MSV < AVE & Square root of AVE greater than inter-construct correlations) (Hair et al., 2010). Convergence effectiveness can be strictly measured with AVE. According to Malhotra and Dash (2011), “AVE is a more conservative measure than CR. On the basis of CR, one may conclude that the convergence effectiveness of a structure is sufficient even if the variance exceeds 50% as a result of error."

Convergence validity is based on items that indicate a specific construction ought to share high variance proportion. The relative amount of this can be measured by these following ways. The first refers to factor loadings. Factor loading size is a key parameter, whereby high factor loading shows high convergence validity. In this case, factors that converge at a common point turn into a potential construct (Hair et al., 2014). Second, AVE is a summary indicator of convergence and calculated as AVE for structurally loaded items. A value of 0.5 or less for AVE suggests that errors in the project exceed the variances described by the underlying factor structure imposed on the measure. A .5 or higher AVE is a good guideline that shows sufficient convergence (Hair et al., 2014; Hutcheson et al., 1999). The third measure is reliability or an indicator

of convergence effectiveness. Good reliability is represented as per fundamental guideline by .7 or higher value. As long as the other indicators of the structural validity of the model are good, the reliability between .6 and .7 is accepted (Hair et al., 2014).

In Table 5.21, the factor loading of all 26 items exceeded 0.5 with significant p value of < 0.05, thus confirming all items are within acceptable convergence validity level while interpreting theoretical constructs (Hair et al., 2006). Convergence validity was supported by all constructs, except for two constructs listed in Table 5.21 as their AVE values fell from 0.50 to 0.696 - greater than the threshold value of 0.5 (Hair et al., 2010). However, the constructs of interface and visual did not satisfy this condition with their AVE values of 0.397 and 0.469, respectively. Moreover, the CR of these variables ranged from 0.666 to 0.872 for all the nine variables; indicating acceptable reliability with an empirical value with special consideration of newly developed scale that should range at 0.6-0.70 (Kline, 2011).

Table 5.21: Convergent Validity Assessment

Construct	Item	Factor Loading	CR (Minimum 0.6)	AVE (Minimum 0.5)
Convenience	CN1	.750	0.811	0.590
	CN5	.808		
	CN6	.744		
Economic	EV1	.826	0.853	0.661
	EV2	.857		
	EV6	.752		
Information	IF1	.768	0.828	0.546
	IF3	.720		
	IF5	.734		
	IF6	.734		
Interface	IT3	.668	0.663	0.397
	IT5	.629		
	IT6	.591		
Visual	IT1	.719	0.638	0.469
	IT7	.649		
Gamification	GA3	.876	0.872	0.696
	GA4	.862		
	GA5	.759		
System Credibility	CR2	.724	0.830	0.620
	CR3	.801		

	CR5	.833		
Social Credibility	SV1	.791	0.691	0.530
	SV3	.659		
Customisation	CV3	.666	0.666	0.500
	CV5	.745		

Discriminant validity is achieved if the square root of AVE for a dimension is less than the absolute value of the correlations with another dimension (Awang, 2015; Hair et al., 2009). Table 5.22 tabulates the discriminant validity test results. For the dimension of convenience, the square root of AVE was 0.645, which was less than the absolute value of its correlation with other dimensions, which was 0.768. Similar cases were noted for dimensions of visual, interface, customisation, and information as the square root of AVE values for these dimensions were below the absolute value of its correlation with other dimensions.

Table 5.22: Divergent Validity Assessment

Dimensions	CR	AVE	MSV	MaxR (H)	SC	CN	CR	GA	VS	IT	CV	IF	EV
System Credibility	0.830	0.620	0.392	0.838	**0.787**								
Convenience	0.811	0.590	0.645	0.815	0.495	**0.768**							
Social Credibility	0.691	0.530	0.392	0.709	0.626	0.214	**0.728**						
Gamification	0.872	0.696	0.555	0.883	0.447	0.341	0.371	**0.834**					
Visual	0.638	0.469	0.929	0.643	0.362	0.402	0.337	0.745	**0.685**				
Interface	0.663	0.397	0.929	0.666	0.477	0.353	0.338	0.657	0.964	**0.630**			
Customisation	0.666	0.500	0.643	0.672	0.446	0.391	0.354	0.716	0.797	0.802	**0.707**		
Information	0.828	0.546	0.645	0.829	0.500	0.803	0.273	0.265	0.433	0.401	0.408	**0.739**	
Economic	0.853	0.661	0.598	0.861	0.575	0.773	0.377	0.355	0.411	0.402	0.406	0.697	**0.813**

Discriminant validity was assessed based on the values of MSV. When the value of MSV for a dimension is greater than the AVE value of the same dimension, discriminant validity is not achieved. It was observed that the AVE for convenience (0.590) was less than its MSV (0.645). Similarly, AVE values for visual (0469), interface (0.397),

customisation (0.500), and information (0.546) dimensions were also less than the corresponding MSV values at 0.929, 0.929, 0.643, and 0.645, respectively.

Therefore, discriminant validity was not achieved for the measurement model and the model was unsuitable for further testing of nomological validity through SEM. Thus, it is crucial to assess issues with the measurement model in order to rectify and propose better measurement model for M-VAL scale. Actions are then taken for revising the measurement model as discussed in following section.

5.3.2.8 Revising the Measurement Model

5.3.2.8.1 Issues with the existing model

During EFA, some factors were cross loaded, but could not be omitted to protect the content validity of the scale. Although cross loading was displayed statistically, when it came to the meaning of these items, they were indeed appropriate to retain. The reasons for retention are discussed in sub-section 4.3.1.10. Besides, some factors with low factor loading (0.4-0.5) were also retained to ensure that the content validity of the scale is not threatened (Nunnally, 1978).

Although the dataset for CFA was new and differed from that used for EFA, it may lead to high correlation among some constructs. The correlation matrix of the measurement model shown in Table 5.23 serves as input. In the measurement model, two constructs are highly correlated if the correlation between them exceeds 0.65. However, such high correlation may be a threat to discriminant validity and result in statistically insignificant values for estimates when nomological validity is determined via SEM.

High to moderately high and very high correlation were recorded among some constructs for M-VAL scale. The highest correlation was noted between visual and interface dimensions (0.964), and followed by the correlation between convenience and information dimensions (0.803). Another pair in the very high correlation category is customisation and interface with correlation coefficient of 0.802. Moderately high correlation was observed among the following dimensions: visual-customisation (0.797), convenience-economic (0.773), gamification-visual (0.745), and gamification-customisation (0.716). High correlation occurred for dimensions information-economic

(0.697), gamification-interface (0.657), as well as system credibility - social credibility (0.626).

After reviewing the correlation coefficient among the above constructs, tentatively, the common dimensions with high correlation among themselves were classified as follows:

The dimensions of interface, visual, customisation, and gamification had moderately high to very high correlations among them and were categorised into a group. Similarly, the dimensions of information, convenience, and economic had high to moderately high correlations among each of the contracts in that group. Finally, system credibility and social credibility had high correlation between them. Besides, correlation coefficients among dimensions across these groups were moderately low to very low.

Table 5.23: Correlation Coefficents

Sub-dimension		Sub-dimension	Estimate
Convenience	<-->	Social Credibility	.214
Convenience	<-->	System Credibility	.495
Convenience	<-->	Gamification	.341
Convenience	<-->	Visual	.402
Convenience	<-->	Interface	.353
Convenience	<-->	Customisation	.391
Convenience	<-->	Information	.803
Convenience	<-->	Economic	.773
Information	<-->	Economic	.697
Economic	<-->	Customisation	.406
Economic	<-->	Interface	.402
Economic	<-->	Visual	.411
Gamification	<-->	Economic	.355
System Credibility	<-->	Economic	.575
Economic	<-->	Social Credibility	.377
Information	<-->	Customisation	.408
Information	<-->	Interface	.401
Information	<-->	Visual	.433
Gamification	<-->	Information	.265
System Credibility	<-->	Information	.500
Information	<-->	Social Credibility	.273
Customisation	<-->	Interface	.802
Visual	<-->	Customisation	.797
Gamification	<-->	Customisation	.716
System Credibility	<-->	Customisation	.446
Social Credibility	<-->	Customisation	.354

Visual	<-->	Interface	.964
Gamification	<-->	Interface	.657
System Credibility	<-->	Interface	.477
Social Credibility	<-->	Interface	.338
Gamification	<-->	Visual	.745
System Credibility	<-->	Visual	.362
Social Credibility	<-->	Visual	.337
Gamification	<-->	System Credibility	.447
Gamification	<-->	Social Credibility	.371
System Credibility	<-->	Social Credibility	.626

5.3.2.8.2 New Model Construction

A model was built in this section to attain discriminant validity and to reduce M-VAL scale complexity by presenting a simple yet comprehensive structure. Despite the model fit, the parameters could not absolutely determine the M-VAL scale structure. The M-VAL scale measurement model should embed theoretical aspect, while fulfilling other factors, such as discriminant validity.

In order to determine and finalise the M-VAL scale structure, two key questions were considered: 1. ‘How many factors should be included in the final model?’ and 2. ‘What is the hierarchical structure of the M-VAL scale?’ Despite the superior model fit, insufficient discriminant validity and high correlation among the constructs posed the potential of second order construct (Dimitrov, 2010; Marsh & Hocevar, 1988). The high correlation and group had been executed as explained in the above section, whereby the factors could be consolidated in single factors or considered as sub-dimensions of a higher order construct. This means; the first group can be used as sub-dimensions of a higher order dimension, and similarly, higher order dimension can be proposed for other groups.

Second order, third order or hierarchical structures are not unusual in the existing literature. Evidence was noted in many established scales about grouping or regrouping of dimensions and sub-dimensions with the objective of minimising scale complexity (Coltman et al., 2008). The two types of higher order constructs are formative and reflective constructs.

Many instances of second order scales can be identified in the literature. Dabholkar et al. (1995) deployed a hierarchical model to capture service quality dimensions for retail stores and suggested service quality as a five-dimensional second order construct with three of those dimensions containing two sub-dimensions each. Similarly, Akter et al. (2013) developed an instrument to measure mobile health quality perception and suggested mHealth quality as a hierarchical, multidimensional, and reflective scale, which consisted of three primary dimensions and eight sub-dimensions.

The on-going debate on validity and applicability of formative or reflective second order measurement models is noted in special issues of Journal of Business Research (2008 and 2013) and Academy of Marketing Science review. Two key issues are highlighted on this matter. First, the discussion is about the conceptualisation of measurement model in the form of second order formative or reflective construct. On one hand, some scholars argued that no construct is inherently reflective and formative (Baxter et al., 2009; Wilcox, Howell, & Breivik, 2008). Meanwhile, some suggested that a construct must be either reflective or formative based on conceptual meaning (Diamantopoulos & Winklhofer, 2001; Jarvis, Mackenzie, & Podsakoff, 2003; Podsakoff et al., 2003).

The M-VAL construct was considered as reflective in nature due to several reasons. First, the theoretical direction of causality is from construct to items. Measures are manifestation of constructs and all measures under a construct share a common theme. These are common characteristics of reflective model (Jarvis et al., 2003; Petter, Straub & Rai, 2007). Second, the reflective perspective is the correlation between measures under a construct, which is highly positive (Bollen & Lennox, 1991) with significant internal consistency (Petter et al., 2007). The following justifications denote the reflective nature of the model. All constructs are reflective (Jarvis et al., 2003) with the direction of causality is from construct to items, indicators are manifestations of construct, changes in construct cause changes in indicators, as well as indicators are required to have the same antecedents and consequences (same nomological network) (Jarvis et al., 2003; Petter et al., 2007).

The terminology of a reflective second order measurement model applied in this study is as prescribed by Petter et al. (2007) and Diamantopoulos, Riefler, and Roth (2008). In

order to understand the characteristics of key construct of M-VAL, it is crucial to allow the proposed two orders of abstraction. This kind of second order reflective measurement model "faithfully represents all the conceptual distinctions that a researcher believes as important and provides the most powerful means of testing and evaluating the construct" (Mackenzie, Podsakoff, & Jarvis, 2005, p. 715).

5.3.2.8.3 Justification based on theoretical consideration

Some researchers over the time have argued that PV is a multidimensional, complex, and evolving phenomenon, in which higher order dimensions of consumption value must be explored (Huang et al., 2019; Overby & Lee, 2006; Sanzes, 2006). Many scholars have linked other dimensions as a result of multidimensional nature of CPV and continuous efforts are encouraged to explore, conceptualise, and formulate such dimensions (Huang et al., 2019). Based on these recommendations, extended and new dimensions are proposed, while re-positioning of some dimensions as part of conceptualisation was conducted in the context of M-Commerce. Sub-dimensions were then encompassed in the proposed dimensions in accordance to the initial conceptualisation described in Section 2.11 of Chapter 2.

Utilitarian value is a well-established dimension of value in the literature. In the conventional market setting, it is defined as the value that a customer receives from the functionality of a product purchased (Babin et al., 1994). In online shopping, Overby & Lee (2006) defined utilitarian value as the overall measurement of functional benefits and sacrifices. Mathwick et al. (2001) proposed a similar concept for active source of extrinsic value for internet shopping. This concept was expanded by researchers by including components, such as price saving (Chen, 2005) and convenience (Jarvenpaa & Todd, 1997; Teo, 2001). In the online shopping context, task-specific use signifies purchase deliberation.

This value dimension focuses on the cognitive aspects of attitude, whereby consumers may opt for online shopping to save money, time, and effort (Grewal et al., 2003; Mathwick et al., 2001). Time conservation is the primary motivation that inspires internet shopping (Seiders, Berry, & Gresham, 2000; Szymanski & Hise, 2000).

Extending this to the context of M-Commerce, ubiquitous (anytime & anywhere) use of M-Commerce is an extended part of this sub-dimension (Huang et al., 2019). Consumers save energy, effort, and transportation cost by shopping online because they need not leave their homes. M-shopping is more convenient as consumers can stick to desktop to purchase products.

This present study positions further differentiation in utilitarian value in light of M-VAL, than other value dimensions, by adding the sub-dimension of information value. Mobile consumers' assessment of perceived benefits received from information provided by mobile retailer versus perceived cost of information search or perceived risk of a potential inappropriate decision based on misinformation by the app reflects information value derived from M-Commerce (Huang et al., 2019).

All in all, various modes, such as economic, product quality, time saving, convenience, and ample of choices, are part of this value dimension. In the same vein, this study incorporated aspect of information value that offers great utility in m-shopping. Therefore, higher order dimension of utilitarian value is formulated comprising of sub-dimensions of economic value, convenience value, and information value.

Interaction value is the second higher order dimension in the proposed scale. The literature focuses on value dimensions, such as hedonic and experiential values, which derive from consumers' interaction. When consumers interact, they gain experience and the corresponding experiential or hedonic value.

Overby and Lee (2006) defined hedonic value as an overall judgement of emotional benefits and sacrifices, such as entertainment, visual appeal, and interactivity, in online shopping context. Consumers' shopping experience is enriched by atmospherics in conventional shopping environment, including the use of appropriate colours, music, and aesthetics (Clark & Flaherty, 2005). Similarly, in the online shopping setting, atmospheric cues add to the hedonic value of consumers (Sarah et al., 2020; Overby & Lee, 2006). Empirical studies have verified that consumers are no longer looking exclusively for functional aspects while shopping online, but hedonic aspects have a crucial role (Childer et al., 2001; To, Liao & Lim, 2007). Although hedonic value has been broadly explored in the context of conventional market (Babin & Attaway, 2000),

it has only received importance in light of online shopping setting (Childers et al., 2001) and lacks investigation in the M-Commerce context. This definition of hedonic aspect is more related to emotional or enjoyment aspect, but quite obscure in PV from M-Commerce or mobile apps. Recent literature considers aspects, such as gamification and its impact on online shopping behaviour, which is an extension of the hedonic aspect in conventional and online shopping contexts. Besides, only emotional aspects cannot be part of the overall value from interaction, mainly because the interaction aspect is also related to factors apart from emotional aspects.

Next, the value obtained from consumer experience has been addressed in the vast literature in light of psychology (Hektner, Schmidt, & Csikszentmihaly, 2007) and is termed as experiential value. Experiential value has its roots in the stream of research related to Stimulus-Organism-Response (S-O-R) framework initiated by Mehrabian and Russell (1974) and later refined by Jacoby (2002). This approach revolves around emotive and cognitive aspects. Experiential value is defined as psychological benefits resulting from a consumer's interaction and the corresponding experience from the environment-related consumption assessable by the individual. In precise, this value is derived directly from the interplay of the consumer with product or service along with its environment. Nonetheless, this conceptualisation in the literature lacks investigation in the M-Commerce context, while concurrently limited to consumers' emotional and intellectual aspects (Chen 2009; Sherry & Joy 2003). Hence, this value dimension is characterised as emotional and mental pulling (Belk, Ger, & Askegaard, 2003).

This present study extends this conceptualisation as merely emotional and mental pulling aspects from hedonic and experiential value dimensions are not in its entirety when it comes to consumer interaction in light of M-Commerce. Interaction value is the consumer's evaluation of how well businesses in terms of service and frontline employees interact with consumers to create value and minimise sacrifices (Laperrie, 2000). As for PV from M-Commerce, interaction value is the evaluation of how well any digital platform or app enables quality interaction across and the costs required to achieve it. Thus, interaction value for M-VAL comprises of hedonic aspects that are contextualised as 'gamification' as sub-dimension, experiential aspect termed as 'visual'

as sub-dimension, and along with two sub-dimensions of ‘customisation value’ and ‘interface value’. Customisation and interface are part and functions of user interface that cannot be ignored while considering user interaction with mobile apps.

The trade-off between perceived benefits gained from usage of quality interface while m-shopping and perceived cost of erroneous interface or perceived risk from faulty interface is called interface value in M-Commerce. Customisation value denotes benefits consumers perceive from app through personalised shopping experience provided by the app, which in turn, reduces the perceived risk of selecting inapt products/services. This value is derived from users’ evaluation of interactive experience with an object or event, or with the media or an activity (Chiu et al., 2009). Higher order dimension of interaction value is composed of sub-dimensions of customisation, interface, visual, and gamification values.

Credibility value is the third higher order dimension added to the scale. According to Belanger, Hiller, and Smith (2002), consumer trust involves their beliefs towards products, brands, services, sales people, as well as the establishment where the products/services are bought and sold. Trust has garnered much attention in the marketing literature (Sirdeshmukh, Singh & Sabol, 2002). In the contexts of online and M-Commerce shopping, consumers need to verify certain aspects as shopping using electronic portals is prone to frauds and system errors. The literature depicts various risk factors in the context of online shopping, such as product risk, monetary risk, transaction risk, and privacy risk (Wai, Dastane, Johari, & Ismail, 2019).

Consumers’ overall assessment of the credibility of m-shopping by considering perceived trustworthiness against perceived security and privacy concerns is called credibility value. In light of M-Commerce, credibility value is the overall assessment of risk based on trust. Credibility of M-Commerce company, its reputation, brand, and familiarity are vital to develop trust among consumers. As such, credibility value can be broadly divided into system credibility and social credibility (Wai et al., 2019).

System credibility is about trustworthiness of a system or app as an interface that may or may not ensure transaction safety, transparency, privacy, and authenticity. Credible system ensures the highest security and privacy that generate trust and perception of low

risk among M-shoppers (Baganzi & Lau, 2017; Rezaei et al., 2018). Meanwhile, social credibility is about brand familiarity, social recommendations, social acceptance, etc. Repeated and well-known brands are well accepted in society and widely applied in social circles. M-Commerce brands or apps recommended by close friends and family members signify social credibility of apps (Kaatz et al., 2018; Tan & Ooi, 2018). Thus, higher order dimension of credibility value is composed of sub-dimensions of system and social credibility value.

5.3.2.9 Final model – Second Order Construct

The second order measurement model was formulated and its constructs are assessed in this section. Based on the recommendations given by Anderson and Gerbing (1982), the constructs were evaluated in terms of uni-dimensionality, reliability, and validity. The related constructs are three second order constructs of utilitarian value, interaction value, and credibility value.

The construct of utilitarian value has three sub-dimensions; information, economic, and convenience values. The interaction value construct has four sub-dimensions viz. interface, customisation, visual, and gamification values. Lastly, the credibility value construct contains two sub-dimensions of system credibility and social credibility. The sub-dimensions are reflective in nature.

The evaluation executed in this section verified the loading of each sub-dimension onto its corresponding higher order dimensions. Items of first order construct loaded on the respective construct for which they were developed and selected from the item pool. Most of the scale items were drawn from the literature and modified to suit the context of this study. Several items were developed as well via qualitative study. As the wording of the existing items had been modified and newly developed items were used, it is crucial to analyse both model fit and validity of the measurement model.

According to Kline (2005), two aspects must be considered while assessing the measurement model. First, an item should have 0.50 or more standardized loadings on the respective factor. Second, to avoid possible overlapping, the estimated correlations between constructs must be less than 0.85. Arnold and Reynolds (2003) asserted that

each item should reflect only one underlying construct with acceptable level of loading to ensure uni-dimensionality. Figure 5.6 illustrates the final measurement model.

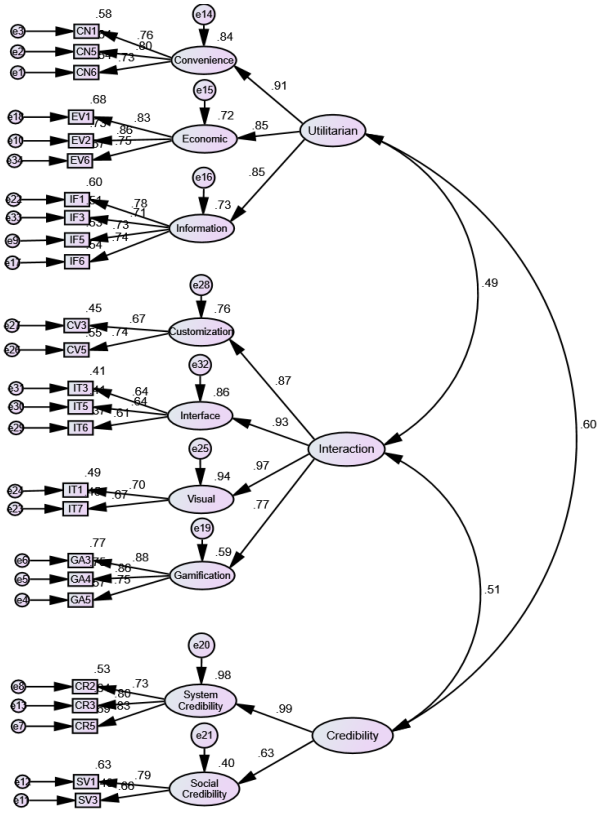


Figure 5.6: Final Measurement Model

Table 5.24: Evaluation of Fitness of a Measurement Model

Category	Index	Level of Acceptance	Index Value	Comments
Absolute Fit	Chi-Square	P-Values < 0.05	0.000	Supported
	RMSEA	< 0.08	0.055	Good Fit
	GFI	> 0.90	0.900	Acceptable
Incremental Fit	AGFI	> 0.80	0.877	Acceptable
	CFI	> 0.90	0.932	Acceptable
	TLI	> 0.90	0.922	Acceptable
	IFI	> 0.90	0.932	Acceptable
Parsimonious Fit	Chisq / df	< 3.0	2.570	Acceptable

Table 5.24 lists the measurement model output and the factor loadings of each construct. Evidently, the measurement model fits in an acceptable level with CMIN/df = 2.570,

RMSEA=0.055, CFI = 0.900, NFI = 0.932, and TLI = 0.922. The factor loading for each item exceeded 0.5 and the uni-dimensionality of each factor is supported as well.

5.3.2.9.1 Validity Assessment

This section determined the extend measures of same factors were correlated with each other through the examination of convergent validity. In adherence to Hair et al., (2010) and Fornell and Larcker (1981), three key criteria were applied to assess the convergent validity of the preliminary M-VAL scale. The first criterion is standardized loading estimates should be 0.5 or greater, and in ideal case, 0.7 or greater. Second, the value of AVE should be 0.5 or greater to signify adequate convergent validity. Third, CR should be 0.7 or more to indicate appropriate internal consistency. In the case of newly developed construct or items, value above 0.6 can be considered.

The values of CR and AVE were calculated for three dimensions based on the formula prescribed by Fornell and Larcker (1981). Table 5.25 presents the values of factor loading of each item, in which all factor loadings exceeded 0.632 and significant with p-values ($p<0.000$). All computed values of CR were above the recommended level of 0.6 (range: 0.808-0.936), indicating adequate convergence validity. The AVE values exceeded 0.5 and support the convergent validity of the scales. Overall, the analysis offers evidence for convergent validity of scale. Next, this study estimated the assessment of higher order scale parameters. Referring to the results tabulated in Table 5.25, CR and AVE values of all second order scales exceeded 0.80 and 0.50, respectively, thus providing the evidence of reliable higher order measures. Apparently, second order construct had a strong association with first order construct.

Table 5.25: Convergent Validity Assessment

Dimensions	Sub-dimensions	Factor Loading	CR (Minimum 0.6)	AVE (Minimum 0.5)
Utilitarian	Convenience	.914	0.906	0.763
	Economic	.851		
	Information	.853		
Interaction	Gamification	.770	0.936	0.788
	Visual	.968		
	Interface	.927		

	Customisation	.872		
Credibility	System Credibility	.988	0.808	0.688
	Social Credibility	.632		

The next step was to assess discriminant validity. Table 5.26 lists the corresponding results. As high correlation was noted among dimensions of M-VAL, it is crucial to assess the discriminant validity of all dimensions of M-VAL using several ways. First, square roots of AVE estimates are presented in Table 5.26, whereby estimates on the diagonal exceeded the corresponding correlation estimates of each pair of dimensions; displaying discriminant validity. Second, a constrained model was built, while a series of chi-square tests were conducted and compared with that of unconstrained model. In this case, discriminant validity was supported as the chi-square of unconstrained model was significantly lower than the chi-square of constrained model for each case. Lastly, no confidence interval for correlation between each pair of dimensions included the value of 1, signifying strong discriminant validity.

Table 5.26: Discriminant Validity Assessment

	CR	**AVE**	**MSV**	**MaxR(H)**	**Utilitarian**	**Interaction**	**Credibility**
Utilitarian	0.906	0.763	0.359	0.912	**0.873**		
Interaction	0.936	0.788	0.256	0.963	0.490***	**0.888**	
Credibility	0.808	0.688	0.359	0.977	0.599***	0.506***	**0.830**

Convergent validity is achieved as factor loadings of all items are more than 0.5 as criteria set in table 4.6. The measurement model appeared satisfactory as it had adequate reliability, as well as divergent, convergent, and discriminant validity. Thus, the model could be used for hypotheses testing and research model verification.

5.3.2.10 Structural Equation Modelling

The objective of this section is to address RQ3: 'How do M-VAL and its relevant dimensions impact customer engagement and repurchase intention?' The main hypotheses to investigate this RQ3 were formulated in Section 3.5 of Chapter 3. The

formulated hypotheses were tested by developing a structural model comprising of M-VAL dimensions, CE, and RI. The specific hypotheses related to the final M-VAL scale were not developed in Chapter 3, as the scale structure was finalised after purification and validation executed in this chapter. Therefore, this section starts with formulating the specific hypotheses based on the extant literature.

This also serves the purpose of nomological validity assessment as in this case, SEM was carried out with RI as DV and CE as mediator. Nomological validity denotes the degree to which the developed scale accurately predicts other concepts in a previously theoretically established model (Hair et al., 2010). This validity assessment determines if the relationships shown by this scale are in accordance with the earlier defined relationships or facts based on theory or prior research work. This present study deployed the two-stage approach proposed by Anderson and Gerbing (1988) to test the model. The first step was to test model fit and validity of the proposed measurement model, while the second step was to test the structural theory.

As the M-VAL scale was finalised through CFA, it is crucial to determine if this M-VAL scale is indeed a valid, reliable, and stable measurement instrument by executing predictive or nomological validity assessments. In this section, a model is proposed to examine the M-VAL scale within a nomological net that focused on M-VAL conceptual relationships. To provide such evidence, antecedents and consequences of conventionally established concept of CPV were employed.

5.3.2.10.1 Revised Hypotheses based on M-VAL Scale Dimensions

This section formulates specific hypotheses after considering the final M-VAL scale in addition to the hypotheses developed in Section 3.5 of Chapter 3. The revision is based on revised M-VAL dimension safter re-group as a result of CFA and this revision does not amend direction as well as fundamental nature of earlier formulated hypotheses. The earlier formulated H1 was M-VAL dimensions positively influence CE. As three main dimensions of M-VAL were identified as utilitarian value, interaction value, and credibility value; hypothesis H1 is expanded as H1a, H1b, and H1c, as follows.

First, utilitarian value in this study is composed of convenience, economic, and information values. Consumers are motivated to engage with mobile apps due to some aspects, such as time schedule, lifestyle decisions, gathering information, prioritising activities, and functionality – major utilitarian aspects (Bridges & Florsheim, 2008; Kim et al., 2013; Hamka et al., 2014). Utilitarian benefits or perception of the same engage consumers within the mobile environment, thus resulting in satisfaction and continuance intention (Guido, Amatulli, & Peluso, 2014). According to Bhave, Jain, and Roy (2013), location-based coupons, discounts, promo, sales, etc., and allied functional features motivate customers to use mobile apps.

This may vary based on the purpose of the application or utility, such as mobile payment for retail-oriented app and multi-touch function for game-oriented app. Some functions enhance the utility or usefulness of mobile apps, thus allowing consumers to engage with their devices/apps more frequently.

The content on mobile apps, information providers, and quality of such information about the products or services are the key reasons consumers use apps as well as engage with apps frequently (Kennedy-Eden & Gretzel, 2012; Nikou & Mezei, 2013). According to Lee and Benbasat (2004) quality of content or information which mobile apps deliver to consumer is key motivation to remain actively engaged with the application. Such quality of content relies on information format, comprehensiveness, and clarity; signifying how well consumer needs are met to enhance engagement with apps (Magrath & McCormick, 2013; Zhao & Balagué, 2015). Ubiquity and convenience related to time, location, and comfort to use mobile apps enable online shopping anytime and anywhere (Kim et al., 2013; Jaing et al., 2013).

H1a: Utilitarian value positively influences consumer engagement

Second, the interaction value dimension is composed of four sub-dimensions; interface, visual, customisation, and gamification values. Studies have highlighted that poor interface or outdated functions as the main factor that leads to rejection, deletion or un-installing of mobile apps (Deloitte, 2012; Eshet & Bouwman, 2015; Forrester, 2011). Inappropriate features or interface functions lead to poor usability. Technical properties of smart mobile devices, such as screen size, storage space, layout of screens, icons

used, and relevance of functions, are key aspects when consumers decide to engage with mobile apps (Islam & Bouwman, 2015). Innovative and smart interfaces that lead to ease of use and usefulness can influence consumers to engage with apps and affect their behaviour positively (Delone & Mclean, 2003; Park, 2009).

Customisation value, based on technology task fit theory, matches technological features with individual needs and task features. This leads to positive customisation impact on adoption (Kang et al., 2015; Wu & Wang, 2005), usage, patronage, and satisfaction of a technology (Larsen, 2019; Lin & Wang, 2012). Meanwhile, compatibility is the degree to which technological innovation is perceived as a factor that affects CE with mobile apps (Ozturk et al., 2016; Rogers, 2003). Apps that create a sense of compatibility with customer requirement or lifestyle are bound to receive increased psychological commitment (Fang, Li, & Prybutok, 2018; Purani, Kumar, & Sahadev 2019). Compatibility is linked to consumers' intrinsic enjoyment and this leads to enhanced engagement (Van Doorn et al., 2010). According to McCormick (2013), consumer-led interaction and engagement are greatly influenced by the ability of mobile apps to offer customised or personalised content/services.

Visual value, which is composed of attractiveness, design, and appeal aspects, is commonly included in taxonomies as the key factor of mobile apps with an impact on CE (Lee & Benbasat, 2004; Kennedy-Eden & Gretzel, 2012). Apart from its focus on usability of interface features, visual value invokes certain emotions and individual perception that affect CE level (Ayob et al., 2009). Such design or visual aspects may change based on the context or industry. For instance, entertainment apps may have higher requirements than educational apps. Such design or visual appeal contributes to usability of mobile apps. The correlation between design or visual-based benefits and CE, along with further usage of mobile apps, has been emphasised by scholars (see Eshet & Bouwman, 2015; Li & Yeh, 2010; Zhang & Adipat, 2005).

Gamification affects engagement with brands or retailers (Berger et al., 2017; Gatautis et al., 2016). Drawing a conclusion from the wider research work on brand engagement, features related to immersion and enjoyment affect interaction, while enjoyment-based gamification is positively linked with CE (Chang, 2013; Peters, Calvo, & Ryan, 2018).

Such affective aspects of immersion are enjoyment, joy, surprise, interest, fun, etc. Enjoyment offers good buying experience that further results in contentment (Hsiao et al., 2016; Venkatesh et al., 2012). On the contrary, if consumers are unable to find interest or fun, they would switch to an alternate option (Faiola, Newlon, Pfaff, & Smyslova., 2013). The literature depicts the positive impact of enjoyment on CE and RI (Lin et al., 2014; Xu et al., 2012, Yang et al., 2017).

In virtual setting, past studies shed light on the relevance of gamification in mobile apps for fostering engaged customers (Oghuma et al., 2016; Yang et al., 2017). Enjoyment in terms of entertainment and relaxation from the usage of apps on smartphone has an impact on CE (Dholakia et al., 2004; Verhagen et al., 2015). Such factors are termed as "hedonic gratification" (Xu et al., 2012) and "perceived playfulness" (Ahn et al., 2007). Mobile consumers would not find it interesting to use apps that do not appeal to their senses, thus limiting or disregarding interaction and involvement. Gamification makes usage of apps more interactive and fun, thus motivating app users to remain engaged with apps.

H1b: Interaction value positively influences consumer engagement

Third, the literature on traditional business setting emphasises on brand credibility (Delgado-Ballester & Munuera-Alemán, 2001; Mao, 2010), reputation (Lai, 2019), and image (Brunner, Stöcklin & Opwis, 2008; Lai, 2019) to ensure CE and loyalty. In light of marketing, trust generated by credibility is a critical factor to establish engagement and long-term relationship (Pennanen et al., 2007).

When it comes to virtual environment, several studies emphasised trust as a catalyst in generating CE (Hollebeek & Macky, 2019; Liu, Luo & Cao, 2018; Ofori et al., 2017). Customers would like to engage with retailers at minimum risks (Lu et al., 2016). According to Hallikainen and Laukkanen (2018), online buyers trust retailers with credible information that deliver promises made and trust, thus encouraging consumers to engage with such online retailers.

In the context of mobile apps, customers experiencing high-level credibility are likely to remain engaged in online shopping. According to Kim et al. (2017), CE in m-shopping

requires commitment and establishment of trust from apps, whereby such trust is generated through credibility. Another aspect related to credibility in virtual environment is the app or website that offers privacy, transparency, and authentic information; indirectly offering peace of mind to consumers. Customers will then feel happy and satisfied; hence resulting in more future engagement (Ng, 2013; Rohm et al., 2013).

Meanwhile, consumer's inability to trust a web portal or app is one of the main deterrents of online transactions (Rios & Riquelme, 2008), thus serving as a restricting factor for engaging with the retailers or brands. Lack of trust hinders consumers to engage, especially if such lack of trust originates from aspects such as privacy, security, and fraud (Gorriz, 2003). Online consumer literature depicts that consumers are concerned about use of personal data, which companies collect online, in which this concern restricts CE and online purchase (Brown & Muchira, 2004; Miyazaki & Fernandez, 2001).

In terms of social credibility; recommendation, influence, and acceptance from social circle have a significant impact on user behaviour in virtual context (Hsu & Lu, 2007; Straub, Keil, & Brenner, 1997; Venkatesh & Davis, 2000). Consumers may be influenced or impressed to use or remain engaged with a brand if their friends subscribe to the same brand. This aspect has been proven in the conventional business setting as behavioural intention determined by subjective norm (Fishbein & Ajzen, 1975). In light of m-shopping behaviour, the extend of social credibility on CE remains an integral issue to explore further. Consumers will be more likely to engage with M-Commerce retailers or apps, which are perceived as credible, trustworthy, and risk free. As such, privacy, transparency, and authenticity lead to credibility, which in turn, leads to engagement. Games with better accessibility and interactivity draw more consumers. Thus, the impact of perceived ease of use on intention for CE should be assessed.

H1c: Credibility value positively influences consumer engagement

Hypothesis H2 is retained as formulated earlier in sub-section 3.5.2 of Chapter 3. As this hypothesis is related to the impact of mediator on dependent variable, no change was

made to this hypothesis as only independent variables were revised at a later stage. Therefore, H2 is maintained as follows:

H2: Consumer engagement positively influences repurchase intention

In the context of mediation analysis, hypotheses H3 (i-x) were broadly formulated earlier in sub-sections 3.5.2 and 3.5.3 of Chapter 3 after weighing in the mediating role of CE on the relationship between M-VAL dimensions and RI. Nonetheless, after finalising the dimensions of M-VAL in sub-section 5.3.2.9, specific mediation hypotheses H3a, H3b, and H3c were formulated, as follows:

Customers who perceive or receive more benefits and less sacrifices tend to remain highly engaged in their purchase activity, which in turn, can foster an array of positive outcomes such as repurchase, recommendations, and loyalty (Lee et al., 2019; Parihar et al., 2019; Rather et al., 2019). Therefore, perception of value may positively affect CE, and promote RI as a result. This shows that CE may mediate the correlation between various benefits and RI; while the role of CE in this relationship is still vague in light of specific dimensions related to perceived value in M-Commerce context. Products or services are linked with longer term aspects of value, which can be summarised as customer lifetime value generated from active engagement with brands that further generates multiple relationship exchanges through RI (Alavijeh et al., 2018; Kim & Ko, 2012; Kumar & George, 2007). On the other hand, transaction benefits, which are functional in nature and real-time, or present benefits, with an impact on RI may or may not be mediated by CE. Based on the findings retrieved from conventional and e-commerce studies, the following hypothesis is formulated for further testing.

H3a: Consumer engagement mediates the relationships between utilitarian value and repurchase intention

The newly formed dimension of interaction value in the context of current scale development exercise is comprised of gamification, visual, interface, and customisation sub-dimensions. Notably, this dimension is made of several aspects, including hedonic, experiential, and interface values.

Positive relationship was identified between website cues and RI for online shopping (see Pee et al., 2018; Rather et al., 2019; Tang & Zhang, 2018), and further elaboration of such studies was extended by including CE as the mediator (Harmeling et al., 2017; Liu, Lee, Liu & Chen, 2018). Recent studies have highlighted some atmospheric cues embedded in the virtual environment that boost CE (Bilro et al., 2018; Demangeot & Broderick, 2016). Such atmospheric cues form perceived value for consumers in terms of visual, hedonic, and aesthetic related aspects, thus enhancing engagement from online shoppers and serving as a crucial mediator for the link between perceived value elements and RI.

Several studies in mobile app literature have emphasised on the impact of multiple dimensions, such as penalisation interactivity on CE and customer loyalty (see Alalwan, 2020). The recent study highlights the mediating role played by CE in associating interaction-related perceived benefits with loyalty in m-shopping context. Thus, the following is hypothesised.

H3b: Consumer engagement mediates the relationships between interaction value and repurchase intention

The dimension of credibility value in the context of current scale development study comprises of system-related credibility sub-dimensions (e.g., transparency, privacy, safety, etc.) and social-related credibility (e.g., reputation, recommendations, etc.).

Trust is a vital aspect generated from the perception of credibility. Studies have confirmed the mediating role of CE on the relationship between trust and RI (Trivedi & Yadav, 2020; Khoa, 2020). Since the credibility dimension is composed of aspects related to system and social credibility, the mediating role of CE in this regard appears to be vague. The literature evidenced CE as a mediator for relationships among aspects, such as trust, authenticity, risk, and RI. Tourism literature highlights the mediating role of CE on the link of place authenticity with customer trust and customer loyalty (Rather et al., 2019; Yen, Teng & Tzeng, 2020). The literature on conventional in-store commerce and e-commerce verifies the mediating effect of CE on the relationship of privacy with trust and RI (Shankar & Jebarajakirthy, 2019). Hence, the following hypothesis is proposed.

H3c: Consumer engagement mediates the relationships between credibility value and repurchase intention

5.3.2.10.2 Hypotheses Testing

Evidence of nomological validity is provided by a construct's possession of distinct consequence and mediator, which can be gathered by assessing theoretical relationships among constructs derived from the literature (Iacobucci et al., 1995). In assessing the nomological validity of M-VAL scale, SEM was used to first assess the impact of scale on RI. The literature on RI as CPV consequence is reviewed in sub-section 3.5.2 of the conceptual framework chapter. The seven items selected for this variable are well-established items in theory (Ho & Wang 2015; Jiménez & San-Martín, 2017). The items were related to ORI and adapted or contextualised for mobile RI.

Next, to assess the nomological validity of the M-VAL scale, a structural model was developed by including CE as a mediator for the linkages between M-VAL dimensions and RI. The literature on CE as CPV consequence and mediator is described in sub-section 3.5.1 of the conceptual framework chapter. The six items selected for this variable are established items in theory (Hollebeek et al., 2014; Rabbanee et al., 2019). These items, which are related to banking, online engagement, and brand engagement, were contextualised for mobile RI. Figure 5.7 displays the structural model.

The sub-dimensions for visual and customisation values were left with two items each after scale purification and validation. A factor with fewer than three items is generally unstable and less powerful; five or more items with strong loading and criteria of factor loading > 0.5 are desirable as they indicate a strong solid factor (Osborne & Costello, 2005). In developing and ultimately finalising the number of scale items to measure a construct, careful consideration is required in terms of how the construct is defined based on its broadness or narrowness (Bearden & Netemeyer, 1999). However, if some constructs are very narrowly defined, single-item measures may suffice (Bergkvist & Rossiter 2007; Drolet & Morrison 2001; Wanous, Reichers, & Hudy 1997). A factor with two variables is reliable when the variables are highly correlated with each other (r > .70), but fairly uncorrelated with other variables (Yong & Pearce, 2013). This justifies

the limitation of two items in the said sub-dimensions, which can be nullified citing strength of factor loading and internal consistency.

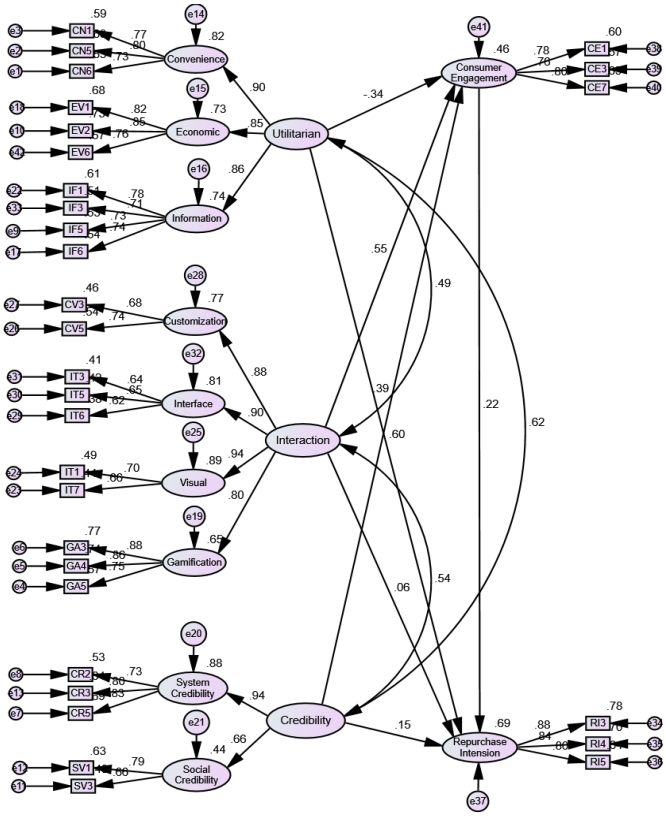


Figure 5.7: Structural Model to Assess the Mediating Impact of CE

Table 5.29: Evaluation of Fitness of Structural Model

Category	Index	Level of Acceptance	Index Value	Comments
Absolute Fit	Chi-Square	P-Values < 0.05	0.000	Supported
	RMSEA	< 0.08	0.054	Good Fit
	GFI	> 0.90	0.878	Acceptable
Incremental Fit	AGFI	> 0.80	0.854	Acceptable
	CFI	> 0.90	0.925	Acceptable
	TLI	> 0.90	0.915	Acceptable
	IFI	> 0.0	0.925	Acceptable
Parsimonious Fit	Chisq / df	< 3.0	2.493	Acceptable

Based on Table 5.29, a structural model was estimated with AMOS and resulted in good fit to the data ($\chi 2$ / df = 2.493; $p < 0.001$; CFI = 0.925; RMSEA = 0.054; TLI = 0.915). Next, the model was deployed to assess the role of CE as a mediator on the correlations between M-VAL dimensions and RI.

Table 5.30: Beta Value and Significance – Direct effect of M-Val dimensions on CE

Hypotheses No.	Dependent Variable		Independent Variable	Beta - Value	P-Value	Result
H1a	CE	<---	Utilitarian	-0.342	0.000	Rejected
H1b	CE	<---	Interaction	0.554	0.000	Accepted
H1c	CE	<---	Credibility	0.390	0.000	Accepted
H2	RI	<---	CE	0.220	0.000	
	RI	<---	Utilitarian	0.604	0.000	
	RI	<---	Interaction	0.065	0.272	
	RI	<---	Credibility	0.149	0.026	Accepted

The analysis and results pertaining to hypotheses H1a, H1b, H1c, and H2 are presented in the following. More details are tabulated in Table 5.30.

H1a: Utilitarian value positively influences consumer engagement

The hypothesis testing revealed that utilitarian value explained -34.20% of CE variation. Besides, the Beta value presented by the structural model was - 0.342 for the relationship between utilitarian value and CE at a significant level of $p < 0.01$. Therefore, this hypothesis is rejected.

H1b: Interaction value positively influences consumer engagement

Apparently, interaction value explained 55.4% of variation for the dependent variable. The Beta value displayed by the structural model was 0.554 for the link between interaction value and CE with a significant level of $p < 0.01$. Hence, this hypothesis is accepted.

H1c: Credibility value positively influences consumer engagement

It was found that credibility value explained 39.00% of CE variation. The Beta value achieved by the structural model was 0.390 for the correlation between credibility value and CE with a significant level of $p < 0.01$. Therefore, this hypothesis is accepted.

H2: Consumer engagement positively influences repurchase intention

Notably, CE explained 22.00% variation of RI. The Beta value attained by the structural model was 0.220 for the CE-RI link with significance level of $p < 0.01$. Hence, the hypothesis is accepted.

The mediation analysis and results related to hypotheses H3a, H3b, and H3c are discussed below. This present study adhered to the approach prescribed by Baron and Kenny (1986), which had four steps. The first step is assessment of path between independent and dependent variables without any mediator and such path must be significant. The second step refers to the path between independent variable and mediator that should be significant. The third step is to assess the path between mediator and dependent variable that must be significant as well. The last step is the assessment of path between independent and dependent variables after including a mediator and such path must be reduced to significant extent due to the addition of mediating variable. The analysis of mediating effect was conducted after obtaining results from the four steps stated above, while the decision on mediation was made in accordance to that recommended by previous scholars (see Awang, 2015; Reimann et al., 2010; Roy, 2019). Table 5.31 tabulates the results retrieved from mediation analysis.

Table 5.31: Beta Value and Significance – Mediating Effect of CE on Correlations between M-VAL Dimensions and RI

Hypothesis No.	Path	Direct effect (without CE)	Direct effect (with CE)	Standardised Indirect effect (via CE)	Results
H3a	Utilitarian -> CE -> RI	0.546 (p = 0.000)	0.604 (p = 0.000)	-0.075 (t = -1.924)	No mediation
H3b	Interaction -> CE -> RI	0.195 (p = 0.000)	0.065 (p = 0.267)	0.122 (t = 2.129)	Full Mediation
H3c	Credibility -> CE-> RI	0.210 (p = 0.000)	0.149 (p = 0.024)	0.086 (t = 1.808)	No mediation

H3a: Consumer engagement mediates the relationship between utilitarian value and repurchase intention

First, upon assessing the direct effect of utilitarian value on RI without CE (Beta value = 0.546, p = 0.000), the outcome revealed that utilitarian value displayed significantly positive effect on RI. Second, the impact of utilitarian value on CE (Beta value = -0.342, p = 0.000) appeared to be significant. Third, H2 is accepted with the discovery of significantly positive effect of CE on RI. Nevertheless, the fourth step of assessment for the path between utilitarian value and RI after incorporating CE, in which the condition of such path must be reduced to significant extent as a result of the addition of CE, was not satisfied as the direct effect of CE on RI (Beta value = 0.604, p = 0.000) did not reduce after embedding CE as the mediator. This signifies the absence of mediation. However, the hypothesis was further tested by adhering to the recommendation provided by Reimann et al. (2010) and Fazlul (2020), whereby the indirect effect of utilitarian value on RI via CE (Beta value = -0.75, t = -1.924) was insignificant. Besides, the indirect effect was (Beta value = -0.75) less than direct effect (Beta value = 0.604) and this resulted in the absence of mediation (Awang, 2015). Therefore, the hypothesis is rejected.

H3b: Consumer engagement mediates the relationship between interaction value and repurchase intention

The direct effect of interaction value on RI without CE was significant (Beta value = 0.195, p = 0.000). This implies that interaction value exerted a significantly positive impact on RI. Next, the direct effect of interaction value on CE (Beta value = 0.542, p = 0.000) was significant as well. Third, H2 is accepted with the significantly positive impact of CE on RI. Finally, the direct impact of interaction value on RI (Beta value = 0.065, p = 0.267) was reduced and insignificant; indicating the presence of mediating effect. The hypothesis was tested based on the recommendation given by Reimann et al. (2010) and Fazlul (2020), whereby the indirect effect of interaction value on RI via CE (Beta value = 0.122, t = 2.129) appeared to be significant. On top of that, the indirect

effect was (Beta value = 0.122) less than direct effect (Beta value = 0.065) and signified full mediation (Awang, 2005). Therefore, the hypothesis is accepted.

H3c: Consumer engagement mediates the relationship between credibility value and repurchase intention

For hypothesis H3c, first, the direct effect of credibility value on RI without CE was determined (Beta value = 0.210, p = 0.000). As a result, credibility value exerted a significantly positive impact on RI. Second, the effect of credibility value on CE was significant (Beta value = 0.390, p = 0.000). Third, H2 is accepted with a significantly positive impact of CE on RI. Next, the fourth step of assessment for the path between credibility value and RI after including CE, in which the condition of such path must be reduced to significant extent as a result of adding CE, was not satisfied as the direct effect on RI (Beta value = 0.149, p = 0.024) did reduce after embedding CE as the mediator and yielded a significant correlation. This implies the possibility of partial mediation. The hypothesis was further tested by following the recommendation by Reimann et al. (2010) and Roy, Rabbanee, Chaudhuri, and Menon (2019) whereby the indirect effect of credibility value on RI via CE (Beta value = -0.086, t = -1.808) was insignificant. Moreover, the indirect effect was (Beta value = -0.086) less than direct effect (Beta value = 0.149) and signified the absence of mediation (Awang, 2015). Therefore, the hypothesis is rejected.

The structural model with CE as a mediator and RI as a consequence of M-VAL revealed that CE did mediate the relationship between M-VAL dimension of interaction value and RI. The full mediation is ascribed to the significant impact of interaction value on RI. Hence, the scale fell well within the norms established in the literature. On the other hand, CE did not mediate the relationship between the remaining two M-VAL dimensions (credibility value and utility value) on RI. This denotes a contribution of this study as it highlights the mediation role of CE on the relationship between a specific M-VAL dimension and RI, instead of purporting a broader approach. This is elaborated in the next chapter.

5.4 Final M-VAL Scale Items

Upon adhering to a rigorous scale development procedure, the final M-VAL scale was developed. Table 5.31 lists the final items selected, along with their corresponding dimensions and sub-dimensions.

Table 5.32: Final M-VAL Scale Items

No		Code	Items
Utilitarian Value			
1	**Information Value***	IF1	The travel app provides in-depth information about travel products (e.g., hotel description, photos etc.).*
2		IF3	The travel app provides information in localised format (e.g., booking amount local currency, booking information in preferred language etc.).*
3		IF5	The travel app provides information on wide variety of travel products (e.g., many hotel options are listed to choose from).
4		IF6	The travel app displays latest (updated) information about travel products.*
5	**Convenience Value**	CN1	The travel app facilitates quick booking.*
6		CN5	The travel app facilitates booking whenever I need to do it.
7		CN6	The travel app is handy in respect to all locations.
8	**Economic Value**	EV1	I can book affordable deals while booking through this travel app.
9		EV2	The travel app offers discounts on booking.
10		EV6	Booking through the travel app is cheaper than the booking directly through hotel / airline company.*
Interaction Value			
11	**Interface Value***	IT3	The travel app provides seamless channel integration among website, app, across different devices.*
12		IT5	The travel app functions smoothly (e.g., without hiccups, slowdown, too many pop-ups).*
13		IT6	The travel app has innovative features such as the ability to work offline, feedback system, geo-localisation.*

14	**Visual Value**	IT7	The travel app uses refreshing colours in app pages.
15		IT1	The travel app has attractive interface design.
16	**Customisation Value***	CV3	The travel app offers personalised tips to me.*
17		CV5	The travel app facilitates booking procedure as per my preferences.*
18	**Gamification Value**	GA3	Travel booking through this travel app is fun.
19		GA4	Travel booking through this travel app is interesting.
20		GA5	The travel app offers entertaining experience while booking.
Credibility Value*			
21	**System Credibility Value***	CR2	The travel app displays its privacy policy.
22		CR3	Booking through the travel app is free from uncertainty.*
23		CR5	The travel app keeps my personal details safe.
24	**Social Credibility Value**	SV1	The travel app is widely used in my friend circle.
25		SV3	I have started using this travel app because of the recommendation from friends.

* - Newly developed items / sub-dimenstions / dimensions; rest are items adapted from existing literature.

5.5 Chapter Summary

This chapter reports a series of data analysis procedures, results, and interpretation of the scale development stages through Studies 1 and 2. As the outcome, this chapter concludes with fully developed, validated, and tested M-VAL scale with three main second order dimensions comprising of nine first order reflective sub-dimensions and 28 items. This multi-item, multidimensional, higher order M-VAL scale was subjected to nomological validity and the corresponding hypotheses were tested. The outcomes of pre-formulated hypotheses were retrieved via SEM. This chapter reports results related to RQs 1 to 3. The next chapter further discusses the aspects of M-VAL scale proposed in this study.

CHAPTER 6

DISCUSSION

6.1 Chapter Overview

This is the second last chapter of the thesis with the purpose of interpreting and discussing the findings presented in Chapter 5 (Studies 1 and 2, along with their sub-studies). This chapter compares the study outcomes with results reported in past studies to determine their agreement or otherwise. This chapter first discusses results related to M-VAL scale and its dimensions, and followed by results related to the impact of M-VAL scale on CE and RI. The results in this chapter are discussed in accordance to RQs and ROs outlined in Chapter 1. The chapter essentially provides a foundation for the study conclusion.

6.2 M-VAL Scale

This section discusses the results related to the final validated M-VAL scale and its structure. The research was based on the problem statement depicted in Section 1.3 of Chapter 1 and the research gap highlighted in Section 2.8 of Chapter 2. Key RQs were then developed, 'How can M-VAL be conceptualised?', 'How can M-VAL and its relevant dimensions be measured?', and 'What are the consequences of M-VAL?' The formulated RQs served as the foundation for ROs. The primary aims of this study are to develop a multidimensional M-VAL scale for M-Commerce and to assess the correlations of M-VAL dimensions with CE and RI. The goals are met and the results are discussed in this section.

In the context of RO 1, which was based on RQs 1 and 2, this thesis thus presents M-VAL scale conceptualisation and validation with dimensions of credibility value, utilitarian value, and interaction value; providing a strong conceptual foundation both on customer value in general (see Holbrook, 1999; Mathwick et al., 2001; Overby & Lee, 2006; Sheth, 1991) and on investigation of customer value specifically in M-Commerce (Babin et al., 1994; Sweeney & Soutar, 2001; Rintamäki et al., 2007). The literature describes the aspects of utilitarian, hedonic, and credibility elements, which are deployed as foundations in this study to conceptualise the M-VAL scale. Thus, the

proposed scale is drawn from established literature that has its roots in the information processing perspective and experiential view (Holbrook & Hirschman, 1982).

The M-VAL scale was conceptualised and operationalised in Studies 1 and 2. As a result of rigorous scale development procedure; a multi-item, multidimensional scale was developed to measure M-VAL. The M-VAL scale is composed of three main dimensions, nine sub-dimensions, and 25 items. The scale structure resulted in higher order, as well as complex in nature with second order formative constructs, namely utilitarian value, interaction value, and credibility value. These second order reflective constructs were correlated to each other but still distinct, thus the attainment of discriminant validity for the scale. The dimension of utilitarian value is made up of three sub-dimensions of information value, economic value, and convenience value. Interaction value is comprised of four sub-dimensions of interface value, customisation value, visual value, and gamification value. Lastly, credibility value has two sub-dimensions - system credibility value and social credibility value.

The statistical base and theoretical justification for this grouping is elaborated in sub-section 4.3.2.8 of Chapter 4. The results of CFA present the final measurement model of the scale with good fit in terms of model fit indices. Overall, the results presented in this chapter support the validity of the research model. The validity of the research model supports the arguments made by Bolton and Drew (1991), who proposed that "the customer's value function is more complex than a trade-off between a single overall quality construct and sacrifice" (p. 383-384).

The three main dimensions and the corresponding detailed results are discussed in the following.

6.2.1 Utilitarian Dimension

The conceptualised dimension of utilitarian value is comprised of information value, economic value, and convenience value. The results showed that information value had a factor loading of 0.853 with a significance level of $p = 0.000$. This factor loading is strong in nature and verifies information value as a part or a sub-dimension of second order construct of utilitarian value.

Similarly, the sub-dimensions of economic and convenience values demonstrated strong factor loading of 0.853 and 0.914 with a significance level of $p < 0.01$. In the context of online shopping, Overby and Lee (2006) defined utilitarian value as the overall measurement of functional benefits and sacrifices. Mathwick et al. (2001) presented a similar concept for active source of extrinsic value for internet shopping and the concept was further enhanced by adding several other components, such as price saving (Chen, 2005) and convenience (Jarvenpaa & Todd, 1997; Teo, 2001).

This present study further differentiated the utilitarian value in the context of PV from M-Commerce by incorporating the sub-dimension of information value. Mobile consumers' assessment of perceived benefits received from information provided by mobile retailer versus perceived cost of information search or perceived risk of a possible inapt decision based on misinformation by an app denotes information value derived from M-Commerce.

Apart from money saving, time saving, convenience, and ample of choices as part of this value dimension, this present study embedded information value that offers great utility via m-shopping. Therefore, the higher order dimension of utilitarian value is confirmed for the scale with economic value, convenience value, and information value sub-dimensions.

6.2.2 Interaction Dimension

The literature focuses on value dimensions, such as hedonic and experiential values, which are the outcomes of consumers' interaction. When consumers interact, they gain experience along with experiential or hedonic value. In the M-VAL scale, the dimension of interaction value is comprised of visual value, interface value, customisation value, and hedonic value.

The results showed that visual value had the strongest factor loading among others at 0.968 with a significance level of $p < 0.01$. This factor loading is strong in nature and confirms visual value as a part or a sub-dimension of second order construct of interaction value. Similarly, the sub-dimensions of gamification value demonstrated factor loading of 0.770 with a significance level of $p < 0.01$. Consumers' shopping

experience is enriched by atmospherics in the conventional shopping environment, which include use of appropriate colours, music, and aesthetics (Clark & Flaherty, 2005). Similarly, in the online shopping setting, hedonic value of consumer is part of atmospheric cues (Sarah et al., 2020; Overby & Lee, 2006). Several empirical studies have verified that consumers are no longer looking exclusively for functional aspects while shopping online, but hedonic aspects have a crucial role (Childer et al., 2001; To, Liao & Lim, 2007). Interaction value is the consumers' evaluation of how well businesses in terms of service and frontline employees interact with consumers to create value and minimise sacrifices (Laperrie, 2000). Similar for PV in M-Commerce, interaction value is the evaluation of how well any digital platform or app enables quality interaction across and costs needed to achieve it. Past studies have also investigated visual aspects, such as colour, layout, and aesthetics, as part of value perceived while using app (Hasan, 2016; Lim, 2015; Pham & Ahammad, 2017; Sreeram et al., 2017).

Finally, the sub-dimensions of interaction value and customisation value demonstrated strong factor loading of 0.920 and 0.872 with a significance level of $p < 0.01$, respectively. The trade-off between perceived benefits gained from usage of quality interface via m-shopping and perceived cost of erroneous interface or perceived risk from faulty interface denotes interface value derived from M-Commerce. Customisation value reflects benefits consumers perceived from app through personalised shopping experience provided by the app, which in turn, minimises the perceived risk of selecting in-appropriate products/services. This value is derived from users' evaluation of an interactive experience with an object or event, or with the media or an activity (Chiu et al., 2009). Hence, higher order dimension of interaction value is composed of customisation value, interface value, visual value, and gamification value sub-dimensions.

Interaction value for M-VAL comprises of hedonic aspects, which are contextualised as gamification sub-dimension, experiential aspect with visual sub-dimension, as well as two sub-dimensions of customisation and interface values. Customisation and interface

are part of user interface that cannot be ignored when users interact with mobile apps (Celik & Kocaman, 2017; Tseng et al., 2017).

6.2.3 Credibility Dimension

Lastly, a new conceptualised dimension of credibility value is comprised of system credibility value and social credibility value. The results showed that system credibility value had factor loading of 0.988 with a significance level of $p < 0.01$. This factor loading is strong in nature and confirms system credibility value as part of sub-dimension of second order construct of credibility value. The sub-dimension of social credibility value demonstrated factor loading of 0.632 with a significance level of $p < 0.01$. Credible system ensures the highest level of security and privacy that generates trust and perception of low-risk among M-shoppers (Baganzi & Lau, 2017; Rezaei et al., 2018). Repeated and well-known brands are well accepted in the society and are widely used in social circles. M-Commerce brands or apps recommended by close friends and family members reflect social credibility of apps (Kaatz et al., 2018; Tan & Ooi, 2018).

Overall, the results revealed that all the sub-dimensions had strong factor loading, thus validating the model. First order construct and respective item factor loading were already assessed during model fit procedure of the final measurement model. The scale structure had attained convergent, divergent, and discriminant validity. Composite reliability was also achieved for all the main dimensions. The results show that aspects related to credibility, utility, and interaction have a vital role in M-VAL formation.

6.3 Consequences of M-VAL Scale

This section discusses the results retrieved from the testing of M-VAL scale, which was executed while developing the structural model with CE as the mediator and RI as the DV. The nomological validity of M-VAL scale was tested as well to address RQ3: 'How do M-VAL and its relevant dimensions impact CE and RI?' The objective of this sub-section is to discuss the results of the hypotheses related to relationships among M-VAL, CE, and RI.

6.3.1 Consumer Engagement as a consequence

This sub-section discusses the results of hypotheses formulated in sub-section 5.3.2.10.1 of Chapter 5 after the M-VAL scale was finalised. The main hypothesis was developed in Section 3.5 of Chapter 3. The structure of M-VAL scale and its dimensions were neither confirmed nor validated at that point, but were finalised in sub-section 5.3.2.9 of Chapter 5. This enabled the development of specific hypotheses related to the final dimensions of M-VAL scale. The main hypothesis H1 was re-formulated as H1a, H1b, and H1c based on the three main dimensions of M-VAL.

H1a: Utilitarian value positively influences consumer engagement

The findings revealed the negative and direct impact of utilitarian value on CE. This finding is consistent with Bianchi and Andrews (2018), who reported that utility perception is negatively related to intention to engage, but RI in the context of social media. The findings are also in line with Jahn and Kunz (2012) that concluded utilitarian value of social media is unrelated to consumers' intention to engage with retail brands via social media. However, the findings are in contrast with some past studies, which emphasised that utilitarian value exerts positive impact on CE (see Bridges & Florsheim, 2008; Hamka et al., 2014; Kim et al., 2013).

This hypothesis is rejected due to the nature of utilitarian value. Consumers may gain value from apps and if the apps offer utility, consumers may repurchase from the apps instead of re-visiting the apps frequently. Utilitarian value affects RI, but it has no positive impact on CE in M-Commerce context.

H1b: Interaction value positively influences consumer engagement

A direct effect was noted between interaction value dimension and CE, which is in agreement with past studies on interaction and hedonic aspects positively affecting CE (see Harmeling et al., 2017; Liu, Lee, Liu & Chen, 2018). Similarly, Rishi et al. (2018) concluded that compatibility is the best predictor of Gen-Y engagement in social commerce (s-commerce). The results of this present study are in line with past studies for the positive effect of hedonic aspects on CE (see Lin et al., 2014; Xu et al., 2012, Yang et al., 2017).

H1c: Credibility value positively influences consumer engagement

The findings suggest that credibility value enhances CE with a strong link between both. This outcome is in line with several other studies in different contexts, such as online commerce and social commerce. According to Erkan and Evans (2016) and Lim et al. (2017), websites that are organised and look credible engage customers more than those that pose feeling of suspicion among consumers. Reliable and authentic platforms generate greater willingness to engage in s-commerce portals (Akter et al., 2019; Sivapalan & Jebarajakirthy, 2017). The outcome is in line with the fundamental step in business, which is delivering promises to ensure long term and highly engaged relationships.

Analysing the correlations of CE with customer perceived value and satisfaction has been undertaken by many researchers (see Mollen & Wilson, 2010; Hollebeek, 2013; Brodie et al., 2013), in which customer perceived value and satisfaction were reported as the consequences of CE. Turning to this present study, it establishes M-VAL as predictor of CE. In addition, a broad range of studies have established the link between various CPV dimensions and CE, such as hedonic dimensions (Holbrook, 1999; Marbach et al., 2016) and utilitarian dimensions (Groeger et al., 2016). For instance, Hollebeek (2013) uncovered the CPV-CE association in the context of online consumers and asserted that CE generates greater CPV, which then increases more for hedonic than for utilitarian brands. The literature depicts the relationship between second forms of CE with CPV. Rohrbeck et al. (2010) looked into customer collaboration and virtual customer integration that comprised of both utilitarian and hedonic values, including monetary incentives, product usage and personal needs, social recognition, entertainment, and curiosity. For instance, Shah (2004) assessed the need for products in three aspects, namely within community, outside community, and related to career concern. Factors within community include reputation, enjoyment status, and desire to improve; whereas factors outside community are identity, ideology, and learning. According to Füller et al. (2010), compensation, interest in innovation, help, and product improvement serve as motivation for consumers to engage in virtual projects related to product development.

6.3.2 Consumer Engagement as a mediator for the links between M-VAL dimensions and RI

These hypotheses were tested by formulating a structural model with second order reflective constructs of M-VAL as IVs, RI as DV, and CE as mediator. The hypotheses formulation is discussed in Section 3.4 and sub-section 5.3.2.10.1 of Chapters 3 and 5, respectively.

Before discussing the findings related to mediation hypotheses, it is crucial to discuss findings pertaining to H2 as this significant link between CE and RI enables testing for the mediating effect of CE on the relationship between M-VAL dimensions and RI.

H2:* C*onsumer engagement positively influences repurchase intention

This study found that CE with mobile apps had a significantly positive impact on RI. This outcome is in line with earlier theoretical insights provided by several authors (see Kim et al., 2013). By corroborating the effect of mobile CE on RI of mobile apps, this present study offers empirical support for redefining the role of CE in M-Commerce. Prior work has highlighted the impact of CE on RI (see Magrath & McCormick, 2013; Zhao & Balagué, 2015).

Several influential factors of CE have been uncovered by researchers, including customer involvement (Harrigan et al., 2017); product experience (Harmeling et al., 2017); customer trust and value in use (Roy et al., 2018); perceived quality; service convenience; and fairness (Roy et al., 2018). As CE creates a deeper and more meaningful relationship between customers and company, managing CE has gained strategic importance in firms striving to build long-term relationship with customers by promoting RI (Roy et al., 2018). According to Kim et al. (2013), CE in mobile technology and its omnipresent service lead to perceived value and satisfaction, which then lead to customer loyalty.

The general discussion related to mediation hypotheses H3a, H3b, and H3c are unfolded in the following. Before probing into mediation, specific discussion related to the impact of M-VAL dimensions on RI is presented. Such impact is determined prior to mediation

testing. As RI is also a consequence of M-VAL both through CE and/or without CE, discussion related to such findings is specified in each hypothesis discussion.

H3a: Consumer engagement mediates the relationship between utilitarian value and repurchase intention

The findings showed that utilitarian value displayed a significantly positive effect on RI. Several researchers claimed that CPV has a significant impact on loyalty, apart from boosting RI (Ozturk, et al., 2016; Wu et al., 2016; Zhang et al., 2017). According to Thakur (2016), some elements of CPV (e.g., economic and convenience aspects) have an impact on CE, which in turn, affects RI. This finding is supported by Kim et al. (2012) and Wu et al. (2014) who highlighted the function of utilitarian value as a strong predictor of RI. Past studies revealed that RI heavily relied on functional value (Pihlström, 2008), which is part of utilitarian value.

In light of the mediating effect of CE on the relationship between utilitarian dimension and RI, this has been investigated by several authors in both conventional in-store and e-commerce contexts. The findings are in contradictory at large as some reported such mediating impact as inconsistent mediation (Ang & Malhotra, 2016; Wang & Shen, 2017), while others termed it as a suppressor or an enhancer (Ludlow & Klein, 2014; MacKinnon, Krull, & Lockwood, 2000). On the other hand, customers perceiving or receiving more benefits tend to remain highly engaged, which in turn, foster an array of positive relationship outcomes, such as repurchase, recommendations, and loyalty (Lee et al., 2019; Parihar et al., 2019; Rather et al., 2019). Nonetheless, if such benefits are only functional in nature, then these are termed as current benefits instead of future benefits; thus making the role of CE obscure in its mediation function. Turning to this present study, CE did not mediate the relationship between utilitarian value and RI.

H3b: Consumer engagement mediates the relationship between interaction value and repurchase intention

The findings unravelled the significantly positive impact of interaction value on RI. This is in agreement with findings pertaining to the impact of hedonic value on RI (see Overby & Lee, 2006; Wen, Prybutok & Xu, 2011) and the impact of experiential value

on RI (see Chiu, Chang, Cheng & Fang, 2009; Overby & Lee, 2006) in the context of M-Commerce. Customisation has been proven as a predictor of RI in the context of m-shopping (Huang et al., 2019), in which the current findings are in agreement with these existing proven relationships.

In light of the mediating effect of CE, the findings of this present study are in agreement with those depicted in the extant literature. Lin et al. (2014) examined the mediating effect of CE on the link between hedonic aspects and RI, whereby CE displayed a mediating role. The relationship between experiential value and RI was also mediated by CE and satisfaction, as reported by Overby and Lee (2006) in the context of e-commerce. In other studies, CE had mediated the relationship of gamification and customisation aspects with RI (see Lin et al., 2014; Xu et al., 2012; Yang et al., 2017). The mediating role of CE in the relationship between interaction value dimension of M-VAL and RI is in agreement with the literature. As highlighted in this present study, the interaction dimension is composed of several aspects such as hedonic, experiential, customisation, and gamification values. The combined result of all these value aspects on RI was also mediated by CE.

H3c: Consumer engagement mediates the relationship between credibility value and repurchase intention

This finding related to this hypothesis is in agreement with that reported by Liang, Choi, and Joppe (2017) as similar aspects were tested for both online and m-shopping contexts (see Baganzi & Lau, 2017; Kim et al., 2017; Madlberger, 2017; Marriott & Williams, 2018a; Ng, 2016; Rezaei et al., 2018). System credibility has been tested by many researchers in terms of privacy (see Chopdar et al., 2018; Kaatz et al., 2018; Liébana-Cabanillas et al., 2018), security (see Tan & Ooi, 2018), etc.; in which the findings of this present study verify such relationships. The outcomes are also in line with aspects related to social credibility, which includes reputation, familiarity, and brand authenticity (Iménez & San-Martín, 2017; Pauzi et al., 2017; von Helversen et al., 2018).

The CE, which serves as a mediator for the trust-loyalty link, was identified by some studies (see Trivedi & Yadav, 2020; Khoa, 2020). In addition, studies also identified the mediating role of place authenticity on customer loyalty (Rather et al., 2019; Yen, Teng

& Tzeng, 2020). The findings of this present study deviate from these existing outcomes. As credibility dimensions combine aspects of system-related and social-related credibility, which differ from trust and authenticity, the present reported findings provide a novel approach in this regard.

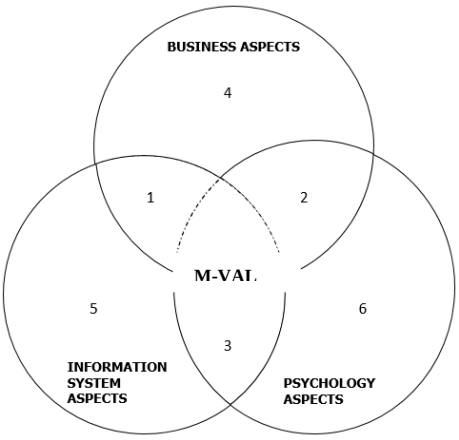
Overall, in terms of the direct impact on RI, utilitarian value exerted the strongest impact among the three M-VAL dimensions on RI. This finding is in agreement with prior work (see Bhat & Singh, 2018; Gan & Wang, 2017; Madan & Yadav, 2018; McKay-Nesbitt et al., 2018; Pappas et al., 2017; Pauzi et al., 2017; Shaw & Sergueeva, 2017; Sun et al., 2017; Yim et al., 2014) in M-Commerce context. Within the general CPV literature, the current finding is in synonym with Overby and Lee (2006) and Wen, Prybutok, and Xu (2011). Following utilitarian value, credibility value displayed the next strong impact on RI. Lastly, interaction value had the least impact among the three M-VAL dimensions on RI.

Overall, CE displayed a mediating effect on the relationship between interaction value and RI. This implies that if an app is more interactive through gamification, visual, personalisation, and interface aspects, it not only encourages CE, but such CE also mediates the relationship between those values and RI. Additionally, the utilitarian benefits of apps, being real-time or current benefits, have an impact on RI irrespective of CE. Similarly, credibility aspects of apps influence RI, but CE does not function as a mediator in this relationship. As CE creates a deeper and more meaningful relationship between customers and company, managing CE has gained strategic importance in firms striving to build long-term relationships with customers by generating RI (Roy et al., 2018). According to Kim et al. (2013), engagement in mobile technology and its omnipresent service lead to perceived value and satisfaction, which in turn, lead to future customer loyalty (Kim et al., 2013). As such, this present study establishes M-VAL as predictor of CE. The study outcomes establish CE as a consequence of M-VAL and a mediating factor between interaction value and RI.

All in all, the scale demonstrated nomological validity and functioned as normal when tested for well established relationships.

6.4 Interdisciplinary Nature of M-VAL

The conventional CPV exemplifies an interdisciplinary approach with most of the dimensions originating from economics and psychology backgrounds. However, this interdisciplinary nature is extended to multidisciplinary by incorporating sub-dimensions from various fields, such as information system and computer system engineering. The multidisciplinary nature extends to the business and psychology domains, thus leading to the M-VAL nature. Most of the models are dominated by the technical aspects that focus on improving or creating PV. More importantly, it is the general tone of researchers that CPV in the specific context of M-Commerce is formulated mainly by technical aspects, such as screen size and navigational flow. On the contrary, the dimensions were conceptualised and classified based on common elements. Meanwhile, M-VAL is dominated by business aspects equally as information system aspects. However, the influence of psychology segment cannot be ignored. The following presents the discipline-based classification of the conceptualised M-VAL sub-dimensions.



1	Information Value, Customisation Value
2	Social Credibility Value, Convenience Value
3	Gamification Value, System Credibility Value, Visual Value
4	Economic Value
5	Interface Value

6	Gamification Value

Figure 6.1: Classification of M-VAL Dimensions

Nevertheless, this is a broad classification, which indicates that the borders are thin considering that a particular dimension belongs to a particular discipline. Information value and customisation value are classified under the intersect of business and information system domains due to the strategic nature of business management. Accordingly, specific customisation is required, while the information system explains the type of information that is deemed appropriate to be displayed decided based on segment, markets, competitions, and how these values should be operationalised. On a similar note, social credibility value and convenience value are classified as the intersect of business and psychology aspects. It is crucial to understand that branding is a business management concept, while social influence and status quo fall under the psychology discipline. However, convenience value denotes psychological outcome despite being delivered by quality business services. Meanwhile, gamification value, credibility value, and visual value are placed as the perceptions at the intersect of information system and psychological aspects. In this case, the realisation of these values is psychological, while the operationalisation is related to information system. On another note, the business aspect is related to business management of online retail outlets that can cause the economic value to fall under this category due to its exclusivity. Similarly, interface value is dominated by the aspect of information system. In conclusion, M-VAL reflects the union of business, information system, and psychological domains, which are multidisciplinary and richer in dimensionality.

6.5 Chapter Summary

The chapter discusses findings on M-VAL scale, its structure, and its impact on CE and RI. It also presents the statistical findings by comparing the current findings with past findings in this domain. This chapter determines if the current findings are in agreement with past findings. The next chapter presents the conclusion of this study, along with its contributions, limitations, and future research avenues.

CHAPTER 7

CONCLUSION

7.1 Chapter Overview

The earlier chapter has discussed the main findings, their interpretations, and comparison with findings reported in past studies. Comments were made if the findings are in agreement with those of past studies or otherwise. This chapter, being the last chapter of the thesis, presents detailed conclusion of the research work. It highlights the theoretical, methodology, and managerial contributions of this study. It also describes the study limitations and the corresponding future research avenues.

7.2 Recapitulation of Major Findings

The problem statement and rational served as a foundation in this study to formulate three RQs and the corresponding four main ROs. In order to achieve the ROs and before formulating the methodology, detailed knowledge of the subject under study was grasped in the literature review section, followed by critical review of key theories and identification of key research gap. Next, the conceptual framework for the M-VAL scale was developed, along with a set of tentative hypotheses based on the proposed scale dimensions by reviewing theories related to CPV, CE, and RI. Research method, tools, and techniques used in the analysis were elaborated by portraying the rigorous scale development procedure and the corresponding stages to achieve the ROs.

The entire analysis is composed of Studies 1 and 2. Study 1 was divided into sub-studies A and B. Study 1 generated the item pool and finalised the initial scale items. In sub-study A, 106 items were identified via literature review, and this was followed by sub-study B where netnographic analysis was conducted to generate a comprehensive item pool that contained 58 items. Study 1 included expert judgement, item refinement, and re-wording, which led to the 47-item initial scale subjected to purification.

Moving on, Study 2 purified and validated the scale based on two sub-studies. Sub-study C purified the scale by conducting PCA, which resulted in 42-item purified scale with nine factors. At this stage, the scale structure was still not finalised. The scale was verified in sub-study D by conducting CFA, and followed by validity assessment. As a

result, second order reflective structure of the scale was identified. The final scale has three main dimensions, nine sub-dimensions, and 25 items. To achieve RO4, RI was selected as DV and CE as mediator when assessing the impact of M-VAL scale via structural model. It was found that all the three dimensions of M-VAL had a significantly positive effect on RI. Next, CE mediated the relationship between interaction value and RI. This mediation was full in nature. However, no mediation was noted between the other two dimensions of M-VAL and RI. Hence, the scale had achieved nomological validity.

7.3 Contributions

This present study offers several contributions to the field of CPV and implications for managers. The study contributions are broadly divided into theoretical, managerial, and methodology contributions.

7.3.1 Theoretical Contribution

Despite the growing body of research conducted in the field of CPV, the conceptualisation of PV from M-Commerce and scale development to measure the same remained unexplored. As such, this study contributes to the literature on the relevant matter by providing an extensive review of CPV literature, conceptualisation of M-VAL, as well as development of a multi-item, multidimensional, and higher order M-VAL scale. The M-VAL scale with three main dimensions, nine sub-dimensions, and 25 items revealed the complexity, multidimensional, and multidisciplinary nature of PV in M-Commerce context. The major contributions of this study on the nature of M-VAL and its dimensions are as follows:

The conceptualisation and scale development carried out in this study have enriched the theory of PV as nine sub-dimensions of M-VAL were developed and tested, namely information value, interface value, customisation value, gamification value, credibility value, social value, convenience value, economic value, and visual value. These sub-dimensions were tested specifically in the context of M-Commerce due to its unique characteristics, which distinguish it from in-store and desktop-based online setting. The sub-dimensions of information value, interface value, gamification value, system credibility value, social credibility value, and convenience value refer to newly

developed sub-dimensions absent in the current CPV literature. The terms of economic value, customisation value, and visual value sub-dimensions were adopted from the literature, thus extending the meaning of CPV by covering several other aspects of consumers' perceptions of value in the M-Commerce context.

Despite the relation of the current CPV literature with in-store businesses, the newly developed five sub-dimensions were not discussed. Some sub-dimensions developed in past studies within the context of E-Commerce, such as information and interface values, were partially discussed in light of information content (Montoya-Weiss et al., 2003) and informativeness (Broekhuizen, 2006). Several dimensions proposed in earlier studies are experiential value (Overby & Lee, 2006) and design value (Huang et al., 2019), which have been broadly covered in multiple contexts. However, the current conceptualisation encompassed several aspects related to each sub-dimension, which is compatible with the unique nature of M-Commerce. This is further explained through convenience value as an example. The meaning of convenience offered by M-Commerce consists of several aspects. To illustrate, it indicates the constant availability of the device to store data, increase in convenience, higher ability to contact customers regardless of time and place, as well as the choice for limited accessibility for particular person or time. The literature describes ubiquity as an aspect of convenience (Åkesson, 2007), while the current sub-dimensions include aspects of time saving and ease of use. As the aforementioned aspects differentiate M-Commerce from traditional setting and E-Commerce, the conceptual dimension of convenience value in this study is exclusively proposed for M-Commerce. While economic value may be the pioneer dimension of PV, as discussed by Ziethml (1988) in quality-price theory, the CPV models proposed by Monroe (1991) and Sanzes (1991) conceptualised it as monetary value, which was also a term used in M-Commerce context by Huang et al. (2019). These unique aspects of M-Commerce, such as flash sales, discount, and dynamic pricing, were emphasised in the current conceptualisation.

Another contribution of this study is the sub-dimension of credibility value. The aspect of risk was emphasised in the existing CPV literature (Sanchez, 2006; Moneoe, 1991); whereas guarantee value that covers guarantee policies, reliability, and security issues

was highlighted by Huang et al. (2019). The current conceptualisation considered the elements related to benefits and risks, including privacy, reliability, security, and risks related to non-delivery of products and product quality among others, followed by the suggestion of a new dimension compatible with M-Commerce.

In the case of gamification value, although the literature discusses the elements of hedonic value (Overby & Lee, 2006) and enjoyment (Broekhuizen, 2006), only a few aspects were highlighted, such as entertainment and playfulness. Notably, the current conceptualisation of M-Commerce presented a profound meaning and proposed a new sub-dimension of gamification value enriched with some aspects, including augmented reality, innovative app features, and video content among others, despite these are not part of the conventional hedonic value dimension. The CPV literature discusses emotional value (Sweeny & Soutar, 2001), comfort, and stress (Sanzes, 2006; Monroe, 1991), which is similar to the emotional value discussed in the context of E-Commerce (Carlson et al., 2017; Mohd-Any et al., 2015; Peng & Liang, 2013). Although the meaning for mobile marketing was extended by Huang et al. (2019), the same term of emotional value was adopted in their model. Turning to this present study, the conceptualisation highlighted a range of aspects related to perceived gratification and proposed a new dimension called gratification value, which is richer in its context than the conventional dimension of emotional value.

Design value was proposed by Huang et al. (2019) in the context of mobile marketing as an extension of aesthetics (Mathwick et al., 2001) and attractiveness (Lu & Lin, 2012) of website. Effective pictorial information in small screen size and quality product images is crucial due to the limited memory and computing powers. Meanwhile, the conceptualisation in this study considered the aforementioned aspects of design and proposed the dimension called visual value. Although the element of personalisation was proposed by Åkesson (2007) in the CPV literature, this element was limited to personalisation of services. Therefore, an extension of the CPV element was performed in this study, including the newly proposed sub-dimension of customisation value, which encompassed multiple aspects, including customisation of services, information, and recommendation system, among others.

Hence, one may conclude that the nine sub-dimensions outlined in this study differ from the dimensions listed in past models in several aspects. Thus, the gaps identified in previous studies have been addressed. Notably, this study presents the first conceptualisation of CPV exclusively for M-Commerce, which is considered an extensive aspect of the element that distinguishes M-Commerce from in-store and E-Commerce. Accordingly, the perception of value for this channel was analysed.

In terms of the consequences of M-VAL, this present study bridges the gap detected in the literature by confirming the correlations between mobile PV dimensions and CE, apart from looking into the role of CE as a mediator between M-VAL and RI. The outcome signified that utilitarian value did not affect CE positively, which contradicts past studies in the context of in-store commerce (see Bridges & Florsheim, 2008; Hamka et al., 2014; Kim et al., 2013), but in agreement with studies in the context of social commerce (Bianchi & Andrews, 2018; Jahn & Kunz, 2012). Another contribution of this study is the fact that CE mediated the relationship between interaction value and RI, which is in line with past studies within varied contexts, such as in-store commerce (see Lin et al., 2014; Xu et al., 2012; Yang et al., 2017). Lastly, this study contributes to the literature by identifying that CE had no mediating impact on the linkages utilitarian value, credibility value, and RI, which contradicted studies within the E-Commerce context (Harmeling et al., 2017; Liu, Lee, Liu & Chen, 2018).

7.3.2 Managerial Contribution

Importance of CPV is well recognised by both academics and managers, as CPV also influences choice of evaluating and selecting products that leads to future purchase decisions (Barlow & Maul, 2000; Gale, 1994; Woodruff & Gardial, 1996). Consumers are becoming more value conscious as they seek products with more benefits for less sacrifice. To meet the demands of value conscious customers, managers should understand what defines value of their products in the minds of their customers. This present study has expanded the value models for M-Commerce and identified important findings that may serve as guidance to M-Commerce managers and app developers in deciphering what derives value perceptions among M-Commerce consumers.

Accordingly, marketers need to comprehend the perception of value to devise viable strategies, while information system or mobile app developer has to understand the functional aspects in the process of developing the apps. Overall, it is critical to understand consumer perception of value, especially within the context of M-Commerce, as this can boost the M-Commerce businesses by drafting the right value proposition for the right type of consumers. This M-VAL scale may facilitate both marketers and business industry to realise what really M-shoppers perceive as value, which in turn, may result in skilful development and delivery of offerings via mobile apps or mobile platforms. This approach goes beyond the conventional emphasis on the benefits and sacrifices of CPV by considering the literature pertaining to the entire m-shopping process and experience comprehensively. Marketers should adopt a holistic approach when creating value for customers, particularly by ensuring that a wider mix of value-creating elements is identified, apart from integrating the identified vital aspects into the mobile platform through which the product is delivered. In light of managerial implications, this present study offers a viable framework to design the right mix of value proposition by bridging the gap between customer perceptions and company value propositions.

The proposed scale has three main dimensions with nine sub-dimensions. Apparently, utilitarian value displayed the strongest impact on RI among the three dimensions of M-VAL. Managers can enhance utility of their offerings by adding comprehensive information or wider choice through provision of discounts, more convenience, etc. Simultaneously, app developers should consider providing online shopping convenience with effective and efficient presentation of information.

Managers may consider the effect of each dimension and draft effective strategies based on the nature of M-Commerce business. For example, although utilitarian value displayed the strongest impact among the three dimensions on RI, the priority may change depending on the nature of business. As RI is triggered through utilitarian value, experienced customers can be reminded with messages that focus on the efforts of the company in providing more utilitarian value to repeat customers. Bateson (2000, p.138)

suggested "giving more choice to the consumer in the service encounter" as one alternative to improve their control perceptions.

The M-VAL scale dimensions may help managers to provide better value proposition. First-time buyers may have concern over credibility aspects of the app and managers can respond to them by communicating credibility value by the app. This is especially related to financial services, such as trading app or e-wallet. In this case, credibility aspects matter more than others and so value proposition of such apps can be dominated by credibility value. Similarly, for apparel shopping or gaming apps, interaction value is imminent. Managers may get clear insight of interaction value through its sub-dimensions and formulate value proposition suitable based on the nature of apps or offerings. Managers may improve their strategies using the dimensions embedded in the M-VAL scale based on various sector and consumer segments.

The results revealed that CE had an impact on RI and mediated the relationship between interaction value and RI. Managers should promote more CE and develop strategies to enhance RI. Interaction value in the context of M-Commerce can be better understood and managers can create online shopping environment full of fun and socially interactive to promote higher satisfaction feelings, higher value perceptions about the shopping experience, as well as higher intentions to return and recommend to others. Thus, managers of M-Commerce and app developers should spend considerable time designing shopping experiences that are perceived as fun, visually pleasant, relaxed, and enjoyment.

These findings imply that M-Commerce managers and app developers need to understand what their customers are looking for in their experiences. Segmenting the customer base can help identify the specific needs of the various consumer groups. For example, experienced customers may expect a different experience when compared to new customers. Apps need to be frequently updated and bugs (if any) must be removed for smooth functioning of apps. Innovative new features are also seen as of value by consumers, in which developers can integrate unique app features to distinguish the app from that of rivals. These can increase both satisfaction and value perceptions through the experience offered. Managers can consider these inputs in developing advertisements

and communication mix plan. Advertisement messages with inclusion of statements giving impression of utility, interaction, and credibility related values are effective to communicate clear value proposition that matches M-Commerce consumer perception.

7.3.3 Methodology Contribution

This study had adhered to rigorous scale development methodology prescribed by Churchill (1976) and Netmyer (2006). However, several limitations were weighed in in relation to scale development procedures depicted in the literature (see Morgado et al., 2017; Clark & Watson, 2016). Such limitations were particularly addressed and common errors highlighted in previous scale development researchers were avoided. Such errors included inappropriate/insufficient sample size (see Turker 2009; Zheng et al., 2010), absence of appropriate panel of experts (see Glynn, Santanasto, Simonsick, Boudreau, Beach, Schulz, & Newman, 2015; Gottlieb, Brown, & Ferrier, 2014), and removal of too many items at the stage of expert judging (see Flight, D'Souza & Allaway, 2011). For example, Pommer, Prins, van Ranst, Meijer, Van't Hul, Janssen, and Pop (2013) initially developed a 391-item scale, but ended up with a scale that only had 18 items.

Second, the study incorporated various amendments considering their suitability within the M-Commerce context. Generally, scale development studies recruit academics or PhD students for content and face validity purpose at the expert judging stage. Nonetheless, this present study had formulated a panel of experts composed of two academics, two app developers (industry experts), and a frequent app user. This had strengthened the scale development procedure based on recommendations given by Morgado et al. (2017) and Clark and Watson (2016).

Third, a different technique was used in the qualitative analysis by generating an item pool based on consumer inputs. Past studies have relied heavily on traditional qualitative analysis techniques, such as in-depth interviews or focus group interviews. Some studies have employed critical incident analysis. Meanwhile, this present study deployed netnography as the qualitative analysis method by downloading 3000 review discussion threads. The use of netnography provides a new paradigm in qualitative analysis of mobile consumers' perception. Lastly, this study had gathered a large sample of users of

mobile apps, particularly related to the travel industry. Such large sample was collected in two phases and focused on respondents from the Greater Klang Valley.

7.4 Limitations and Future Research Avenues

Any study is bound to have drawbacks and this present study is no exception. This section discusses the study limitations, which in turn, create opportunity for future research.

The conceptualisation used for this current research is based on the aspects of perceived benefits and perceived sacrifices from M-Commerce or mobile apps used for businesses. However, such benefits and sacrifices are grouped under a value dimension by Seth et al. (1991) in their theory of consumption values. Similar conceptualisation was operationalised by Overby and Lee (2006). Hence, future research work may adopt a different way of conceptualising value dimensions, besides presenting novel conceptualisation of value elements for M-Commerce to accommodate the existing elements differently.

Following the scale development process, items were generated and an initial item pool was developed via literature review. For scale development studies, the existing scales need to be reviewed and items need to be collected from such scales. However, dearth of literature on CPV related to M-Commerce and scales in this context pose a challenge of generating a comprehensive item pool. Thus, this study had adopted items from other CPV scales developed for online and conventional market contexts. The items were supplemented with review of articles related to benefits and sacrifices from M-Commerce. Future research may consider similar aspects from IT literature and enrich the item pool.

Netnography is a technique used to conduct qualitative analysis to generate items through extracting themes from review data. This is in addition to initial item pool to generated from literature review. As several benefits of netnography are cited over other traditional methods of qualitative analysis, it also poses some limitations. For example, reviews are posted for the particular time period. As perception evolves over time, old reviews are not of much utility considering the dynamic nature of CPV. On top of that,

several reviews are impulse, emotional, and bias. It is difficult to differentiate authentic review from bias ones. This challenge is similar to the challenge of bias in focused group interviews. Future research may consider generating specific reviews in the context of research by initiating online discussions by creating online forums with specific topic and for specific time period. By doing so, future researcher can generate reviews that are the latest and focused on the issue under study. In addition, reviews can be collected across different time periods, different locations, and across varying demographics. Future researchers should consider critical incident techniques and other real-time experimental data collection methods for qualitative studies.

In regard to quantitative study that comprises of two sets of data collection for EFA and CFA, the sample selection method deployed in this study was convenient sampling, where respondents were selected purposively and this pose concerns for the generalisability of the findings. Future studies can investigate or validate the scale across other samples. Data collected from the Greater Klang Valley region in Malaysia may further restrict transferability of the findings. As such, future research work may gather national data from Malaysia or test the scale in another country for further validation.

The survey conducted in this study was self-administered, in which the respondents might have exaggerated or recorded false response. Such invalid responses can mislead the findings and one of the solutions to overcome such issue is to collect larger data size. Although the sample size of this current quantitative study is sufficient, future researchers can collect more data to minimise the said errors. In terms of demographic aspect, most data were collected from working professionals from the 25-45 age group with more concentration of sample in the age range of 35 to 45. This study faces issues generalising its findings to young population, college students, etc. In addition, similar limitations can be discussed across other demographic aspects, such as race, income level, education level, etc.

Some drivers of CPV are well established in the literature and might affect M-VAL. Thus, it is crucial to adopt and contextualise such drivers for M-Commerce and test their impact on M-VAL. This aspect was excluded while testing nonomological validity of

the scale. Future research can test the impact of such drivers on M-VAL, such as consumer attitude, e-WOM, and customer relationship management.

M-VAL scale is developed for Business to Customer (B-to-C) context and is not suitable to measure perception of value in business to business (B-to-B) context as B-to-C and B-to-B are significant distinct from each other. Apps are used by consumers to make purchases and sellers to sell their products or services. The current scale does not encompass value perception by sellers when they use such apps to list their products. Some interesting outcomes can be generated by developing exclusive scale for business to business (B-to-B) context. This B-to B context is an important aspect that future researches may place focus upon.

The literature depicts the moderating impact of various constructs, including demographic attributes. Typically, age, gender, income, and education level moderate consumers' perception of value and it is important to test such moderating effects for M-VAL. Apart from the demographic aspects, other moderators are customer relationship management, e-WoM, digital marketing, etc. Future researchers can investigate such moderating aspects as these are excluded in this current research work.

Other factors also can mediate the CPV-RI correlation, including switching cost (Ghazali, Nguyen, Mutum, & Mohd-Any, 2016), customer satisfaction (Mouakket, 2015; Punyatoya et al., 2018; San-Martín et al., 2016), brand value (Barreda et al., 2016), WOM (Duarte et al., 2018), and e-loyalty (Tseng et al., 2017; Zheng et al., 2017). It is vital to understand how such constructs mediate correlations in the context of M-VAL. As for this study, only CE was assessed for its mediating effect. Hence, future research may explore the mediating effect of several other constructs.

There are several consequences of CPV and some are highlighted in the literature as shopping adoption (Akgül, 2018; Baganzi & Lau, 2017; Chen, 2013), e-satisfaction (lcántara-Pilar et al., 2018; Fan et al., 2013; Gao & Bai, 2014), and e-impulse buying (Akram et al., 2018; Liu et al., 2013). As for this present study, only CE and RI were selected as the consequences. Future research work may select various other constructs and identify consequences of M-VAL in the specific context of M-Commerce.

The items in M-VAL scale were contextualised for travel apps and were tested empirically in Malaysia. Future research can contextualise this scale for other apps, such as apparel, electronic goods, and retail, by collecting national data. Future researchers can also test the scale in other countries to validate its generalizability. Comparative studies may be conducted by collecting data from two countries or continents.

The scale has three main dimensions, nine sub-dimensions, and 25 items with second order reflective structure. This multi-item, multidimensional and higher order scale structure is complex and broad in terms of the number of items. In order to have a precise scale, it should be shorter and simpler. Future research may focus on shortening this M-VAL scale with reduced number of simplified dimensions and fewer items. Future research can also focus on the sub-scales of this M-VAL scale. This suggests a separate scale of utilitarian value only in the context of M-Commerce. Such sub-scales can deepen the theoretical foundation of each dimension and sub-dimension.

Lastly, most of the phases of this research work were conducted prior to the Coronavirus Disease 2019 (COVID-19) pandemic. Although the first phase of data collection was performed during the lockdown period, most consumers did not perceive additional aspects of value, which were developed as a result of COVID-19 pandemic as well as lockdown enforced as a result of the pandemic. Recent researches revealed that some factors, such as online content, panic buying, and green value (Chang & Meyerhoefer, 2020; Donthu & Gustafsson, 2020; Bhatti, Akram, Basit & Khan, 2020), could affect M-Commerce. Hence, future research can explore and investigate the impact of such factors on M-VAL. There is a scope to identify, alter, and modify the scale structure, apart from suggesting new drivers and consequences of M-VAL after considering such novel aspects.

7.5 Conclusion

This study had thoroughly reviewed major works in the field of CPV for synthesis purpose. An extensive review was executed to determine the various aspects of the emerging empirical research work in the past. Besides, exponential growth was noted in studies related to M-Commerce since the last five years, whereby various aspects were

focused upon including the antecedents and the consequences of M-VAL. However, due to the absence of a robust modelling of the same conceptual clarity, this present study prescribes the appropriate connotations for all conceptualised dimensions and sub-dimensions.

Following the conceptualisation, rigorous scale development procedure was adhered to and M-VAL scale is presented for the first time. Only a handful of studies have assessed the dimensions of CPV in the context of M-Commerce. To the best of the researcher's knowledge, there is no scale to measure M-VAL. This present study proposes multi-item, multidimensional, and higher-order M-VAL scale to measure consumers' perception from M-Commerce. Notably, this study has been the first to review CPV in the context of mobile consumers by using the M-VAL scale. Therefore, the first RO, which is to develop a multidimensional M-VAL scale for M-Commerce, is achieved.

Referring to the conceptualisation, the dimensionality of M-VAL is richer and wider than the traditional CPV. With the classification of such dimensions, a clearer picture of the multidisciplinary nature was developed. In this case, the scale enables the provision of an alternative theoretical foundation for future research despite its sole focus on the foundations of TAM, Seth, UTAT 1, and UTAT 11 in past studies.

The study validated and tested the scale, along with its impact on CE and RI, thus contributing to the key consequences of M-VAL. Both the impact and intensity of each M-VAL dimension on CE are highlighted. The mediating role of CE on the link of M-VAL dimensions with RI was assessed. Thus, the second objective, which is to investigate the relationships among M-VAL, CE, and RI, is achieved.

This chapter ends with detailed conclusion, contributions, implications, drawbacks, and future research avenues. This study has unravelled the dimensions of M-VAL through rigorous scale development steps. This chapter presents the theoretical and managerial implications of the M-VAL scale. Essentially, this study has advanced theory development in light of PV and extended the CPV concept in M-Commerce.

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APPENDIX I

INVITATION - EXPERT JUDGING SURVEY

Dear Panel Member,

The purpose of this survey is to identify consumers' perception of benefits from shopping in their mobile handset using mobile compatible travel app(s). The survey also intends to identify how such benefit perception factors affect consumers' engagement with travel app(s) and repeat purchases using the same travel app(s). The project is being conducted by Omkar Prabhakar Dastane under supervision of Dr. Goi Chai lee of Curtin Malaysia and Dr. Fazlul Rabbanee of Curtin Australia. The results of this research project will be used by him to obtain a Doctor of Philosophy at Curtin University.

Guidelines:

This small exercise will take 30 minutes of your time and the purpose is to assess content and Face validity of the proposed scale multi-item scale. The definitions of all nine dimensions of 'Perceived Value of Mobile Commerce (M-VAL)' are provided in a separate file. A number of items related to these dimensions are also included in same file. Please rate 1 to 5 for each item. You may rate 5 if you think the item is best match for the proposed dimension. Your additional suggestions on simplification items if any are welcome and general suggestions can be provided in the 'common section'. Items with best scores will be retained for the scale for further statistical purification.

Please feel free to contact if you need any further clarification: omkar.dastane@postgrad.curtin.edu.my.

Thank You,

APPENDIX II

QUESTIONNAIRE USED FOR SUB-STUDY C

☐ I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

Travel apps are mobile apps used for booking of travel products such as flights, hotels, tour packages, vacation package suggestions, etc. Some of the examples of popular travel apps are Agoda, Booking.com, TripAdvisor, etc. Following are some statements to understand your usage of mobile travel apps. Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option.

Which travel app(s) have you personally used for your travel booking(s) in the past? In case of more than one, you can tick more than one:

□ TripAdvisor □ Booking.com □ Agoda □ Traveloka

□ Expedia □ Trivago □ Airbnb □ AirAsia

□ Any Other? Please mention_____

You use a travel app for booking which of the following service(s)? Please mark as many as relevant:

□ Flight booking □ Hotel booking □ Car rental □ Maps

□ Destination information □ Booking of sightseeing

□ Any Other? Please mention_____

Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option.

Travel App Usage	**StronglyDisagree** **Strongly Agree**

I frequently use mobile apps for shopping various products	1	2	3	4	5	6	7
I feel easy to use travel apps for my travel bookings	1	2	3	4	5	6	7
I use mobile travel app(s) for all of my travel bookings	1	2	3	4	5	6	7
I frequently browse travel app (s) through mobile phone	1	2	3	4	5	6	7
I prefer to use smartphone-based apps more than desktop-based website.	1	2	3	4	5	6	7
I will use travel apps more frequently in future	1	2	3	4	5	6	7

Please name the travel app which you prefer to use for most of your bookings?

_____

You may think of your experiences related to the booking of your travel through this mobile travel app (we mention it 'the travel app' in the statements below). The following statements are related to various facets of benefits you perceive from shopping in your mobile handset using mobile compatible travel apps. Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option (1 for strongly disagree to 7 for strongly agree).

Information Value		**StronglyDisagree Strongly Agree**						
IF1	The travel app provides in-depth information about travel products (e.g., hotel description, photos etc.)	1	2	3	4	5	6	7
IF2	The travel app provides authentic information about travel products	1	2	3	4	5	6	7
IF3	The travel app provides information in localised format (e.g., booking amount local currency, booking information in preferred language etc.)	1	2	3	4	5	6	7
IF4	The travel app provides information on wide variety of	1	2	3	4	5	6	7

	travel products (e.g., many hotel options are listed to choose from)							
IF6	The travel app displays latest (updated) information about travel products	1	2	3	4	5	6	7
Interface Value		**Strongly Disagree to Strongly Agree**						
IT1	The travel app has attractive interface design	1	2	3	4	5	6	7
IT2	The travel app provides easy navigation	1	2	3	4	5	6	7
IT3	The travel app provides seamless channel integration among website, app, across different devices.	1	2	3	4	5	6	7
IT4	The travel app can be connected with my social media (e.g., Facebook, Instagram)	1	2	3	4	5	6	7
IT5	The travel app functions smoothly (e.g., without hiccups, slowdown, too many pop-ups)	1	2	3	4	5	6	7
IT6	The travel app has innovative features such as the ability to work offline, feedback system, geo-localization	1	2	3	4	5	6	7
IT7	The travel app uses refreshing colours in app pages	1	2	3	4	5	6	7
IT8	The travel app has simplicity of layout	1	2	3	4	5	6	7
Customization Value		**Strongly Disagree to Strongly Agree**						
CV 1	I receive travel recommendations from the travel app	1	2	3	4	5	6	7
CV 2	The travel app offers booking services as per my requirements	1	2	3	4	5	6	7
CV 3	The travel app offers personalized tips to me	1	2	3	4	5	6	7
CV 4	The travel app facilitates sorting of the information as per my priorities	1	2	3	4	5	6	7
CV 5	The travel app facilitates booking procedure as per my preferences	1	2	3	4	5	6	7
Gamification Value		**Strongly Disagree to Strongly Agree**						

GA 1	My experience of using this travel app is enjoyable	1	2	3	4	5	6	7
GA 2	The travel app offers exciting features	1	2	3	4	5	6	7
GA 3	Travel booking through this travel app is fun	1	2	3	4	5	6	7
GA 4	Travel booking through this travel app is interesting	1	2	3	4	5	6	7
GA 5	The travel app offers entertaining experience while booking	1	2	3	4	5	6	7
GR 2	Booking through the travel app makes me feel good							
GR 3	I have a good time browsing through the travel app	1	2	3	4	5	6	7
Credibility Value		**Strongly Disagree to Strongly Agree**						
CR 1	My transactions through the travel app are safe	1	2	3	4	5	6	7
CR 2	The travel app displays its privacy policy	1	2	3	4	5	6	7
CR 3	Booking through the travel app is free from uncertainty	1	2	3	4	5	6	7
CR 4	The travel app provides transparency in all transactions	1	2	3	4	5	6	7
CR 5	The travel app keeps my personal details safe	1	2	3	4	5	6	7
CR 6	The travel app has a good reputation	1	2	3	4	5	6	7
CR 7	The brand of this travel app is familiar to me	1	2	3	4	5	6	7
CR	The travel app belongs to a well-known company	1	2	3	4	5	6	7

8								
Social Value		**Strongly Disagree to Strongly Agree**						
SV 1	The travel app is widely used in my friend circle	1	2	3	4	5	6	7
SV 2	Booking through the travel app offers me a social recognition	1	2	3	4	5	6	7
SV 3	I have started using this travel app because of the recommendation from friends	1	2	3	4	5	6	7
Convenience Value		**Strongly Disagree to Strongly Agree**						
CN 1	The travel app facilitates quick booking	1	2	3	4	5	6	7
CN 2	The travel app facilitates booking from wherever I am	1	2	3	4	5	6	7
CN 3	The travel app facilitates quick exit once booking is done	1	2	3	4	5	6	7
CN 4	The travel app offers multiple payment options (e.g., credit card, online banking etc.)	1	2	3	4	5	6	7
CN 5	The travel app facilitates booking whenever I need to do it	1	2	3	4	5	6	7
CB 6	The travel app is handy in respect to all locations	1	2	3	4	5	6	7
CN 10	The travel app can be accessed 24hours/7 days	1	2	3	4	5	6	7
Economic Value		**Strongly Disagree to Strongly Agree**						
EV 1	I can book affordable deals while booking through this travel app	1	2	3	4	5	6	7
EV 2	The travel app offers discounts on bookings	1	2	3	4	5	6	7
EV	The travel app offers benefits for referring a friend	1	2	3	4	5	6	7

3								
EV 4	Booking through the travel app is cheaper than the booking directly through hotel / airline company	1	2	3	4	5	6	7

Which of the following age group you belong to?

□ Below 25 □ 25 to 30 □ 31 to 35 □ 36 to 40 □ 41 to 45 □ 46 and above

Please select your gender

□ Male □ Female

Please select your current highest education acquired

□ Primary School □ Secondary School □ Certificate/ Diploma □ Bachelor Degree

□ Masters □ Doctorate □ Professional certificate, eg CPA, CLP etc

Please select your income range (in Malaysian Ringgit)

□ 2499 and below □ 2500 to 4999 □ 5000 to 7499 □ 7500 to 9999 □ 10,000 and above

Please select your race

□ Malay □ Chinese □ Indian □ Others

Thank you for your valuable time and inputs!

APPENDIX III

QUESTIONNAIRE USED FOR SUB-STUDY D

☐ I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

Travel apps are mobile apps used for booking of travel products such as flights, hotels, tour packages, vacation package suggestions, etc. Some of the examples of popular travel apps are Agoda, Booking.com, TripAdvisor, etc. Following are some statements to understand your usage of mobile travel apps. Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option.

Which travel app(s) have you personally used for your travel booking(s) in the past? In case of more than one, you can tick more than one:

□ TripAdvisor □ Booking.com □ Agoda □ Traveloka

□ Expedia □ Trivago □ Airbnb □ AirAsia

□ Any Other? Please mention_____

You use a travel app for booking which of the following service(s)? Please mark as many as relevant:

□ Flight booking □ Hotel booking □ Car rental □ Maps

□ Destination information □ Booking of sightseeing

□ Any Other? Please mention_____

Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option.

Travel App Usage	**StronglyDisagree** **Strongly Agree**

I frequently use mobile apps for shopping various products	1	2	3	4	5	6	7
I feel easy to use travel apps for my travel bookings	1	2	3	4	5	6	7
I use mobile travel app(s) for all of my travel bookings	1	2	3	4	5	6	7
I frequently browse travel app (s) through mobile phone	1	2	3	4	5	6	7
I prefer to use smartphone-based apps more than desktop-based website.	1	2	3	4	5	6	7
I will use travel apps more frequently in future	1	2	3	4	5	6	7

Please name the travel app which you prefer to use for most of your bookings?

_____

You may think of your experiences related to the booking of your travel through this mobile travel app (we mention it 'the travel app' in the statements below). The following statements are related to various facets of benefits you perceive from shopping in your mobile handset using mobile compatible travel apps. Please indicate the extent of your agreement with each of the following statements by choosing the appropriate option (1 for strongly disagree to 7 for strongly agree).

Information Value		**StronglyDisagree Strongly Agree**						
IF1	The travel app provides in-depth information about travel products (e.g., hotel description, photos etc.)	1	2	3	4	5	6	7
IF2	The travel app provides authentic information about travel products	1	2	3	4	5	6	7
IF3	The travel app provides information in localised format (e.g., booking amount local currency, booking information in preferred language etc.)	1	2	3	4	5	6	7
IF4	The travel app provides information on wide variety of	1	2	3	4	5	6	7

	travel products (e.g., many hotel options are listed to choose from)							
IF6	The travel app displays latest (updated) information about travel products	1	2	3	4	5	6	7
Interface Value		**Strongly Disagree to Strongly Agree**						
IT1	The travel app has attractive interface design	1	2	3	4	5	6	7
IT2	The travel app provides easy navigation	1	2	3	4	5	6	7
IT3	The travel app provides seamless channel integration among website, app, across different devices.	1	2	3	4	5	6	7
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IT5	The travel app functions smoothly (e.g., without hiccups, slowdown, too many pop-ups)	1	2	3	4	5	6	7
IT6	The travel app has innovative features such as the ability to work offline, feedback system, geo-localization	1	2	3	4	5	6	7
IT7	The travel app uses refreshing colours in app pages	1	2	3	4	5	6	7
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Customization Value		**Strongly Disagree to Strongly Agree**						
CV1	I receive travel recommendations from the travel app	1	2	3	4	5	6	7
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Gamification Value		**Strongly Disagree to Strongly Agree**						
GA1	My experience of using this travel app is enjoyable	1	2	3	4	5	6	7
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GA3	Travel booking through this travel app is fun	1	2	3	4	5	6	7
GA4	Travel booking through this travel app is interesting	1	2	3	4	5	6	7
GA5	The travel app offers entertaining experience while booking	1	2	3	4	5	6	7
GR2	Booking through the travel app makes me feel good							
GR3	I have a good time browsing through the travel app	1	2	3	4	5	6	7
Credibility Value		**Strongly Disagree to Strongly Agree**						
CR1	My transactions through the travel app are safe	1	2	3	4	5	6	7
CR2	The travel app displays its privacy policy	1	2	3	4	5	6	7
CR3	Booking through the travel app is free from uncertainty	1	2	3	4	5	6	7
CR4	The travel app provides transparency in all transactions	1	2	3	4	5	6	7
CR5	The travel app keeps my personal details safe	1	2	3	4	5	6	7
CR6	The travel app has a good reputation	1	2	3	4	5	6	7
CR7	The brand of this travel app is familiar to me	1	2	3	4	5	6	7
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Social Value		**Strongly Disagree to Strongly Agree**						
SV1	The travel app is widely used in my friend circle	1	2	3	4	5	6	7
SV2	Booking through the travel app offers me a social recognition	1	2	3	4	5	6	7
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CB6	The travel app is handy in respect to all locations	1	2	3	4	5	6	7
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EV1	I can book affordable deals while booking through this travel app	1	2	3	4	5	6	7
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EV3	The travel app offers benefits for referring a friend	1	2	3	4	5	6	7
EV4	Booking through the travel app is cheaper than the booking directly through hotel / airline company	1	2	3	4	5	6	7

The following statements related your benefit perception to your engagement with travel apps. Please indicate the extent of your agreement with each statement by choosing the appropriate option based on the context of your engagement with travel apps.

Consumer Engagement		**Strongly Disagree to Strongly Agree**						
CE1	I track updates through this app regularly	1	2	3	4	5	6	7
CE3	I spend a lot of time browsing this app as compared to other similar travel apps	1	2	3	4	5	6	7
CE5	I browse this app to read reviews posted by others	1	2	3	4	5	6	7
CE6	I post reviews about my travel experiences on this app	1	2	3	4	5	6	7
CE7	I regularly check travel app to learn about new travel packages	1	2	3	4	5	6	7

The following statements relate your perception of benefit to your repeat bookings using the same app. Please indicate the extent of your agreement with each statement by choosing the appropriate option based on the context of repeat purchases using the same travel app**.**

Re-purchase Intention	**Strongly Disagree to**

		Strongly Agree						
RI1	I intend to continue my future travel bookings through this app	1	2	3	4	5	6	7
RI2	I desire to repeat purchases from this app when opportunity arises	1	2	3	4	5	6	7
RI3	I will keep using this app for my travel bookings as regularly as I do now	1	2	3	4	5	6	7
RI4	I would love to use this app continuously for future bookings	1	2	3	4	5	6	7
RI5	I think of myself as loyal user of this app	1	2	3	4	5	6	7

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