The Adoption of Advanced Mobile Commerce Services by Individuals: Investigating the Impact of the Interaction between the Consumer and the Mobile Service Provider

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Abstract

This research investigates the impact of the interaction between the consumer and mobile service provider on the adoption of advanced mobile commerce services by existing consumers of mobile technology. These factors include: 1) Perceived Relationship Quality (PRQ), which is the consumer's evaluation of the quality of his/her relationship with the mobile service provider, and 2) Perceived Value of the Adoption Incentive (PVI), which is the consumer's evaluation of the value of incentives that are offered by the service provider to entice him/her to adopt the mobile service. The influence of these factors on consumer attitudes and intentions towards adopting mobile commerce services is studied and compared with three other well-known adoption factors including perceived usefulness, ease of use and the subjective norm.

This study was undertaken in three parts. Firstly, a conceptual study was conducted to investigate and analyse the existing literature on consumer adoption of mobile commerce services. This phase started with a general review of the existing studies using a novel model: the Entities-Interactions Framework, EIF. The EIF explains adoption behaviour in terms of interactions between the consumer and the other entities including the mobile service, the service provider and the social system. This framework was used to analyse the extent to which important adoption factors have been covered by past research and therefore identify the research questions. The conceptual study resulted in the development of a research model and relevant hypotheses.

Secondly, a large-scale questionnaire survey was conducted to test the research model and the proposed hypotheses. This part of the research helped give a broad picture of the influence of consumer-service provider factors on consumer adoption of mobile commerce services. Thirdly, face-to-face interviews with mobile phones users were conducted in order to validate the survey results and provide an understanding of the mechanisms that control the impact of the investigated factors. The research found that PRQ and PVI have an important influence on the attitude and intention of existing mobile phone users towards accepting and using advanced mobile commerce services. Furthermore, the research found that these newly introduced factors are more influential on consumer adoption perceptions than other well-established factors.

The study enriches our understanding of technology adoption by individuals because it explains why an existing user of a technology, such as mobile technology, will or will not adopt advanced versions of that technology. The findings affirm that in the context of communication technologies, which are interactive by nature, understanding the interaction between consumers and service providers is a key to understanding the progressive adoption by consumers of advanced forms of these technologies. The thesis provides practitioners (particularly mobile service providers) with a better understanding of the impact and implication of their interaction with consumers on consumers' acceptance and use of mobile services. The study emphasises the importance of incorporating this understanding throughout the mobile service provision process, starting from the conceptualisation of the service to the actual provision of the service to the market. The study also offers a novel comprehension of how to view each mobile service offer as a consequence of the previous offer and a precedent of the next in order to enhance consumer adoption of mobile service in the short and long runs.

Declaration

This is to certify that:

(i) the thesis comprises only my original work towards the PhD;

(ii) due acknowledgement has been made in the text to all other material used; and

(iii) the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Yousuf Salim AlHinai

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Chapter 1.

Introduction and Overview

1.1. Research Motivation

The emergence of mobile telephony devices with increasingly powerful internet capabilities has created the foundation for a new market: mobile commerce services. Using mobile commerce services, consumers can send or receive emails, download music, shop for goods and services, play interactive online games, trade stocks, purchase tickets, find friends and conduct financial and banking transactions and so on. Mobile commerce services vary from basic services (such as Short Messaging Services (SMS) and Multimedia Messaging Services (MMS)) to more advanced services such as mobile banking, mobile stock trading and mobile selling and buying. Providers of mobile commerce services promote the convenience of mobile services with the claim that they allow mobile phone users to carry out tasks anywhere and anytime.

There have been continuous improvements in the capabilities of mobile technologies such as mobile devices (e.g. colour displays, screen resolutions, functionality, etc.) and mobile networks (e.g. bandwidth and reliability). Mobile technologies have changed from simple voice transmitting and receiving devices to a total computing and communication solution that can accommodate voice, text, pictures, video and other types of multimedia. These features have transformed mobile phones from expensive functional tools to general-purpose accessories that are used by all people of all classes for a vast array of purposes. Indeed, the International Telecommunication Union (ITU) recently announced that at the end of 2008, approximately 61 per cent of the world population (ITU 2008) subscribed to some form of mobile communication service, with many people (particularly in Europe) operating multiple subscriptions simultaneously.

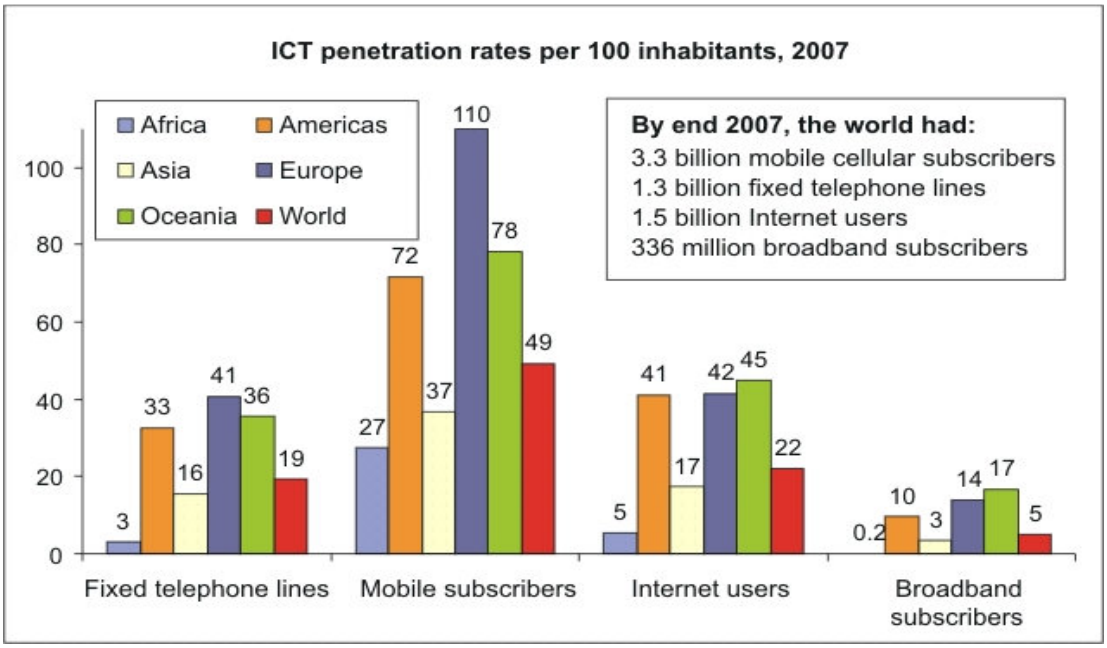


Figure 1.1 World ICT penetration rates per 100 inhabitants

(Source: ITU (2007))

As Figure 1.1 shows, in 2007 there were 49 mobile phone users among every 100 people around the world, compared to 19 fixed phone users, 22 landline internet subscribers and five broadband users. These statistics also show that globally there are at least 3.3 billion mobile phone subscribers compared to 1.3 billion fixed phone users, 1.5 billion internet users and 336 million subscribers. This tremendous growth of mobile phone usage has already brought new changes, opportunities and challenges to the way we live, interact with others and conduct business around the globe.

Improvements in mobile technologies, increased affordability and availability of that technology, and the rapid widespread growth of mobile phone use worldwide have facilitated the emergence of, and strong growth in, several successful mobile commerce markets, notably Korea and Japan (Sharma 2007). However, the lack of strong market growth elsewhere indicates that improved functionality, affordability, and availability does not automatically lead to a widespread adoption of mobile commerce services (Bruner and Kumar 2005; Constantiou et al. 2006). Indeed, numerous studies show that mobile services have so far failed to attract the hearts and minds of existing mobile

phone consumers; and that revenues have fallen far short of expectations (Blechar et al. 2006; Carlsson et al. 2006b; Mylonopoulos and Sideris 2006; Urbaczewski et al. 2003).

Developing an understanding of how to encourage adoption of these services by existing mobile phone users is important to the industry if it is to avoid the mistakes that underlie some of the expensive failures that have occurred since 2000. For example, uptake of the Wireless Application Protocol (WAP) platform was dismal (Constantinou et al. 2007), and Mobile TV and Video services markets, which were anticipated to become major revenue generators for mobile commerce stakeholders (Kharif 2004), look like they will suffer a similarly disappointing fate (Ankeny 2008). Current projections indicate that the mobile services industry will face even more difficult times in 2009 and beyond (Ankeny 2008).

The study of technology adoption is a complex field due to the large number of factors involved (Chiasson and Lovato 2001; Cooper and Zmud 1990; Munro et al. 1997). In the mobile commerce services adoption field many consumer adoption factors are closely related to participants in the m-commerce value chain (which I refer to as *entities*). Using an innovative Entities-Interactions Framework (EIF), I identify the consumer, the mobile commerce service, the service provider, and the surrounding social system as the main entities at the consumer level of mobile services provision. I then argue that the individual characteristics of these entities and the interactions among them are the source of many important adoption factors. The existing literature is then reviewed and discussed systematically using the EIF, which allows the evaluation of the extent of coverage for important adoption factors, as discussed in Chapter 2.

This study shows that the existing literature on mobile commerce adoption by individuals generally emphasises factors that relate to the consumer, the service and/or the social systems, and the interactions between these entities. The service providers, as one of the main entities in the value chain, and their interaction with the consumer, have not been well addressed. For example, past research recognises the importance of technical characteristics of the service (availability and reliability), social network effects, and demographic characteristics of the consumer. The interaction between the consumer and his/her social system and how this influences the consumer adoption and

use of mobile services have also been investigated. However, the factors that relate to the *interaction* between the service provider and the consumer (the giver and the receiver of the service) have largely been overlooked.

This study, therefore, investigates the impact of relational factors that relate to the interaction between the consumer and the mobile service provider on the acceptance and adoption of advanced mobile services by existing mobile phone users. In particular, two key consumer-service provider factors were identified: 1) Perceived Relationship Quality (PRQ), which is the consumer evaluation of the quality of his/her relationship with the mobile service provider, and 2) Perceived Value of the Adoption Incentive (PVI), which is the consumer evaluation of the incentives that are offered by the mobile service provider to entice him/her to adopt the mobile commerce service.

1.2. Research Questions

By investigating the impact of these two relational factors, PRQ and PVI, and comparing their impact with other well-known adoption factors, this thesis addresses the following research questions:

1. What is the importance of the interaction between the consumer and the mobile service provider in the adoption of advanced mobile commerce services where the consumer is an existing user of mobile technology?
2. How do relational factors influence the decision of an existing user of a mobile communication technology to adopt advanced mobile commerce services?

To answer these research questions, I study the impact of PRQ and PVI as two key relational factors on the adoption of advanced mobile commerce services by existing users of mobile phones and compare their impact with that from three other well-known adoption factors (Perceived Usefulness, Perceived Ease of Use, and Subjective Norm). I do this by building a research model of mobile adoption, incorporating the consumer-service provider key factors, consumer-service key factors, and consumer-social key factors and then propose a number of hypotheses for further empirical studies.

Studying the impact of the relational exchange between the consumer and the mobile service provider achieves two aims. First, it improves our understanding of the factors that influence the adoption of advanced mobile commerce services by existing users of mobile technology. This helps mobile service providers devise strategies that consider the relational nature of the interaction with consumers, which will help increase the adoption rate of mobile commerce services among the existing users of mobile phones. Second, it enriches our understanding of the adoption process and traditional technology adoption theories by investigating the effect of relational factors on the progressive adoption of advanced, multi-purpose m-commerce services by existing users of mobile technology. This helps address the more general Information Systems (IS) question: *why does an existing user of a technology adopt more advanced forms of that technology*? Tackling this topic in the context of mobile commerce services helps suggest new directions to expand traditional adoption theories beyond their original scope.

1.3. Overview of Research Model and Theory

To better understand the impact of the set of factors that relate to the interaction between the consumer and the service provider (PRQ and PVI) and comparing their impact to other known factors, the research model includes two more sets of adoption factors, including those that relate the consumer to the mobile commerce service (Perceived Usefulness and Perceived Ease of Use) and those that relate the consumer to the social system that the consumer is part of and interacts with (Subjective Norm). The three sets of factors, therefore, are *consumer-service perceptions*, *consumer-service provider perceptions* and *consumer-social perceptions*. The impact of these three sets of factors on consumer attitude (ATT) and intention (INT) towards the adoption of mobile commerce services is examined and compared.

In the mobile commerce adoption literature review (presented in the next chapter), the consumer-service provider perceptions are identified as the main focus of this research. The consumer-service provider factors are factors that relate to consumer perceptions regarding the mobile service provider, its offers and products and they way it deals with

its customers. As mentioned in the previous section of this chapter, the research model includes two consumer-service provider factors: PRQ and PVI.

The theoretical linkages between PRQ and consumer attitude and intention to adopt, between PVI and attitude and intention, and between PRQ and PVI are based on the Social Exchange Theory (SET) (Homans 1958), as discussed in more detail in Chapter 3. In short, the theory argues that human relationships and exchanges with others are generally formed via the use of subjective cost-benefit analysis. In other words, if a person finds that the subjective benefits of engaging in an exchange (or relationship) with another party are greater than the subjective costs, he/she will invest resources into the continuity and success of the exchange.

The consumer adoption of a mobile service signifies exchange(s) with the service provider that involve(s) trusting the service provider with personal information such as credit details, as well as receiving the service as promised, being able to solve problems, and so on. Considering these aspects of the consumer-service provider exchanges in mobile commerce services provision, the SET subjective cost-benefit analysis proposition provides bases for the importance of the consumer evaluation of the relationship with the service provider (PRQ) and the consumer perception of the value of incentives provided by the service provider (PVI) as important factors that influence consumer adoption.

The PRQ and PVI perceptions and their impact on consumer attitude and intention to adopt mobile services are newly introduced to the mobile commerce adoption literature through this study. Therefore, in order to understand the extent of the influence that these factors have on mobile services adoption, it is important to compare their effect with more well-established adoption factors that are known and supported in traditional adoption studies. Therefore, in addition to PRQ and PVI (consumer-service provider factors) the research model in this study also includes consumer-service factors and consumer-social factors from traditional adoption research. Including these established adoption perceptions serves two purposes: 1) to re-validate and re-examine these factors in the context of mobile commerce services, which will add more insights to what has

been already established, and 2) to use them as benchmarks for measuring the effect of the newly introduced factors.

Consumer-service factors are consumer perceptions that relate to the various aspects of the mobile service being adopted and its characteristics and features. As described in the literature review (Chapter 2), this group of factors are the most frequently investigated variables in the existing literature on mobile commerce adoption. From this set of perceptions, the research model includes Perceived Usefulness and Perceived Ease of Use as two important technology adoption factors that were proposed by the Technology Acceptance Model (Davis 1989) and have received profound empirical support in a large number of studies in different contexts (Agarwal and Prasad 1999; Davis et al. 1989; Hu et al. 1999; Taylor and Todd 1995b; Venkatesh and Davis 2000a; Venkatesh and Morris 2000b; Venkatesh et al. 2003). Perceived Usefulness is defined as "the degree to which a person believes that using a certain system would enhance his or her job performance" (Davis, 1989, p. 320). Perceived Ease of Use (PEOU) is defined as "the degree to which a person believes that using a certain system would be free of effort" (Davis, 1989, p. 320).

On the other hand, consumer-social factors are consumer perceptions that link the consumer or adopter to the social system of people that the consumer interacts with. The Subjective Norm (SN) variable is a consumer-social factor that originates from the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975). The Subjective Norm is a factor that relates to the consumer perception regarding the pressure from his/her social network (family, friends, peers, etc) to perform or not to perform the behaviour under consideration. This factor therefore relates to the influence that individuals have on each other's opinions, judgments and decisions. In addition to being a well-founded and supported adoption factor in traditional adoption studies (e.g., Venkatesh et al. 2000b; Venkatesh et al. 2003), the inclusion of SN is also based on the fact that mobile commerce services are usually used by individuals in and around social contexts. Therefore, the consumer attitude and intention toward mobile services adoption are normally influenced by the opinions of other people, like family and friends, whose views are considered important by the consumer.

Therefore, using the Social Exchange Theory, the Technology Acceptance Model and the Theory of Reasoned Action as theoretical justifications, the research model in this thesis investigates the impact of five adoption factors on consumer attitude (ATT) and intention (INT) toward the adoption of mobile services. These five factors are: PRQ and PVI as two consumer-service provider perceptions, Perceived Usefulness and Perceived Ease of Use of the mobile service as two consumer-service perceptions, and Subjective Norm (SN) as a consumer-social perception. The research model and the proposed hypotheses are discussed in more detail in Chapter 3.

1.4. Overview of Research Design and Method

To investigate the impact of the adoption factors in the research model (PRQ, PVI, PU, PEOU and SN) on the consumer attitude and intention toward the adoption of mobile services, two empirical studies were staged: a quantitative study and a qualitative study.

The first study involved conducting a large-scale online questionnaire of mobile phone users in order to test the research model and confirm or disconfirm the proposed hypotheses. This empirical study was mainly directed to answer the first research question:

1. What is the importance of the interaction between the consumer and the mobile service provider in the adoption of advanced mobile commerce services where the consumer is an existing user of mobile technology?

With the exception of the PVI variable, the measurement scales for all the other variables in the research model were adapted from previous studies (as described in Chapter 5). For the PVI, a new scale was developed using a comprehensive step-by-step process that involved various scale development practices (e.g. card sorting) and more than 30 face-to-face interviews with potential survey respondents (the full details of which are described in Chapter 6).

This research focused on the population of mobile phone users in Australia in order to measure the influence of various factors on their attitude and intention toward adopting mobile commerce services. Australia is a suitable context for conducting this study

because of the widespread use of mobile phones. It has a penetration rate that currently exceeds 100 per cent (Johnson 2005), and this rate is expected to reach up to 109.3 per cent by 2010 (Federation 2008). However, like in many other markets, advanced mobile commerce services are still struggling to penetrate through the Australian market and attract mobile phone consumers (Ankeny 2008). To collect the required data, a sample population was obtained from the World Mobile Internet Survey (WMIS) 2006 mailing list which was created as a result of an international research consortium of academics and industry researchers from over ten countries (Oh et al. 2008). The consortium has conducted an annual survey on the trends and use of mobile data services worldwide every year since 2002. The mailing list contains more than 6,128 Australian mobile phone users who have indicated their consent to participate in future studies involving the use of mobile phones.

Using the WMIS mailing list, a total of 800 responses were received (a response rate of 17 per cent from a base of 4,820 respondents who received email invitations), leading to a total of 626 useful responses that were used in the data analysis. To analyse the questionnaire data, examine the research model and test the hypotheses, a variety of analytic techniques and tools were used. SPSS (Version 15 for Windows) software was used to organise the data and run preliminary descriptive analyses. The examination of the research model and the hypotheses testing were performed using the Structural Equation Modelling (SEM) technique using Partial Least Squares (PLS) via SmartPLS (Beta, Version 2.0) software (Ringle et al. 2005).

The insights gained from the quantitative study were then used towards designing the second data collection stage in the form of qualitative face-to-face interviews with mobile phone users. This qualitative study aimed to re-examine and validate the research model and the theory using a different technique than the questionnaire. This allowed me to assess the validity of both the proposed theory and the questionnaire results. In addition, the interviews helped enrich the quantitative data that were collected using the questionnaire with more contextual descriptions of the mechanisms underlying the different effects and hypotheses. Therefore, this qualitative study aimed to enrich the answers to the first research question, but also to answer the second research question, which aims to better understand the dynamics of the impact of the

relational factors (PRQ and PVI) on the adoption of advanced mobile services by existing mobile technology users. For this round of data collection, six semi-structured face-to-face interviews with mobile phone users were conducted.

1.5. Overview of the Main Findings and Results

In brief, this study suggests that in order to better understand mobile adoption and usage by consumers, it is important to understand factors that relate to the main entities involved (the consumers, service provider, the mobile service and the social context) and the interactions between the consumers and the other entities. With the consumer as the focus, this research identifies that the consumer-service provider interaction, which potentially has a significant impact on adoption, has largely been ignored. The research model in this study provides new insights into the way mobile services adoption is studied and offers mobile service providers a better understanding of what can be done to improve the adoption of the mobile services they offer.

In relation to the first research question, the results of the quantitative and qualitative studies (Chapters 8 and 9) demonstrate the significant impact of the newly introduced consumer-service provider factors: Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI). In addition, the other two sets of factors, including consumer-service (Perceived Usefulness and Perceived Ease of Use) and consumer-social (Subjective Norm), retained their significant and well-established influence on consumer adoption of mobile commerce services.

The quantitative study results show that the proposed research model explains 52 per cent of the variance in consumer attitude towards the mobile service and 49 per cent of the variance in consumer intention to adopt the mobile service. The results also demonstrate significant support of all the proposed hypotheses in the research model, except those that propose a direct relationship between PRQ and consumer attitude (ATT) and intention (INT) towards adopting the mobile service. Although the PRQ->ATT and PRQ->INT paths are not statistically significant, PRQ nevertheless shows a highly significant correlation with both attitude and intention. This prompted further in-

depth investigation using contextual data from the qualitative study (which is explored in more detail in Chapter 9).

When the whole research model, including all the hypothesised effects, is examined in PLS, the results show that the PVI is a stronger predictor of both consumer attitude and intention toward adoption than other well-established factors such as Perceived Usefulness, Perceived Ease of Use and Subjective Norm. To compare the predictive power of the three sets of factors, including the consumer-service provider factors (PRQ and PVI), the consumer-service factors (PU and PEOU), and the consumer-social factor (SN), a separate PLS model was created for each set of factors independently. This helped remove any overlapping effects amongst the various sets of factors and therefore obtain a better idea on the independent impact of each set of factors. The results show that PRQ and PVI explain 47 per cent of the variance in consumer attitude and 45 per cent of the variance in consumer intention to adopt. This compares with the 38 per cent and 45 per cent (respectively) explained by consumer-service factors, and 29 per cent and 41 per cent explained by consumer-social factors.

In relation to the second research question, the results of the qualitative interviews provide interesting contextual explanations on the dynamics of the proposed effects of the relational factors (PRQ and PVI) on consumer adoption of advanced mobile services and the interaction effect between these two factors. These contextual explanations are discussed through the proposition of three explanatory perspectives (see Chapters 9 and 10). First is the *PRQ-Spectrum Model*, which depicts the quality of the relationship between the consumer and the service provider (PRQ) as a continuum of values with three main levels of relationship quality: extremely positive, neutral, and extremely negative. The model explains that the impact and implication of the quality of the relationship between the consumer and the service provider on the consumer adoption perceptions (particularly attitude and intention) vary depending on the positioning of the relationship at one of these three levels.

Second is the *Usage-Maturity Model*, which represents the association between consumers' progression towards the adoption of more advanced mobile services (in other words, more mature usage of mobile technology) and the role and implication of

the quality of the relationship with the service provider. This model shows that, on one hand, as the consumer usage of mobile commerce services matures or progresses towards more advanced services, the relationship quality plays a more influential and have greater implications on the consumer perceptions. On the other hand, this model also demonstrates that a higher level of relationship quality between the consumer and the service provider is required for the consumer usage of mobile commerce to mature towards more advanced services.

The third model is the *PRQ 'tunnel' concept*, which depicts the quality of the relationship between the consumer and the service provider as a tunnel or a proxy through which passes every type of value that is intended by the service provider through the offering of an adoption incentive. The model describes the quality of the relationship between the consumer and the mobile service provider can be both the cause of, and the solution to, any discrepancies between the values that are intended by the service provider through the adoption incentive and the values that are received or perceived by the consumer on the other side of the exchange. This model is particularly focused on the interaction impact between the two relational factors in this study: PRQ and PVI.

1.6. Organisation of this thesis

To achieve the above aim and answer the research questions, the rest of this thesis is organised as follows.

Chapter 2: Study Context and Literature Review reviews the relevant literature in order to establish the conceptual context of this research leading to the specification of the gap that this study fills. This discussion involves the introduction and overview of the main conceptual concepts of interest: PRQ and PVI.

Chapter 3: Research Model and Hypotheses, introduces and theoretically justifies the research and hypotheses that were used to fill the conceptual gap that has been identified in the literature review.

Chapter 4: Research Design and Method specifies and justifies the research design and methods that were used to collect the required empirical evidence. The discussion in this chapter involves describing two empirical studies: the quantitative study (questionnaire) followed by the qualitative study (interviews).

Chapter 5: Conceptual Variables and their Measurement describes the measures used to examine each of the conceptual variables from the research model in the quantitative (questionnaire) study. The research model in this study includes seven main conceptual variables, and the measures for six of them are described in this chapter. The development process of a new scale to measure the seventh variable (Perceived Value of the Adoption Incentive) is described in Chapter 6.

Chapter 6: Perceived Value of the Adoption Incentive (PVI) Scale Development, specifies the comprehensive step-by-step process used in order to develop a new validated scale to measure PVI in the quantitative (questionnaire) study.

Chapter 7: Quantitative Study: Sample and Population Characteristics presents the results of the preliminary descriptive analyses of the data collected from an online questionnaire. I provide an overview of the characteristics of the study sample and the target population, specifically, demographic characteristics and mobile phone usage characteristics.

Chapter 8: Quantitative Study Analysis and Results presents the results of the analysis of the data collected from the online questionnaire. The statistical distribution analysis of the sample perceptions of the various concepts is described. This chapter also presents the results of testing for moderation effects of the sample characteristics on the various paths in the research model. The measurement model is then evaluated and the proposed hypotheses are tested.

Chapter 9: Interview Analysis and Results describes the results of the analysis of the data collected from the second empirical study (interviews).

Chapter 10: Integration of Results and Discussion discusses the implications of the findings from the quantitative (questionnaire, Chapter 8) and qualitative (interviews,

Chapter 9) studies. I also gather and discuss all the evidence that was collected to answer the research questions in this project.

Chapter 11: Conclusions provides a summary of the objectives, activities and main findings of this research, with a particular emphasis on the research questions. I then discuss the contributions to theory and practice that this study makes, as well as limitations of the study, and various avenues for future research.

Chapter 2.

Study Context and Literature Review

2.1. Introduction

The objective of this chapter is to describe the context and scope of this research. To do this, I explore several areas of the existing literature in order to define the conceptual gap that this study fills. I then build on this gap to establish the context of the research model (which is discussed in the next chapter).

This chapter is organised as follows. In Section 2.2 I provide a brief overview of mobile commerce, including its definition, service and applications, and enabling technologies. In this overview, I emphasise the central position that consumer acceptance and adoption of mobile services possess for the success of mobile telecommunication markets. In Section 2.3 I introduce an innovative perspective (the Entities-Interactions Framework) to explore the existing literature on this topic and, therefore, identify the gap that the present research attempts to fill. I then briefly introduce the concepts (adoption factors) that I have investigated in order to fill this gap (Section 2.4).

2.2. Mobile Commerce

Mobile Commerce (also called mobile electronic commerce, wireless commerce and m-commerce, or MC for short) has been technologically possible for a number of years. However, it is only in the last few years that a promising volume of economic activity has occurred, as a result of technological and system improvements, coupled with greater consumer familiarity of devices and services. The use of mobile phones for internet access and mobile commerce is spreading rapidly, particularly compared to the value of commercial activity conducted using land-lines (Dholakia et al. 2004).

In this section, I provide a brief overview on mobile commerce including a definition (Section 2.2.1), examples of services and applications (Section 2.2.2) and enabling technologies (Section 2.2.3). I also discuss the central role played by consumers in the overall mobile commerce value chain and the importance of their adoption of offered services for the success of this emerging market (Section 2.2.4).

2.2.1. Definition

Mobile commerce is a relatively complex innovation which can support multiple types of activities (e.g. leisure, work, social) through the interaction of hardware, software and services. These activities and supporting technologies are not fixed; instead they change depending on the specific mobile service, its requirements, and its use context. Perhaps not surprisingly, the mobile literature includes a wide range of definitions of mobile commerce. Here, I explore three possible reasons for the variance in the definitions of mobile commerce and then introduce the definition I use in this thesis.

First, the perspective from which this innovation is viewed can cause the variance. Some researchers and practitioners have a prescriptive technical focus where definitions describe characteristics of the devices used, the networks employed, and/or the kinds of connections utilised. For example, m-commerce has been defined as "purchases made remotely using the data connection features of a mobile phone and network" (Wolfe and Genin 2004, p.2), and "transactions conducted through a variety of mobile equipment over a wireless telecommunication network in a wireless environment" (Yang 2005, p.258). Others emphasise business-related aspects of this innovation, describing m-commerce as business transactions conducted while on the move (Kalakota 2001). This style of definition makes little reference to any technologies involved in a mobile commerce transaction but rather concentrates on business applications and implications.

M-commerce definitions also vary in their level of depth. While some writers prefer to keep definitions simple and general, others give more detailed descriptions that specify the kinds of devices and networks used to enable the use of the technology. An example of the first is simply that m-commerce is "wireless commerce" (Andreas et al. 2003), and an example of the second is: "MC refers to any transaction, either direct or indirect,

with a monetary value implemented via a wireless telecommunication network" (Wu and Wang 2005).

A third reason for the variance is due to the apparent assumption by some writers that m-commerce necessarily involves the use of the internet via wireless connections and wireless devices. For example, Forrester Research defines m-commerce as "the use of handheld wireless devices to communicate, interact, and transact via high-speed connection to the internet" (Kauffman and Techatassanasoontorn 2005). While this definition encapsulates a good number of m-commerce applications and service that are accessed through the mobile internet, it might be insufficient to cover other possible m-commerce transactions that are not necessarily accessed through the mobile version of the traditional internet. Examples include mobile commerce transactions conducted via vendors' private networks, as with the case of Short Messaging Services (SMS) and Multimedia Messaging Services (MMS) (Kauffman et al. 2005).

These reasons show that *mobile commerce*, as a term, is broad in scope and can be defined in many ways. Generally, for any interaction or exchange to be considered as a mobile commerce activity, it must involve all of the following elements:

1. One of a range of *activities* such as communicating, obtaining information, entertaining, transacting, etc. Compared to some studies (e.g. Barutçu 2007) that used the terms *mobile commerce* or *m-commerce* to specifically and only refer to transacting activities, in this study, *m-commerce* is used as an umbrella term to cover all possible activities.
2. A mobile *handheld device*, where the word *mobile* simply describes a handheld computing device that is not restricted to a certain location, unlike desktop computers, for example. A mobile device may be a PDA, a smart cell phone or web phone, or any one of other numerous *handheld* devices that allow the user to conduct various tasks anywhere and at any time.
3. The exchange of *data* such as the use of Mobile Data Services (MDS) which requires a *data-enabled* mobile handheld device. Therefore, the use of handheld devices in conjunction with wireless connections only for *voice* communication is not considered an advanced mobile commerce service.

4. A *network* or a *medium*, which could be the internet (as in the case of using services like mobile internet browsing and banking, mobile internet email, mobile internet shopping applications, etc), a vendor's private network, as with SMS and MMS services, or other kinds of networks.
5. A *wireless connection* between a handheld mobile device and a network.
6. An exchange of money (or its equivalent, such as credits) for goods or services.

Considering these various issues, I define the term in this thesis as follows:

M-Commerce *is the use of data-enabled mobile handheld devices to perform activities (such as communicating, obtaining information, entertaining, and transacting) that have a direct or indirect monetary value through wireless connections to the internet or to vendors' private networks.*

This definition encapsulates both the technologies required for the activity to be considered mobile, and the process requirements for it to be considered a transaction (i.e. a commercial trading activity). The specific technologies and activities involved might vary depending on the application or the technology utilised, but the activity cannot be considered as m-commerce unless all six components are present.

It is evident from this discussion that the term *mobile commerce* covers a wide range of applications and transactions. A transaction can be as simple as using an SMS service to vote for a contestant on a television program, or as complex as locating, evaluating, and purchasing a product. Therefore, in this research, *mobile commerce* is used to refer to any mobile service that falls within the scope of the above definition.

In the next sections, I highlight some examples of mobile commerce services and application and enabling technologies.

2.2.2. Services and Applications

There are large numbers of existing and potential mobile applications and services. Mobile commerce services can generally be classified into four broad categories (Durlacher 2001):

1- **Communication services.** This includes SMS, MMS, mobile chat, mobile email, and other services that are mainly intended to facilitate communication among consumers.

2- **Information services.** These are services used to provide general news, sport news, financial news, weather reports, personalised flight updates, convenient access to products, price comparisons, and other informational needs.

3- **Entertainment services.** This category includes games, horoscopes, and other fun and entertaining services that can be provided via mobile phones. This class of services is expected to be the main driver behind m-commerce success, given its contribution to the explosive growth of the mobile commerce industry in Japan.

4- **Transaction services.** This includes services such as m-shopping, m-finance, m-brokerage, m-banking, and mobile selling and buying.

All of these applications potentially differ in their technological requirements, the type of user targeted, and the business and support processes involved. Therefore, for any market, whether one of the above categories, or none of them, is going to be the main revenue generator for stakeholders is not easy to predict. It could be a single application or it could be a group of interrelated services. In all cases, the winning services are highly dependent on the characteristics of the targeted users and their preferences. In the I-mode market of Japan, for example, entertainment and gaming applications, supported by advanced and flexible mobile payment solutions, are believed to be the driving force behind its exponential growth because of the high consumer acceptance of such services (Kleijnen et al. 2003). However, this has not been the same in other m-commerce markets (Carlsson et al. 2002).

For example, in Finland, mobile consumer-generated and location content and information services are considered the leading mobile commerce services (Pelkonen 2006). In Germany, mobile email services and music ring tones are driving m-commerce in a market where m-payment, financial services, and location-based mobile solutions have been dismal failures because of consumer trust and privacy issues (Kehr and Luhrig 2006). On the other hand, SMS is the main driving force for many mobile

commerce markets such as France (Vialle and Epinette 2006), India (Banerjee and Lennon 2006), New Zealand (Maneesoonthorn and Fortin 2006) and the USA (Samuelsson et al. 2006).

2.2.3. Enabling Technologies

There are many technologies that work together to enable mobile services provision such as handsets, networks and supporting technologies. Improvements in each technology are the foundation for changes in mobile service markets. Games, for example, are dependent on technical features such as screen resolution, memory capacity, movement sensors, and processing power. Indeed, the market for mobile multimedia products (games, music, and movies) simply did not exist in the late 1990s because the necessary infrastructure did not exist.

Mobile service networks are another example of MC-enabling technologies that are constantly advancing and improving. A few years ago, mobile networks were mainly used to transmit voice and text data only. Today, these networks are capable of transmitting voice as well as a variety of data formats such text, pictures and video. In addition to handsets and network technologies, there are also other important supporting technologies, such as special device accessories, browsers, operating systems and user applications.

Over time, the advancement of mobile technologies has generally gone through a number of phases or milestones, as indicated by Jillbert and Khasawneh (2004):

1- **1st Generation (1G).** This generation communicates via basic (unencrypted analog) wireless voice technology.

2- **2nd Generation (2G).** This generation marks the ability to accommodate the transmission of text in addition to voice.

3- **2.5 Generation (2.5G).** This generation is an interim technological stage that allowed the accommodation of graphics. 2.5G technology was designed to bridge the deployment gap between 2G and 3G. GPRS (General Packet Radio Services) is considered a 2.5G technology and was the first conventional

technology to bring the true benefit of the mobile internet to the consumer through its enhanced connection features (Durlacher 2001).

4- **3rd Generation (3G).** This widely available wireless technology supports rich media (e.g. video clips). 3G wireless technologies "enable high-speed mobile connections to the internet while offering customers full access to rich content, applications and value added services" (Constantiou and Polyzos 2003). The "always on" feature and the higher bandwidth are the two main features that distinguish 2.5G and 3G devices from 2G technologies (Andreas et al. 2003).

5- **4th Generation (4G).** The most advanced class of mobile technologies currently available provides faster multimedia and network capabilities. This generation of mobile technology combines the features of all previous generations to deliver voice, data and streamed multimedia with higher speeds of 100 megabits per second while moving and 1 gigabit per second while stationary.

Generally, mobile commerce enabling technologies seem to be improving rapidly despite the technological constraints of wireless technologies such as low bandwidth and transaction execution delays (Barnes 2003). The goal of all stakeholders in this industry, as in all other industries, is to satisfy consumers and provide them with services that serve their needs and generate revenues for the service providers.

Therefore, regardless of the technology used, satisfying consumers is important. It is especially important to ensure that the market continues to grow. After all, it is the consumer-specific factors that will encourage consumer demand for mobile services whatever technology is used to provide it (Muthaiyah 2004). As a result, it is evident that focusing on the consumers, their preferences, their needs, and what factors make them accept and use the provided services is the key to success in this emerging market. The next section describes role that consumers play in determining the future of the overall m-commence value chain, and ultimately leads to the focus of this study.

2.2.4. The Consumer

Many authors, for example Haque (2004), Harris et al. (2005), Matthew et al. (2004), Mylonopoulos et al. (2006), Nysveen et al. (2005b) and Scornavacca et al. (2006) claim

that developing an understanding of the factors that influence end-user (consumer) behaviour and acceptance of new mobile services is important at this early stage of the mobile evolution because consumer acceptance is a critical foundation for the continued expansion of the market for mobile services.

However, with the exception of the success of the I-mode service in Japan, m-commerce has not been as widespread as anticipated (Okazaki 2005). By ensuring acceptance and use of m-commerce by consumers, stakeholders can have more confidence in their current and future investments. The importance of consumers in this new industry can be seen in Figure 2.1, which illustrates the central position that they play in the overall mobile services value chain (adapted from Kuo & Yu (2006)).

Figure 2.1 The central position of the consumer in the mobile services value chain

(Source: Kuo et al. (2006))

As Figure 2.1 shows, the success and interest of all stakeholders in the mobile commerce value chain is highly dependent on their ability to gain consumer attention, interest, acceptance and increasing use of the offered services. Therefore, it is important to understand the driving forces that might increase or decrease the motivation of

existing users of mobile technology to progress towards the adoption of advanced mobile commerce services. Once this is accomplished, mobile service providers can then adapt and customise available technologies and services to satisfy the needs of their consumers (Nysveen et al. 2005b).

2.3. The Entities-Interactions Framework (EIF)

The existing literature on mobile services adoption by individuals has investigated the importance of many factors in various contexts. Some of these factors were adapted from traditional adoption theories and studies, such as perceived usefulness and perceived ease of use from the Technology Acceptance Model (Cyr et al. 2006), while others are more mobile-specific such as mobile service design aesthetics (Ainin et al. 2007; Bouwman et al. 2008; Carlsson et al. 2006b; Hong and Tam 2006a; Park 2006; Ranganathan et al. 2006; Serenko et al. 2006) and have been added and investigated more recently.

The Entities-Interactions Framework (EIF) (Figure 2.2, below) is used to provide an overview of the factors that have been studied in the literature. The EIF attempts to identity: 1) the main entities involved at the consumer level of mobile services provision, and 2) the interactions that typically take place among the identified entities. The EIF has been used to identify the conceptual gap in the literature.

The provision, adoption and use of mobile services, in its simplest form at the consumer level, can be seen as an interactive process that involves four main entities, as shown in Figure 2.2.

1. The **consumer** is the target of the service provision.
2. The **mobile service** encapsulates the technology via which the mobile service is provided.
3. The **mobile service provider** is the entity that the consumer interacts with in order to use the mobile service. Depending on the specific market structure, the service provider can be a telecommunication company, a content provider, or another entity. In the context of this study, the service provider entity is the party

that the consumer interacts with to acquire the service, solve problems, pay fees and so on.

4. The **social system** is the consumer's social reference group, including family, peers, colleagues, and so on. They are the people who can affect or influence the consumer attitudes, perceptions, behaviours and actions.

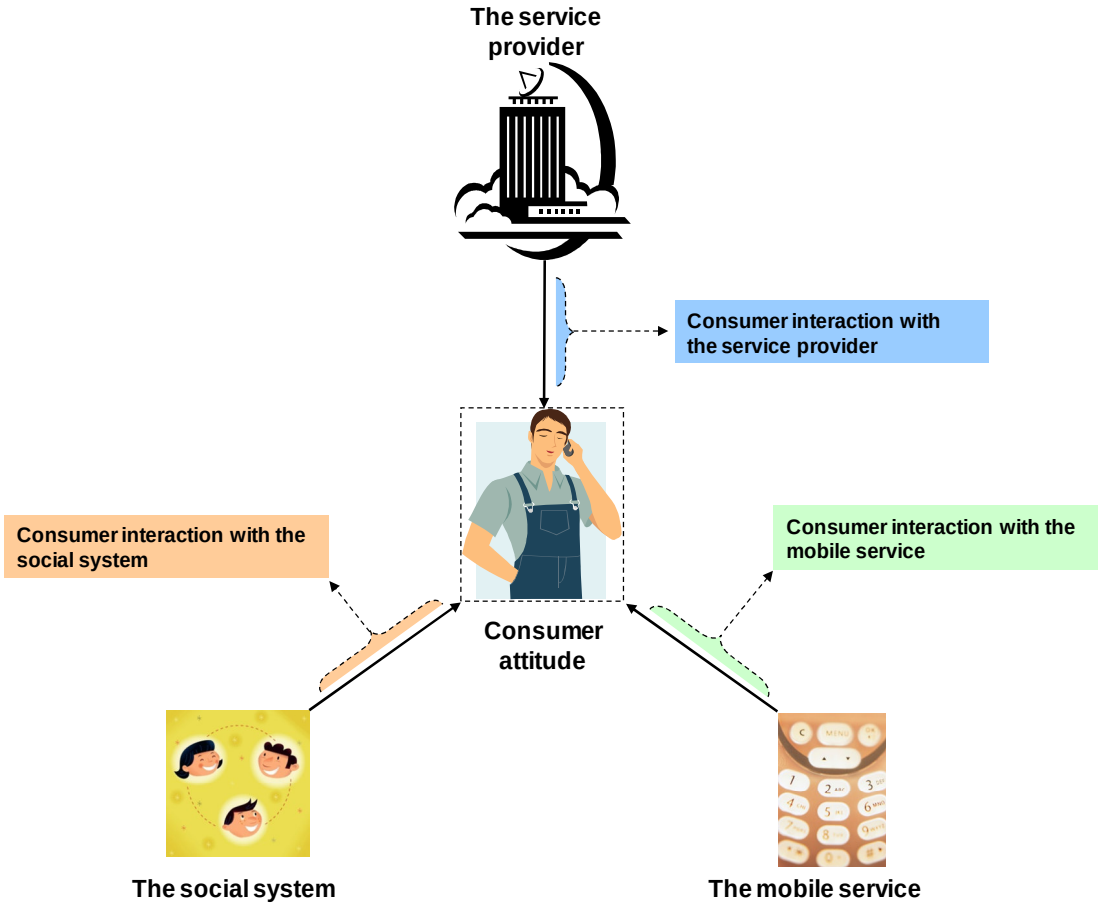


Figure 2.2 The Entities-Interactions Framework (EIF)

As depicted in Figure 2.2, the consumer attitude and intention towards the adoption of the mobile service is affected by factors that relate to the mobile service, the provider of the service and the consumer social system. Based on the identification of the consumer, service, service provider and social system entities in this framework, I propose that to fully understand what drives the uptake of mobile service usage and adoption by consumers, it is important to investigate and understand two general sets of factors:

A) **Entity-specific factors** are the characteristics and properties of each entity. These include, for example, *consumer characteristics* such as age, gender, income; *mobile service characteristics* such as composition, technological requirements; *service provider characteristics* such as market position and ability to reach and attract consumers; and *social system characteristics* that the consumer belongs to, such as the general level of innovativeness vs. resistance to change, the common culture and beliefs of the society.

B) **Inter-entity factors** are the factors that stem from the interactions or exchanges among two of these entities. This set of factors also encapsulates how each entity is perceived by the other entities such as consumer perceptions about the various aspects of the service and consumer perceptions towards his/her social system.

Researchers in the field have identified and investigated a large number of related factors. In the following sections, I review these factors using the proposed Entity-Interactions Framework.

2.3.1. Entity-specific factors

The consumer

The consumer characteristics have been known in traditional adoption studies for their important direct or indirect effect on consumer attitudes, perceptions and behaviours. Most importantly, consumer demographic characteristics such as age, gender and income have been found important in the mobile services adoption context. There are large numbers of studies that have investigated how the demographic characteristics of the consumer entity can impact consumer adoption of mobile services. For example, Bouwman et al. (2008) collected data in 2004, 2005 and 2006 from a sample of Finnish consumers in order to examine the impact of age, gender and income on 1) their attitude towards a number of mobile services (travel services, including hotel reservations, tickets, time tables; early mobile services, such as ringtones and icons; and mobile internet, including MMS, mobile email, news and surfing) and 2) the type of mobile handset owned by the consumer. They found that male consumers have a more positive attitude towards mobile innovations and use more advanced handsets than females; younger consumers have more positive attitude and use more advanced handsets

compared to older consumers; and that income did not show any significant impact on either consumer attitude or the type of mobile handsets they use.

In a study to explore the demographic characteristics of early adopters of mobile services, Munnukka (2007) found that this group mainly consists of males, under 35 years of age, and low-income earners. Similarly, Sulaiman et al. (2007) found that the most likely adopters of mobile banking services are young (21-30 years old), males and highly educated but high-income earners in contract to Munnukka (2007) and consistent with the traditional profile of early adopters (Rogers 1995). Another example of a study that aimed to investigate the demographic characteristics of the consumers of mobile services is the one conducted by Nysveen et al. (2005a) which investigated the moderating effects of gender in explaining the intention to use mobile chat services and found that gender plays an important role.

In addition to consumer demographics, other characteristics of the consumer entity that have been studied include consumer innovativeness; self-efficacy, which is the user's belief about and confidence in his/her individual ability to use the service; prior experience; and shopping orientation. For example, in their review of the future of mobile commerce, Jarvenpaa et al. (2003) emphasised that the innovativeness of users and uses of mobile technology will eventually drive m-commerce to meet its success predictions. Hung et al. (2003) studied the impact of consumer innovativeness on the adoption of mobile services and found that innovativeness is an important characteristic that distinguishes adopters from non-adopters. Lu et al. (2005a) also studied consumer innovativeness and its impact on adoption beliefs (perceived usefulness and ease of use) of mobile services and found that innovativeness significantly influences these beliefs leading to an impact on consumer intention to adopt. In contrast to this result, Lu et al. (2005c) found that innovativeness does not influence ease of use or usefulness but does impact adoption intentions directly.

Many studies have confirmed the impact of self-efficacy to try new mobile services and found that this consumer characteristic has a particularly important impact on the consumer perception of the ease of using the mobile service, which then influences consumer intention towards adoption (Gong and Xu 2005; Gong and Yan 2004; Lee and Kim 2002). Consumer self-efficacy was also found to be a direct determinant of

consumer intention to adopt mobile commerce services over and above its known influence on ease of use (Lin and Wang 2005; Wang et al. 2006).

Prior experience as a consumer characteristic has also been found as an influential determinant of consumer adoption of mobile commerce, whether this experience is acquired through the previous use of mobile services (Carroll et al. 2007), traditional technologies such as desktop computers and the wired internet (Blechar et al. 2006; Schwarz et al. 2004) or experiences that relate to the consumer's general lifestyle and history (McManus and Standing 2004). Consumer shopping orientation (e.g. price consciousness) is another consumer characteristic that has an influence on the consumer attitudes towards adopting mobile commerce services (Barutçu 2007).

Many other studies have also found that consumer demographics and general characteristics play an important role in shaping their perceptions to adopt mobile commerce services (for example, Akinci et al. 2004; Bigne et al. 2005; Blechar et al. 2006; Okazaki 2006; Serenko et al. 2006).

The mobile service

The mobile service characteristics play an important role in its adoption and use by consumers. For example, the composition, content and delivery mode of SMS marketing messages and their suitability for a specific consumer's needs were found as a major determinants of consumers' acceptance of mobile marketing services (Carroll et al. 2007). The personalisability of the mobile service content and its fit with the user mobile devices are also important characteristics of mobile commerce services according to Constantiou et al. (2006). In addition, the composition of a mobile service bundle (where more than one service is combined to form a packaged mobile service) and how each part of the service package relates to the other parts – supplementary vs. independent – is another service characteristic that influences consumer adoption of mobile services (Bouwman et al. 2007b).

Bauer et al. (2007) investigated several attributes of mobile ticketing services (including pricing, payment and delivery modes) and found that such service characteristics are important to increase the perceived benefit of the service and therefore encourage its acceptance by consumers. Furthermore, Park (2006) found that several mobile internet

service characteristics, such as its pricing, content and information quality and connection stability, influence the hedonic and utilitarian value of the service and therefore impact consumer adoption. Mobile commerce services attributes including security and privacy standards, cost, and efficiency (navigation and transaction processing) were also found by Khalifa and Shen (2008) as important determinants of the consumer perception of the usefulness of the mobile service which has a known impact on consumer adoption of mobile services. In addition, the quality of information as a characteristics of mobile internet services were found as significant predictors of consumer satisfaction when using these mobile services (Chae et al. 2002). This study examined several aspects of mobile internet information quality, including connection quality (stability and responsiveness), content quality (objectivity, believability and amount), interaction quality (structure, navigation and presentation) and contextual quality (timeliness and promptness).

Other examples of mobile service characteristics that were examined and found important for the successful acceptance and use of mobile commerce include: system quality, stability and efficiency and connection stability and availability (Kim et al. 2008; Laukkanen and Lauronen 2005), mobile service design quality and aesthetics for mobile internet websites (Cyr et al. 2006), message content, controlability and personalisability for SMS marketing services (Scharl et al. 2005), transaction convenience and speed for mobile payment services (Chen 2008), and the fit between the characteristics of the mobile service and the tasks performed using the service (Lee et al. 2007a).

The service provider

The service provider characteristics influence the internal business process quality and therefore its performance in the market and the quality of the services it offers to its customers. Examples of these attributes include: top management commitment (Badri and Davis 1995; Bricknell 1996; Hsu and Su 2002), leadership (McColl-Kennedy and Anderson 2002; Thiagarajan and Zairi 1997), strategic planning (Anderson 1982; Schoeffler et al. 1990), internal departmental communication (Reynoso and Moores 1995), and employee empowerment and involvement in the business process and performance (Bettencourt and Gwinner 1996; Fletcher 1999). Since most of the issues

relevant to the characteristics of this entity are related internal-business aspects, they are outside the scope of this study, which focuses more on factors that impact consumers' attitude and intention to adopt mobile commerce services. Nevertheless, it is important to emphasise that in research fields where these issues are of interest, their impact on the adoption and diffusion of mobile services should not be ignored.

The social system

The characteristics of the consumer's social system plays a critical role in shaping the consumer overall perceptions, attitudes and behaviours. Many studies have examined the characteristics of the social system and the consumer culture and their influence on the consumer adoption of mobile services and technologies. Most of these studies focus on cross-cultural comparisons. For example, Su and Adams (2004) examined whether, based on individualism vs. collectivism cultural dimensions, there are differences in mobile use and adoption between the Chinese and British societies by comparing samples of young consumers both societies. Their results indicated that the characteristics of the society play a role in influencing consumer adoption and perceptions. In a similar study, Muk (2007b) studied the impact of cultural and social characteristics on the adoption of SMS advertising services. This study compared the individualistic nature of American society and the collective culture of Taiwanese society and found that Americans' adoption intentions are exclusively driven by their attitudinal consideration, while Taiwanese consumers' decisions are largely influenced by their society and culture, in addition to their individual considerations.

In addition, Harris et al. (2005) compared m-commerce usage in the United Kingdom and Hong Kong and found that the differences in attributes of these two social systems, such as the levels of collectivism and power distance, significantly influence attitudes towards m-commerce and its usage. Sarker and Wells (2003) similarly discuss how socio-cultural variables can impose a pattern of adoption and usage on the consumer. As an example, the authors used the power distance attribute and explained that in high power distance cultures (such as Korea) sending SMS to superiors at work can be considered a serious offence, while in other social systems (such as Norway) it is not offensive to do so. In a study on mobile banking in China, Laforet and Li (2005) found that the Chinese traditional cash-carry banking culture is one of the main barriers to

online banking in the country. Another example of studies that examined the characteristics of the social system is the research by Lee et al. (2007) which found that socio-cultural attributes, such as uncertainty avoidance, individualism, perception of time, and a preference for face-to-face, indirect or written communication, can all significantly influence consumers' post-adoption perceptions of mobile services.

2.3.2. Inter-entity factors

According to the EIF (Figure 2.2), the interaction of various entities in any mobile service provision scenario creates many factors that might positively or negatively influence consumer perceptions, attitudes and behaviours towards the acceptance of the provided service.

Consumer-service factors

The interaction of the consumer with the service is the source of most of the factors that have been studied in traditional adoption research as well as in the emergent mobile services adoption field. In the existing literature, the factors that relate to the interaction between the consumer and the mobile service are measured either based on consumers' direct experience with the service or based on consumers' perceptions and beliefs about how they expect the factors would affect their use of the service. Consumer-service factors can be generally classified into outcome-expectancy factors, effort-expectancy factors and facilitating conditions.[1]

The first group, *outcome-expectancy*, relates to consumer perceptions and beliefs about the advantages and disadvantages of adopting the offered mobile service. Therefore, most factors in this category can either take a positive form and become a benefit, or take a negative form and become a barrier. Generally, expected outcomes from using the mobile service can be classified into two groups: *performance-related* outcomes or *personal* outcomes.

Performance-related outcome factors relate to the perceived benefits or advantages from using the mobile service that result in increased performance and improved task

[1] These three concepts were adapted from Venkatesh et al. (2003).

accomplishment. These factors are therefore related to more functional, utilitarian or instrumental benefits such as the usefulness, efficiency and convenience of using a mobile commerce service. Personal outcome-expectancy factors are related to non-utilitarian and non-task-oriented benefits such as the enjoyment and playfulness of using a mobile commerce service.

The second group, *effort-expectancy*, relates to consumer perceptions about the ease or difficulty of acquiring, dealing with and using m-commerce services. A known example from this group is Perceived Ease of Use from the Technology Acceptance Model (Davis 1989; Davis et al. 1989). Effort-expectancy factors also include consumer expectations of other possible difficulties (or efforts) such as perceived loss of personal security and privacy and perceived cost (a financial effort or difficulty) as a result of using mobile commerce services.

The third group of factors that relates to the consumer interaction with the mobile commerce service is *facilitating conditions*. These factors are basically conditions whose existence would facilitate the adoption and use of mobile services by individuals. The triability factor from the Diffusion of Innovation theory (Rogers 1995) is a known example from this group.

Table 2.1 lists examples of adoption factors from these three groups that relate to the interaction between the consumer and the mobile service. Factors that are similar in concept (e.g. usefulness and relative advantage, ease of use and complexity, etc) are grouped together to increase the readability of the table. This table generally shows the large extent to which consumer-service factors have been examined in the existing literature on mobile commerce services adoption by individuals. While this table might not be exhaustive of every single study in the literature, it does offer some interesting pointers on the existing coverage of consumer-service factors.

To illustrate, a simple frequency count of the number of times each factor and category of factors have been studied (shown in the third and fourth rows of the table) shows that among the four major categories of factors, the performance-related outcome factors and effort-expectancy factors have received far more attention than personal-related outcome and facilitating conditions factors. In the performance-related outcome category, perceived usefulness, relative advantage, perceived utility and contextual

benefits have been examined more frequently. Among the effort-expectancy factors, perceived ease of use and perceived complexity have received more attention than the other factors.

These patterns show the influence which traditional technology adoption concepts such as usefulness and ease of use from TAM (Davis 1989, Davis et al. 1989) and relative advantage and complexity from Diffusion of Innovation (Rogers 1995) have on the types of concepts that have been investigated in the existing literature on the adoption of mobile commerce services. This influence is understandable given that, first, mobile commerce is still a relatively new innovation and researchers are still learning about the factors that are specific to the adoption processes of mobile commerce services. Second, traditional adoption models such as TAM and DOI have an established record for their explanatory power in various contexts and therefore must be considered in the mobile commerce literature.

Nevertheless, many consumer-service factors that are more relevant to the usage of mobile commerce services have also been investigated. For example, perceived efficiency, speed, quality, flexibility, performance and convenience of the mobile service (performance-related outcomes), perceived enjoyment, playfulness and entertainment (personal-outcome factors), and perceived cost, trust, credibility, privacy and security (effort-expectancy factors) have been more frequently examined (e.g. Bouwman et al. 2007a; Carlsson et al. 2006a; Kim et al. 2008; Tsang et al. 2004). Table 2.1 shows that there has been a growing interest in the mobile commerce literature in examining more relevant adoption factors to m-commerce beyond those that are applicable from traditional technology adoption theories.

Table 2.1 Examples of consumer-service factors that have been examined to date

Example studies	Outcome-expectancy factors (performance-related)					Outcome-expectancy factors (personal)				Effort-expectancy factors						Facilitating conditions				
	Perceived usefulness, relative advantage, perceived utility, contextual benefits	Perceived efficiency, speed, quality, flexibility, performance & convenience	Perceived value-added, usability, perceived relevance, need & interest	Confirmation/disconfirmation of the service	perceived satisfaction with service	Perceived enjoyment, playfulness & entertainment	Fulfilment of personal need for uniqueness & enhanced personal and emotional values (e.g. self-esteem)	Perceived fashion and enhanced personal image, life-style and status	Perceived self-expressiveness	Perceived ease of use, complexity	Perceived trust and credibility	Perceived risk	Perceived, safety, privacy, and security	Perceived cost & monetary value	Other barriers (e.g. physical, cognitive, etc)	perceived compatibility	Triability	Network Externalities (critical mass)	Use situation and context (place and time)	Facilitating conditions (e.g. regulatory policies, availability of support, etc)
Category count	**101**					**38**				**104**						**34**				
Factors count	**46**	**21**	**20**	**2**	**12**	**21**	**7**	**8**	**2**	**40**	**12**	**7**	**19**	**26**	**3**	**13**	**4**	**5**	**7**	**5**
Chen (2008)	*	*								*		*	*			*				
Kim et al. (2008)	*		*							*				*		*				
Lin and Shih (2008)		*		*	*		*				*									
Khalifa et al. (2008)	*	*								*			*	*						
Bouwman et al. (2008)		*				*		*												
Lee and Jun (2007)	*		*		*					*										
Mallat (2007)	*									*	*			*		*		*	*	
Lee et al. (2007)	*				*	*				*				*						
Bouwman et al. (2007a)		*				*							*	*	*					
Turel et al. (2007)	*	*				*	*	*						*						
Junglas (2007)	*									*									*	

Heinonen and Strandvik (2007)			*																*	
Haghirian and Inoue (2007)			*			*					*		*							
Lee and Jun (2007)	*		*							*										
Muk (2007a)	*									*						*	*			
Leung (2007)		*				*	*	*						*						
Laukkanen (2007)		*	*										*							
Kim et al. (2007)	*		*			*				*				*						
Koivumaki et al. (2006)	*				*					*						*				
Park (2006)	*	*	*			*								*						
Chu and Lin (2006)	*		*		*					*			*	*		*				
Carlsson et al. (2006b)	*	*	*			*	*	*		*		*	*	*	*					
Hong et al. (2006a)	*					*	*			*				*						
Wang et al. (2006)	*									*	*			*						
Cyr et al. (2006)	*				*	*				*										
Wakefield and Whitten (2006)	*					*				*										
Hong et al. (2006b)	*			*	*					*										
Leppaniemi and Karjaluoto (2005)		*	*								*	*	*					*		
Laukkanen et al. (2005)		*	*				*						*							
Yang (2005)	*									*										
Pura (2005)	*	*			*		*	*						*						
Nysveen et al. (2005a)	*					*			*	*										
Pedersen (2005)	*									*										*
Fang et al. (2005)	*					*				*			*							
Lee (2005)											*									
Dewan and Chen (2005)	*	*								*			*							
Bauer et al. (2005)	*											*								
Harris et al. (2005)			*					*						*			*			
Lu et al. (2005b)											*									*

Bruner and Kumar (2005)	*					*				*										
Cheong and Park (2005)	*	*				*				*				*						
Wu et al. (2005)	*									*		*		*		*				
Laforet et al. (2005)	*	*								*			*						*	
Hung and Chang (2005)	*				*					*										*
Malhotra and Segars (2005)	*		*			*										*				
Nysveen et al. (2005b)	*					*			*	*										
Amberg et al. (2004)	*	*								*				*						
Keng et al. (2004)					*						*									
Luarn and Lin (2005)	*									*	*			*						
Tsang et al. (2004)			*			*					*		*							
Pagani (2004)	*					*				*				*						
Schwarz et al. (2004)																*				
Muthaiyah (2004)		*	*										*	*		*		*		
Massoud and Gupta (2003)	*									*			*	*						
Hung et al. (2003)	*				*					*				*						*
Lee et al. (2003a)	*									*		*	*			*	*			
Sarker et al. (2003)		*												*				*	*	
Lu (2003)	*									*	*									*
Barnes and Huff (2003)	*							*		*	*					*	*			
Teo and Pok (2003)	*							*		*		*				*				
Jarvenpaa et al. (2003)	*	*	*							*			*		*			*		
Rao and Minakakis (2003)	*		*										*						*	
Anckar and D'Incau (2002)	*	*	*			*								*					*	
Wang and Lo (2002)			*		*															
Koivumäki (2002)										*			*	*						

Consumer-social system factors

Since mobile services are usually used in and around a social environment, consumers' perceptions, attitudes and behaviours are naturally influenced by other people. Social influence is the effect that others have on the perceptions of the consumer towards the service. One of the well-known factors under this group is the *subjective norm* (Venkatesh et al. 2003), which measures consumer perception of whether important people to him/her would approve or disapprove his/her decision to adopt the provided service.

In the mobile commerce adoption literature, many studies have examined the impact of social influence on consumer adoption of mobile services. For example, in a study to examine and compare the impact of seven adoption factors (usefulness, usability, system quality, social influence, ubiquitous connectivity, perceived cost and perceived value) on the behavioural intention of discontinuers and continuers to use mobile services, Kim et al. (2008) found that social influence is one of the factors which has a major impact on the perceptions of discontinuers. In addition, Lu et al. (2005a) found that social influence is a significant determinant of consumers' utilitarian perceptions, such as the usefulness and the ease of using mobile technology, and these have a significant influence on the intention to adopt. The impact of subjective norm on adoption intention was also examined by Toe and Pok (2003), who found that consumers tend to seek information from their 'significant others' reference group (family, friends, colleagues and peers) in order to form a subjective norm perception, which consequently influences their adoption intentions. Many other studies have similarly investigated the impact of consumer-social factors on the consumer adoption of mobile commerce services (e.g., Baron et al. 2006; Hong et al. 2006a; Khalifa et al. 2008; Muk 2007b; Sugai 2007; Yan et al. 2006; Yang et al. 2007).

Consumer-service provider factors

The existing literature on consumer adoption of mobile services has mainly focused on the consumer and the services; both in terms of their independent characteristics as well as their interactions. Social influences have also seen frequent investigation in the existing literature based on their known impact in traditional adoption and diffusion studies. However, interestingly, the consumer-service provider (the receiver and provider of the mobile services) factors have been largely overlooked. It is intriguing how the important

interaction between these two entities in the mobile services adoption scene has received scant attention from researchers in the field. As discussed in the following section, this has been the major motivation for this study.

2.4. The present research

Based on all the above, this research attempts to fill an important gap in the literature by focusing on the impact of consumer-service provider factors on the consumer adoption of mobile commerce services. In particular, this study investigates (1) the influence of the quality of the consumer-service provider relationship (as perceived by consumers) on their attitudes and intentions towards accepting m-commerce services, and (2) how consumers' perception of the value of adoption incentives offered by the service provider affects their attitudes and intentions towards accepting mobile services.

Firstly, this study investigates the influence of the quality of the relationship between the consumer-service provider (as perceived by consumers) on their attitudes and intentions towards accepting m-commerce services. This influence is based on the proposition that, in general, the acceptance of what is offered by one party is highly dependent on who is offering it and what the receiver thinks of both the provider and the nature of their relationship.

This proposition is fundamental to this research which studies how consumers' perception of the nature of their relationship with their service providers affects their decision to accept or reject an offered mobile service. In particular, this study investigates the influence of the consumer-service provider relationship quality (as perceived by consumers) on both their attitudes and intentions towards the adoption of mobile services. More details of the theoretical or conceptual linkage of PRQ to consumer adoption perceptions are provided in Chapter 3.

Secondly, most mobile services are offered along with some kind of incentive to motivate the adoption and acceptance of the service by consumers. Therefore, following the same proposition that the value of what is offered is generally related to who is offering it, this study investigates how consumers' perception of the value of incentives affects their attitudes and intentions towards the adoption of mobile services. How much value

consumers perceive in such incentives is hypothesised to affect a consumer's willingness to accept the incentive and thus adopt the service that is promoted with the incentive. I call this factor the Perceived Value of the Adoption Incentive, or PVI. More details of the theoretical association between PVI and consumer adoption perceptions are provided in Chapter 3.

By investigating these two consumer-service provider factors and how they impact the decision of existing users of mobile technology to adopt or reject a mobile commerce service, this research fills an important gap in the m-commerce adoption literature. The insights of this study should assist service providers to devise strategies to increase the adoption rate of these services among their existing users of mobile phones. In addition, examining these relational factors using a combination of theoretical bases from various research fields such as Information Systems, Marketing and Social Science, offers new insights into the adequacy or inadequacy of traditional adoption theories to fully explain the adoption of mobile commerce services by individuals.

There are many reasons to think that traditional adoption theories, such as the Technology Acceptance Model (TAM) (Davis 1989; Davis et al. 1989), the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975), and the Theory of Planned Behaviour (TPB) (Ajzen 1991), and Diffusion of Innovation (DOI) (Rogers 1995) need to be expanded with more relevant factors in order to fully explain the adoption processes for multipurpose, technology-enabled services such as mobile commerce.

Firstly, many of traditional adoption models (such as TAM) were developed and applied primarily to explain the individual adoption and acceptance of technologies in workplace and organisational settings. In contrast, the adoption and use of mobile commerce services can take place in many contexts, including work (such as checking work-related email inside and outside the office), social (such as sending or receiving messages) and personal (such as personal banking and accounts management, music, games and leisure). This wide range of adoption and usage contexts requires a significant expansion of traditional technology adoption theories.

Secondly, mobile commerce services are complex bundles of technology-enabled innovations that can include a number of complementary (yet distinctive) services to

support multiple activities. Each mobile service within such bundles might have distinctive characteristics and adoption processes that can distinguish it from other parts of the mobile commerce bundle. This complexity means that traditional adoption theories may be inadequate to fully explain the adoption of mobile commerce services. This is because traditional adoption theories were developed to explain the adoption processes of simpler technologies (such as personal computers and/or software) which can be recognised as discrete, single-purpose innovations.

Thirdly, the successful and useful adoption of mobile commerce services is dependent on ongoing connection and service provision. Without this successful and continuous exchange between the provider and the consumer, the technology is almost useless. This is similar to the adoption processes of other information technologies, such as IT outsourcing, where exploiting the full potential of the technology is dependent on an important element of successful 'exchange' between the provider and the consumer of the technology (e.g., Kern and Willcocks 2000). While economic intensions might be a main driver for these interactions, they are evidently embedded in social exchange settings where the relationship between the provider and the consumer plays a major role in the success of the exchange (Granovetter 1985). Traditional technology adoption theories do not adequately consider this element of exchange and its impact on the adoption process.

Fourthly, mobile commerce includes a wide range of applications and services that differ in terms of technical complexity. For example, the use of SMS and MMS can be quite simplistic compared to services such as mobile stock trading, mobile buying and selling, and mobile banking. In order for mobile commerce markets to reach their full potential and generate predicted revenues, existing mobile phone consumers must progress from being users of basic mobile commerce services to adopters and users of more advanced mobile services. This progressive adoption process is quite unlike the adoption processes of traditional discrete, single-purpose innovations. Traditional adoption models mainly describe the process leading to the initial and continued use of a discrete, single-purpose technology, as opposed to the progressive adoption of more advanced features of a multi-purpose technology.

Therefore, this thesis enriches our understanding of the technology adoption process because it explains the adoption process for rapidly evolving, multi-purpose communication

technologies. It examines the effect of relational factors on the progressive adoption of advanced m-commerce services by existing users of mobile technology. This helps address a more general Information Systems (IS) question: *why might an existing user of a technology adopt more advanced forms of that technology?*

The focus on understanding the adoption behavior of *existing* users to upgrade or progress towards advanced versions of the technology is important for the success of all ICT consumer markets, including the mobile commerce market. This is because one of the fundamental characteristics of technology and technology-enabled service markets is the fact that it is almost certain that every technological innovation will eventually be replaced by a newer generation of technology (Danaher et al. 2001). This means that existing users of a technology can (or are expected to) go through shorter upgrade cycles; moving from the adoption of one version of the technology to the next more advanced version or generation. This type of progressive adoption applies to mobile commerce where the consumer must first become a mobile phone owner and can then progress from basic services (such as SMS) to more advanced services (such as mobile selling and buying). Understanding the upgrade behaviour of existing consumers is important because it helps market stakeholders to develop better strategies to promote future products and increase their sales volume (Grewal et al. 2004; Kim and Srinivasan 2009). In fact, several studies have examined and emphasised the importance of understanding consumers' adoption of progressive upgrades for the success of various consumer markets.

For example, Lennstrand (1998) studied the adoption and diffusion of Information and Communication Technology (ICT) in households. This study discusses how there is often a mismatch between the speed of introducing new generations of ICT to the market and the speed at which consumers upgrade from older to newer generations of that technology. In this discussion, the author explains how the adoption and diffusion of a new ICT (e.g. the internet) is dependent on the consumer progression from a more basic technology (e.g. computers). This demonstrates that even for two seemingly independent adoption processes, such as PC adoption and internet adoption, ICT technologies in general have progressive and overlapping interdependencies within them. This would seem to be even more evident when linking existing consumers' progressive adoption from a basic use of mobile phones to using advanced mobile commerce services; especially given that these two innovations share the same underlying infrastructure and technology.

In addition, Huh and Kim (2008) addressed the question of whether or not early adopters of a technology are more likely to upgrade to next generations of the technology compared to late adopters. They found that being an early adopter (measured by the duration of usage since first use) is not a sufficient predictor of the consumer's intention to upgrade to subsequent innovations. This finding contradicts the way traditional studies (e.g. Rogers 1995) categorise adopters based on how far they are located from the mean of the distribution of adoption timing. Huh and Kim conclude that the new knowledge and experience that consumers develop from their usage of the current technology are better predictors of how likely they are to upgrade to more advanced versions of the same technology. This result was confirmed by Sugai (2007), who found that past usage, knowledge and experience is a better predictor of future usage pattern (intensity and variety) of a newer model than other factors such as upgrade motivations (e.g. sociability, instrumentality and fashion) and the technical capabilities of the new device. These conclusions are consistent with the foundation of the present research, which considers that the knowledge and experiences that the existing mobile phone consumer attains from the interaction with the mobile service provider is a major predictor (or inhibitor) of the progressive adoption of consumers towards more advanced mobile commerce services.

Other studies that have also emphasised the importance of understanding the progressive adoption behavior of consumers in other contexts include Irani et al. (2008), who studied the factors that affect the adoption of broadband internet services by the existing users of narrowband technology in the UK. They employed and expanded the Technology Acceptance Model with variables including perceived resources, self-efficacy and social influence. They found all these factors to be important predictors of existing consumers' intention to progress from using the narrowband version of the wired internet technology to using broadband. Furthermore, in the physical product context, Bucklin and Sengupta (1993) found an important relationship between the adoption and diffusion processes of laser scanners in supermarkets and Universal Product Code (UPC) symbols printed on the packages of stocked items, as two examples of complementary innovations that have separate adoption tracks. Also, Kim et al. (2001) developed and estimated a model to understand the adoption and substitution decision patterns of existing Personal Computer users as an example of multi-generation or multi-model technological products. They found that the repeat purchase decision could be estimated using variables including purchase

history, buyer expectations of future generations, and preferences for the currently available options.

All these studies emphasise the importance of understanding consumer progressive adoption of the flourishing of all markets that offer successive generations of technological innovations. The present research offers new insights into this line of research by examining how the interaction between the consumer and the service provider influences the progressive adoption of advanced versions of the mobile services by existing users of mobile technology.

Perceived Relationship Quality (PRQ) is introduced in the next section, and Perceived Value of the Adoption Incentive (PVI) is introduced in Section 2.6.

2.5. Perceived Relationship Quality (PRQ)

The importance of relationships between customers and firms has been frequently stressed throughout the literature. Generally, there seems to be a consensus among researchers and practitioners that building and maintaining positive relationships with customers is essential for the long-term success and profitability of a firm (Claycomb and Martin 2002). In fact, it is argued that keeping existing customers happy is much more effective for a firm than trying to attract new customers (Palmer 1995). In an effort to achieve this advantage, many businesses have started special initiatives, including dedicated departments and personnel in some cases, for managing customer relationships.

Before the concept of customer-firm relationships came to attention, the main focus of businesses was on transactional, day-to-day exchanges with their customers. With increasing competition in different industries, firms started to realise the importance of constructing and sustaining positive relationships with their existing and potential customers. From this perspective, everyday transactions are seen as potentially contributing to continuous, long-term and more profitable business. In this relational view, exchanges with customers are planned and managed instead of being carried out on an ad hoc basis (Arndt 1979). To distinguish relational exchanges from transactional ones, Dwyer et al (1987, p.12) stated that a “relational exchange transpires over time; each transaction must

be viewed in terms of its history and its anticipated future." In this research, I use the definition by Roberts et al (2003, p.181) as follows:

Perceived Relationship Quality (PRQ) *is the consumer perception of "the intangible aspects of relationships, over and above the core elements of the service, and thus adds value to the service when the interaction between the consumer and service provider is ongoing (relational) rather than one-off (transactional)."*

From this definition it seems clear that relationship quality is relevant to almost all kinds of service markets. As the definition states, as long as there is an ongoing exchange between a customer and a service provider, there is a relationship element and, therefore, its nature and quality play a role in the effectiveness, smoothness and continuity of their mutual exchange over time. In the present research, I measure the consumer-service provider relationship quality as perceived by the consumer.

2.5.1. The Formation of Perceived Relationship Quality

In this study, the formation of PRQ is conceptualised as the accumulation of consumer perceptions over time that stem from the consumer's personal episodic experiences (interactions) with the mobile service provider, as depicted in Figure 2.3.

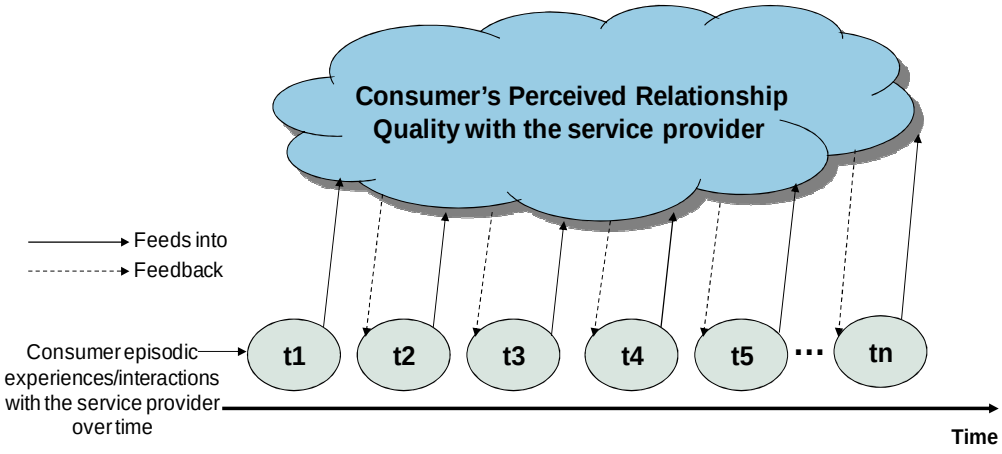


Figure 2.3 The formation of the consumer's Perceived Relationship Quality

As Figure 2.3 shows, the consumer's personal experiences form his/her perception of the relationship quality with the service provider. These episodic experiences, whether positive or negative, accumulate over time to form the consumer's overall perception of the service

provider. As the consumer passes from one experience to the next, he/she uses this accumulated perception to make better informed choices and decisions.

2.5.2. The Importance of Relationship Quality

Ongoing positive relationships with customers can bring many advantages to firms. Firstly, while most 'tangible' marketing and business differentiation strategies (e.g. price discounts, promotions, prizes, on-time service, asking for feedback from customers, membership clubs, etc) can be easily imitated or duplicated by competitors, firms are realising that the 'intangible' nature of a truly positive relationship with a customer cannot be simply duplicated by others (Roberts et al. 2003). A positive relationship differentiates the service provider products in the market, creates barriers to customers switching behaviours (Dwyer et al. 1987) and gives a unique overall competitive advantage to a firm (Roberts et al. 2003). In addition, positive relationships with customers could be "leveraged across services" (Roberts et al. 2003, p.180) to increase a firm's share of each customer's wallet.

Other benefits that firms can gain from positive relationships with customers include: positive word-of-mouth by satisfied customers (Claycomb et al. 2002; Roberts et al. 2003), reduced business uncertainty, managed dependence of each party on the other (Spekman et al. 1985), higher customer retention and thus profitability of a firm (Fornell and Wernerfelt 1987; Hennig-Thurau and Klee 1997; Reichheld and Sasser Jr 1990), exchange efficiency (Dwyer et al. 1987), increased sales volumes, improved operating efficiencies, improved customer feedback, and minimised marketing expenses (Buttle 1996; Reichheld et al. 1990; Vavra 1992).

In addition, customers can also benefit from positive relationships with firms or service providers. Among these are individualised services and/or customised goods (Liljander and Roos 2002), enhanced value, better quality, and increased satisfaction with their purchases (File and Prince 1993).

These benefits, among others, can be generalised to any kind of business-to-consumer (B2C) industry where an interaction between a customer and a business takes place. However, the literature emphasises that positive relationships are even more critical in service, as opposed to industrial, markets. Liljander and Roos (2002) argued that "the

interpersonal nature of services makes them particularly well suited for relationship building." Moreover, the 'intangible' nature of most services, compared to physical products, makes service providers themselves the most tangible aspect of the service. As a result, to evaluate services, customers mostly depend on evaluating the quality of their relationship with their service providers (Claycomb et al. 2002).

The mobile commerce market is, to a great extent, service-based. Mobile services in themselves are highly technological in nature. However, the success of a service provider in delivering these technologies, measured by consumer acceptance and adoption of such services, is also dependent on the firm's ability to provide superior experience or interaction alongside the technology itself. In addition, the adoption of m-commerce services compared to traditional technologies such as personal computers requires a higher level, and probably more frequent, interaction between the provider and the receiver through activities like fees payments for service delivery. Therefore, mobile commerce markets require a good ground for relationship building and so a positive consumer-service provider interaction is critical for its success. This is discussed in the following section.

2.5.3. Consumer-service provider relationships in the mobile commerce markets

Mobile commerce service providers, like other service providers, operate in customer-oriented markets where appealing to the interests of customers and keeping them satisfied is one of the most important drivers of success. While mobile commerce is referred to as a 'technology' in some contexts, it should not be confused with other pure technologies such as fridges or TVs, for which the importance of the relationship with the provider after the adoption of the technology might not be as influential. Rather, a mobile commerce market is an emerging service industry that is formed by customers' adoption of particular technological innovations. Therefore, customer relationship remains one of the most important determinants of success in the mobile commerce markets, and is probably even more important than the technologies utilised to provide the mobile services.

Dwyer et al. (1987) listed four general attributes of relationships: 1) dependence is lengthened over time, 2) future performance is less evident (in terms of measurability) and is dependent on one party's promises and the other's trust, 3) uncertainty exists and leads to

greater communication between the partners, and 4) anticipation of conflict or disagreement takes place. The existence of these attributes in an exchange indicates a suitable ground for relationship building, a ground where relationship has an impact on present and future exchanges. Comparing these attributes against the characteristics of the exchanges between customers and mobile commerce service providers shows that, in such markets, relationships manifest and play a critical role in influencing the exchanges that take place.

For example, billing relationships between customers and mobile commerce service providers (end of month billing, for example) as well as the reliance of customers on firms' promises of timely and accurate mobile service delivery both correlate to the existence of dependence over time between the two (relating to the first and second attributes above). Also, once a customer subscribes to a mobile commerce service, the customer is completely dependent on the service provider to deliver what is expected.

In addition, uncertainty exists in relation to the continuity and quality of service performance, billing accuracy, speed of service, customer service and other deliverables expected from the service provider (the third attribute). Some level of uncertainty could also be perceived by the service provider in relation to, for example, consumer loyalty and timely payments. Therefore, both parties might have their own anticipations of future conflict (the fourth attribute).

2.6. Perceived Value of the Adoption Incentive (PVI)

The concept of *value* is of great importance and is frequently investigated in many fields such as management, information systems, marketing, strategy and finance and economics (Wikström and Normann 1994). The notion of value can take different forms or meanings depending on the specific context or setting being investigated. When referring to the demand aspect of a business's product or offer, customer value becomes the driver of the success of such a product or offer. The more value customers see in an offer, whether product or service, the more willing they are to accept and use it.

Customer value is of increasing interest to both practitioners and academics (Woodall 2003). For any business, creating customer value is fundamental and a prerequisite to securing a profitable position in a competitive market (Huber et al. 2001). Without superior

customer value, even the most basic business strategies, such as differentiation and low cost (Porter 1980) run a great risk of failure (Day 1990).

When offering a product or a service, the consumer's perception of how much value he/she will potentially gain is decisive in its success or failure. The more value the offer carries, the better the chances that it will be accepted. Perceived value, therefore, builds around the utility a customer gains from an offer (Huber et al. 2001). According to the literature on competitive strategy, the number of customers can be increased by conveying more value than the competition (Day and Wensley 1988; Gale 1994; Porter 1985; Woodruff and Gardial 1996). This is to say that customers are always searching for more value in all their actions. The more value they are given (or perceive they are given) compared to other competitive options, the more likely they are to accept the offer.

Similarly, for technology-enabled services such as m-commerce, the consumer should be able to see more value in these technologies compared to other alternatives such as PC-internet based services. As a result, the acceptance of m-commerce becomes a question of how much value the consumer perceives. Generally, the consumer perception of the adoption value of m-commerce can be influenced in two ways. First, the service provider should be able to highlight to the consumer the advantages that he/she will receive by adopting the MC service, compared to other alternatives such as e-commerce, wired-internet-based services. In this respect, m-commerce advantages such as flexibility, convenience and accessibility must be clearly emphasised.

Second, the service provider should also be able to entice the customer to accept m-commerce services by providing an attractive offer. There are many ways through which this attractiveness can be accomplished. One way is to provide an incentive alongside the service that can increase the value of the actual service in the eyes of the consumer and lead them to adopt it. In this case, the magnitude of value the potential m-commerce adopter associates with, or perceives in, the decision to accept the service can be greatly influenced by his/her perception of the value of the incentive. In this research, the consumer's perception of the value of the incentive is examined as one of the consumer-service provider factors.

Zeithaml's (1988) definition of perceived value is the most commonly used among researchers. She was among the first to provide a formal definition of the perceived value concept from a consumer perspective: "a consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given. Though what is received varies across consumers … and what is given varies … value represents a trade-off of the salient give and get components" (p.14).

In this research, I use this definition to specify consumers' Perceived Value of the Adoption Incentive provided by the m-commerce service provider. Note, however, that Zeithaml's (1988) definition is directed towards the consumer's perception of the value of the *actual* product or service, whereas this study examines consumer perceptions of the value of an adoption *incentive*, rather than the mobile service itself. Therefore, for the purpose of this study, PVI is defined as follows:

Perceived Value of the Adoption Incentive (PVI) *is the consumer's overall assessment of the utility derived from an adoption incentive offered by a company to promote a service, based on perceptions of what is received and what is given.*

As this definition states, the perceived value concept is the evaluation of all 'give' and 'get' components in a specific choice situation. These components might originate from many aspects of value such as economic, emotional, social, and so on. In this study, it is argued that a high perceived value is a condition for consumer acceptance of an adoption incentive. In other words, the 'get' components that the incentive offers to the consumer have to be higher and bigger than the 'give' components in order for the consumer to accept the incentive and the mobile service that comes with it. I discuss these value components in more detail in Chapter 6.

2.7. Conclusion

This chapter has described the context for this thesis. I provided an introduction to the definition, the enabling technologies, and the main services and applications of mobile commerce. I emphasised the importance of consumer adoption of mobile services for the success of mobile markets around the world, and systematically reviewed and synthesised the relevant literature to highlight the gap that I address in this research.

Chapter 2

Using the Entities-Interactions Framework (EIF), it was found that the existing literature has mostly emphasised the consumer and the mobile service both in terms of their individual characteristics as independent entities as well as their interactions. On the other hand, an important conceptual gap was identified that emphasises the consumer-service provider factors and how relevant factors affect the adoption by consumers of mobile commerce services. Based on a wide review of relevant studies, two relevant consumer-service provider factors were identified. These are Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI).

The next chapter builds on the PRQ and PVI concepts to determine the conceptual scope of the study, introduce and justify the research model, and propose relevant hypotheses.

Chapter 3.

Research Model and Hypotheses

3.8. Introduction

The previous chapter established the context of this study, reviewed the relevant literature and identified the specific research issue that this study addresses. Using the Entities-Interactions Framework (EIF) and specifying the consumer as the focus, the consumer-service provider factors were identified as the key area that this project focuses on. Based on a wide review of relevant studies, Chapter 2 identified the consumer's Perceived Relationship Quality (PRQ) with the service provider and the consumer's Perceived Value of the Adoption Incentive (PVI) as two important factors relevant to the study of consumer-service provider factors and their impact on consumer adoption of mobile commerce services.

This chapter describes the theoretical basis for this research. First, I establish the conceptual scope of the study by identifying the main adoption factors that will be focused on, leading to the introduction of the research model (Section 3.2). Then, I theoretically justify the linkages drawn between the various variables and concepts leading to the proposition of relevant hypotheses (Section 3.3). The research model and the hypotheses from this chapter are then tested empirically in later chapters (Chapters 8 and 9).

3.9. Conceptual Scope and Research Model

The impact of the consumer-service provider perceptions on consumer attitude and intention towards adopting mobile services is the central focus of this study. It was previously specified that two important factors are relevant to studying the impact of consumer-service provider factors. They are 1) PRQ, which is the consumer's evaluation of his/her relationship with the service provider and 2) PVI, which is the consumer's

evaluation of the value of adoption incentives that are offered by the service provider to entice him/her to accept and use a mobile service.

PRQ is an important concept in understanding consumer acceptance and use of mobile commerce since, in general, a person's attitude towards accepting what is offered or given depends (to some extent) on that person's attitude towards the provider and the nature of the relationship between the receiver and the provider. Secondly, incentives are regularly used by service providers to promote new mobile services and encourage adoption and use of existing services. Following the same underlying argument that the value of what is given partly depends on who gives it, this study investigates how a consumer's perception of the value of such adoption incentives (PVI) affects his/her acceptance and use of mobile services.

In order to fully understand the impact of these newly introduced consumer-service provider factors (PRQ and PVI) it is important to compare their impact with other well-established factors that relate the consumer to the other entities in the EIF, namely, the mobile service itself and the social system. As a result, the conceptual scope of this study is to investigate and compare the impact of three sets of consumer-related factors:

1. **Consumer-service provider factors**: this group includes PRQ and PVI.
2. **Consumer-service factors**: from this type of factors, two of the most commonly studied and well-established factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEU) from the Technology Acceptance Model (Davis 1989; Davis et al. 1989) are investigated.
3. **Consumer-social factors**: Subjective Norm (SN) is one of the most frequently studied and well-established factors in the traditional as well as more recent research in the fields of adoption and diffusion.

The research model, which shows the impact of the PVI, PRQ, SN, PEOU, and PU on consumer attitudes (ATT) and intentions (INT) towards adopting new mobile service offers, is shown in Figure 3.1. The investigation of these distinct yet related sets of factors in a single model provides useful insights into the literature on mobile services adoption by individuals.

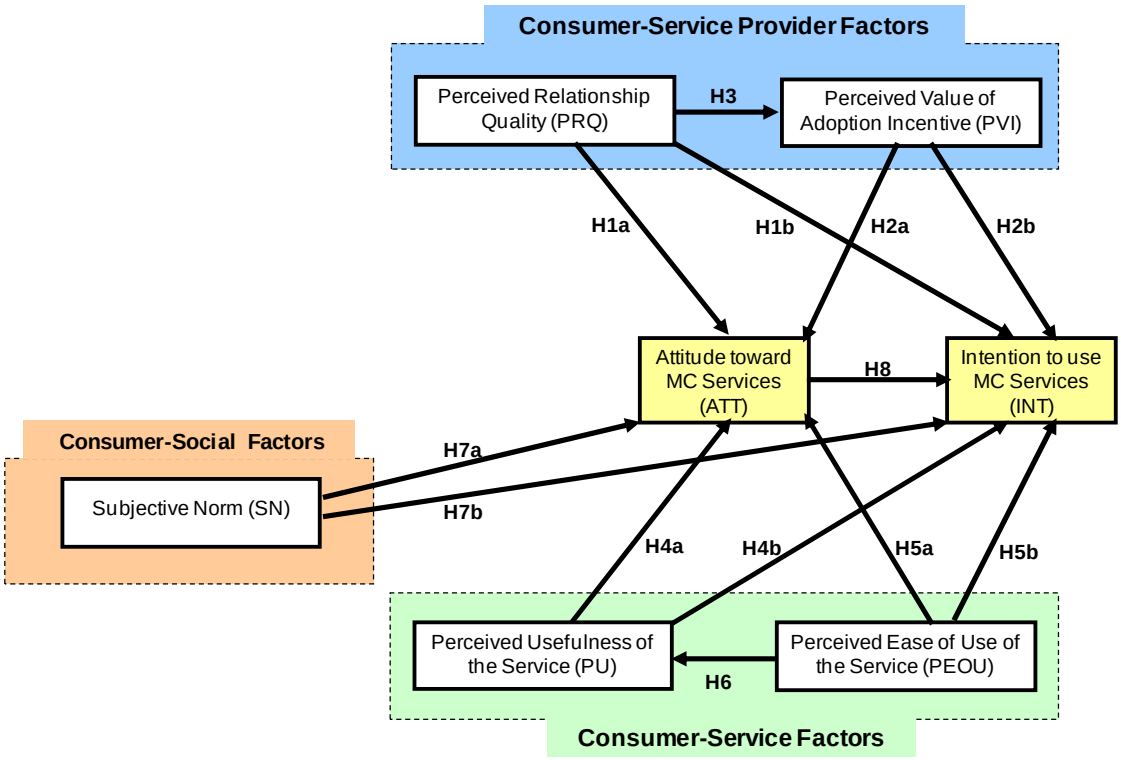


Figure 3.1 The research model

In the following sections, I establish the theoretical grounds and justification for each of the constructs and propose related hypotheses.

3.10. Theories and Hypotheses

This research applies a number of well-known theories including the Social Exchange Theory (SET) (Homans 1958), the Technology Acceptance Model (TAM) (Davis 1989; Davis et al. 1989), and the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975). In the following sections, each construct is discussed based on one of these theories and relevant hypotheses are introduced accordingly.

3.10.1. Consumer-Service Provider Factors: the Social Exchange Theory

Social Exchange Theory (SET) stems from the integration of three main research areas: economics, psychology, and sociology. It was developed to gain a better insight into human social behaviour in economic settings (Homans 1958). Social behaviour is defined by

Homans (1958, p. 606) as "an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige." The theory additionally posits that human relationships are generally formed via the use of subjective cost-benefit analysis. In other words, if a person finds that the subjective benefits of engaging in an exchange (or relationship) are greater than the subjective costs, he/she will invest resources into starting and maintaining the relationship.

This theory has been used by several IS researchers (Hall 2003; Kankanhalli et al. 2005; Kern et al. 2000; Lee and Kim 1999; Son et al. 2005). For example, Gefen et al. (1998) employed the theory to investigate the adoption of expert systems in organisational contexts and found that a constructive social exchange between the user and the developer, through developer responsiveness, can enhance the user perception of the usefulness and ease of using the information system. Kern and Willcocks (2000) used the theory to conduct an exploratory research into client-supplier relationships in the IT outsourcing domain and provided several insights on how these relationships can be managed. Son et al. (2005) combined the theoretical grounds of the Social Exchange Theory and transaction cost economics to investigate the effects of two relational factors: power and reciprocal investments, on trading partner relationships in inter-organisational systems (IOS) network. They found that the client's reciprocal investments in the form of BDI-related support have an important impact in increasing the exchange volume and diversity, while power exercised is found to be not effective.

In line with SET propositions, PRQ and PVI help to inform a consumer's subjective cost-benefit analysis undertaken when forming an intention to accept a new mobile service. The following sections further discuss and hypothesise the link between each of the two concepts with the basis of the Social Exchange Theory.

SET and consumers' perceptions of their relationship quality with service providers (PRQ)

In addition to the materialistic, economic exchange involved in consumers' adoption of mobile services (paying fees in exchange of service delivery); a great part of this exchange is social, non-materialistic in nature. By adopting a new mobile service, a consumer might be seeking to receive some additional non-material values such as prestige, power, approval of others, personal satisfaction, etc. Also, even if the consumer is not practically 'seeking'

such values, in many cases they might play a great role in his/her intention-formation and decision-making activities within the adoption process. Therefore, as SET argues, consumers' end behaviour (accepting or rejecting a new service) is partly based on objective economic analysis, but also (and perhaps primarily) on subjective analysis of costs and benefits.

A consumer's perception of the quality of his/her relationship with the service provider (PRQ) is viewed in this study as one of those non-material goods involved in the exchange between consumers and service providers in mobile services contexts. Accepting a new service from a mobile service provider usually means a beginning of a new phase of a relationship or an exchange over time. In line with SET, the non-material relationship quality perception (PRQ) will affect consumer's attitude, intention, decision and behaviour in relation to this exchange through its direct influence on the consumer's subjective cost-benefit analysis. In this study, the effects of PRQ on consumer attitude (ATT) and consumer intention (INT) toward adopting the mobile service are examined.

Consumer attitude is an evaluation phase where the consumer weighs and compares various aspects of the upcoming exchange in order to formulate an informed intention (and decision) to either adopt or reject the offered service. The mobile service provider is one of the most important aspects of any new mobile service offer because the consumer's post-adoption experience is largely determined by the successful exchange and relationship between the consumer and the service provider. Therefore, the consumer perception of relationship quality with the mobile service provider is an important factor that can influence the outcome of the attitude or evaluation process. Normally, if the consumer has a negative perception of the relationship with the provider, his/her attitude towards adopting the mobile service that is offered by that provider will be negatively affected because the consumer expects the post-adoption experience to be negative. In contrast, the consumer would be encouraged to form a positive attitude towards adopting the service if he/she perceives the relationship with the provider as a positive factor in the evaluation process because he/she would expect the post-adoption experience to also be positive. Therefore, the following hypothesis which links the impact of PRQ on ATT is proposed:

Hypothesis 1a: A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's attitude (ATT) toward the adoption of mobile services.

As part of the adoption process, the consumer usually moves from attitude-building to intention-formation to decision-making. According to this flow, adoption factors are usually assessed and compared during the evaluation or attitude stage leading to an effect on intention. However, sometimes some factors can have a dominant influence that makes them able to directly impact consumer intention over and above their impact on the previous phase (attitude-building). For PRQ, this direct effect on intention might take place in some cases where the consumer relationship with the service provider is severely negative. For example, if the consumer is being offered a new mobile service from a provider that the consumer has had previous serious conflicts with; the consumer might not take the time to evaluate aspects of the service (attitude-building) but rather go directly to forming a negative intention to adopt. Similarly, a special relationship with the service provider might lead the consumer to be willing to adopt the service based on his/her established trust in the provider. For this possible direct impact of PRQ on intention, the following hypothesis is proposed:

Hypothesis 1b: A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's intention (INT) to adopt mobile services.

SET and consumers' perception about the value of incentives offered by service providers (PVI)

The Social Exchange Theory argues that the outcome of a party's subjective cost-benefit evaluation of getting involved in an exchange with another is influenced by the behaviour or the perceived behaviour of the other party. Drawing from this, a consumer's (first party) perception about the value of the adoption incentive offered by a service provider (behaviour of the other party) would influence the results of the consumer's subjective cost-benefit analysis of getting involved in an exchange with the service provider. This subjective cost-benefit analysis, according to SET, forms the basis for consumers' decisions about getting involved in an exchange (i.e., adopting a new mobile service).

In addition, SET views the exchange between parties (e.g., consumers and service providers) as actions contingent on rewarding reactions from others (Blau 1964). Homans (1958) also stressed the importance of each party finding the other's behaviour reinforcing for the exchange to take place. Thus, a consumer's adoption action would similarly be dependent on his/her perceptions about the rewards or incentives presented by the service provider to reinforce the exchange. Correspondingly, a consumer would be willing to maintain and strengthen his/her relationship with the service provider as long as he/she perceives the behaviour of the service provider as reinforcing for the relationship. One way through which service providers can assure this kind of consumer perception is via offering attractive and valuable adoption incentives.

Incentives are intended to increase the worth of the mobile service offer in the eyes of the potential adopter. When building attitude towards adopting the service, the consumer considers various aspects of the offer including any incentives that come with the actual mobile service to encourage him/her to adopt. Normally, the greater value the consumer perceives in the incentive, the greater the overall worth of the offer and consequently the more positive will be the consumer attitude towards adopting the service. Therefore, in this study, the consumer perception of the value of the adoption incentive is considered an important factor that impacts the result of the evaluation (attitude-building) stage of the adoption process, leading to the following hypothesis:

Hypothesis 2a: A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's attitude (ATT) toward the adoption of mobile services.

In addition to the impact that PVI has on attitude leading to an impact on intention, this factor can also have a direct impact on intention over and above its impact on attitude. For example, if the incentive is offered at a time when the consumer has an established need that can be fulfilled by accepting the incentive, the consumer might not take the time to evaluate various aspects of the mobile service (attitude-building) but rather go directly to forming a positive intention to adopt. This leads to the following hypothesis:

Hypothesis 2b: A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's intention (INT) to adopt mobile services.

Incentives are also important to keep consumers in the relationship and away from the temptation of other competing alternatives. Homans (1958) argues that when a party perceives the subjective profit of engaging in a behaviour as higher than the subjective cost, the party is not very opt to change towards other alternatives (competitor service providers or alternative technologies for example). On the other hand, as mentioned earlier in this study, the acceptance of what is given by one party highly depends on who is providing it and what the receiver thinks of the provider and the nature of their relationship. Therefore, the consumer perception of the value of an adoption incentive would depend on who offers that incentive and the nature of the consumer-provider relationship. For example, a negative relationship with the provider of an incentive might decrease the value or worth of the incentive in the eyes of the consumer. Likewise, a consumer might perceive more value in an incentive if the incentive is offered by a provider that he/she trusts and has good relationship with. These linkages lead to the following hypothesis:

Hypothesis 3: A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's perception of the value of the adoption incentive (PVI) offered by the service provider.

3.10.2. Consumer-Service Factors: the Technology Acceptance Model (TAM)

TAM (Davis 1989; Davis et al. 1989) is based on the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975) which suggests that intentions determine behaviour. TAM is one of the most frequently cited theories in Information Systems (IS) research (e.g., Davis 1993; Mathieson 1991; Taylor et al. 1995b; Venkatesh 1999; Venkatesh et al. 2000b). Comprehensive summaries of the research that tested, adapted, replicated, and extended TAM can be found in major reviews including Legris et al. (2003), Lee et al. (2003b), Han (2003) and Lu (2003). Based on the linkages between attitude and intention leading to usage, TAM posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are two major perceptions that influence attitude towards the technology and intentions to adoption and usage.

Perceived Usefulness is defined as "the degree to which a person believes that using a certain system would enhance his or her job performance" (Davis, 1989, p. 320). The

perceived usefulness of an information system is connected to its instrumentality in achieving a valued goal (Davis et al. 1989). Regardless of how much effort is put into the design and implementation of a system, its ability to provide the user with functionality to perform valued tasks remains a major determinant of the system usefulness and adoption. Therefore, through this instrumentality mechanism, perceived usefulness is hypothesised to impact user attitude and intention towards adopting the information system.

Mobile commerce services are information processing and delivery systems that are intended to help users achieve tasks with the flexibility and convenience that mobile technology provides. In line with the TAM propositions, the perceived usefulness of the mobile service in achieving valued goals would affect the consumer attitude and intention toward adopting and using the mobile service. In other words, the more useful the service is perceived by the consumer, the more positive is the consumer's attitude and intention towards adopting and using the mobile service. On the other hand, the less usefulness the mobile service appears to be to the consumer, the less positive his/her attitude and intention towards adoption.

Adoption theories such as the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975) and the Technology Acceptance Model (Davis 1989; Davis et al. 1989) maintain that consumer attitude towards an information systems like mobile services is determined by relevant beliefs such as the system usefulness. As mentioned above, usefulness is associated with the system's ability to allow the user to achieve valued tasks. Essentially, a system that does not help people perform tasks is not likely to be perceived favourably (Robey 1979). Therefore, this favourable or unfavourable perception which results from the perceived usefulness of system such as a mobile service determines the nature of consumer affect (attitude) towards adopting the system. This leads to the following hypothesis:

> *Hypothesis 4a: A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.*

Davis et al. (1989) postulate that users are driven to adopt an application primarily because of the functions it performs for them and that people form positive intentions towards

systems they believe will increase their performance, despite any positive or negative feelings they may have towards adopting the system. They justify this direct influence of usefulness on intentions by arguing that, in work contexts, the enhanced performance is instrumental in attaining various rewards that are extrinsic to the work itself such as promotions and pay-raise (Davis et al. 1989). In the context of this study that examines mobile services adoption by individuals, the direct link between usefulness and intention is also hypothesised. The underlying perceived rewards that result from enhanced performance may by either extrinsic or intrinsic to the performed task itself. For example, intrinsic rewards gained by improved performance as a result of its usefulness may include increased efficiency and effectiveness in performing the particular task. Extrinsic rewards may include things such as enhanced social image, the ability to multi-task and achieve more, greater sense of achievement and self satisfaction with ones overall performance.

These perceived rewards-mechanisms that result from the anticipation of an enhanced performance lead to stronger perceived usefulness of the mobile service. This means-end behaviour is believed to be the underlying mechanism that causes the direct impact of usefulness on consumer intention without the need to activate the evaluation affect (attitude) towards the system (Bagozzi 1982), leading to the following hypothesis:

Hypothesis 4b: A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.

Perceived Ease of Use (PEOU) is defined as "the degree to which a person believes that using a certain system would be free of effort" (Davis, 1989, p. 320). Two effects of ease of use have been established and supported: 1) the effect on attitude and intention, and 2) the effect on perceived usefulness (Agarwal et al. 1999; Davis et al. 1989; Hu et al. 1999; Jackson et al. 1997; Venkatesh 1999; Venkatesh 2000; Venkatesh and Davis 1996; Venkatesh et al. 2000a; Venkatesh et al. 2000b).

The impact of PEOU on consumer attitude and intention is based on the proposition that the easier-to-use the information system is the more willing people would be to start and continue to use it. TAM (Davis 1989; Davis et al. 1989) identifies two mechanisms through which ease of use affects user attitude and intention towards adopting the information system: self-efficacy and instrumentality. Firstly, the easier the system is to interact with

the greater the user's sense of efficacy and personal control concerning his/her ability to operate the system and make use of it. This enhanced sense of self-efficacy is thought to influence the user's attitude and intention to adopt the system due to natural human drives for competence and self-administration (Davis et al. 1989). Secondly, enhancement in PEOU is also instrumental since it contributes to improved performance and the saving of effort that can be used to accomplish other tasks. Both mechanisms (self-efficacy and instrumentality) that are created by the ease of using the system create favourable affect (attitude) and intention towards using the system.

Mobile service providers usually sell mobile commerce services by promoting the flexibility and convenience of accomplishing various tasks while on the move. For such advantages to be realised by the consumer, it is essential that the mobile service is easy to use. Therefore, if consumers are faced with difficult to use services that are supposed to provide them flexible and convenient solution to accomplish tasks, consumers would form negative attitude towards the mobile services. In addition, the difficulty to use would cause a sense of low self-efficacy and accomplishment that will also impact the consumer attitude. These effects of ease of use on consumer attitude towards adoption lead to the following hypotheses:

Hypothesis 5a: A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.

Through the self-efficacy and instrumentality mechanisms, ease of use can also affect consumer intentions directly. For example, a person with a low sense of self-efficacy in using new technologies and innovations might directly form a negative intention to adopt a mobile service that he/she perceives to be difficult-to-use, without necessarily going through the affect (attitude) phase. Similarly, if a person adopts the mobile service for the instrumentality it provides (e.g. flexibility and convenience in achieving tasks), a difficult-to-use service will cause a negative intention to adopt since this difficulty runs on the opposite direction to the proposed advantages of using the service, leading to the following hypothesis:

Hypothesis 5b: A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.

As mentioned above, the perceived usefulness of an information system is linked to its instrumentality in achieving valued goals (Davis et al. 1989). TAM posits that the ease of using a system is critical for creating sense of instrumentality (usefulness) of the system. As a result, ease of use is viewed as an essential antecedent of perceived usefulness. For mobile services, instrumentality is associated with their ability to provide consumers with easy, on-the-go means of achieving intended tasks. According to the TAM theory, the proposed usefulness of a mobile service would greatly suffer if it is difficult-to-use. In addition, the easier to use the mobile service, the less effort is needed to accomplish a specific task and the more effort one can allocate for other activities. This saved effort contributes to the person's sense of overall performance which increases the sense of the service usefulness. This association between a mobile service ease-of-use and its usefulness leads to the following hypothesis:

Hypothesis 6: A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's perception of the usefulness (PU) of the mobile service.

3.10.3. Consumer-Social System Factors: the Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975) postulates that a person's intention (INT) to perform, or not perform, a behaviour is the immediate determinant of that action. Therefore, excluding unforeseen events, people are expected to act in accordance with their intentions. Further, the theory suggests that intentions are a function of two basic determinants:

1. A social factor (*Subjective norm, SN*). Subjective Norm is the person's perception of social pressure to perform or not to perform the behaviour under consideration, i.e. what the group important others think of his/her performance of the action, do they approve it or disapprove it?
2. A personal factor (*Attitude toward the behaviour, ATT*). This is the individual's positive or negative evaluation of performing the particular behaviour of interest.

Subjective Norm (SN): a person's relationships with others are considered the heart of the person's existence and a fundamental determinant of his/her social behaviour (Hinde 1979). That is why people would most often refer to their group of significant people such as family and friends to acquire opinions and to ensure that the intended action will not be faced by rejection from others. Subjective Norm (SN) is the process through which a person ensures the compatibility of his/her intended action with the 'norm' of the social surrounding. Lewis et al. (2003) identifies two mechanisms that govern the impact of Subjective Norm on a person's attitudes, intentions and actions: internalisation and identification. Through internalisation, the person integrates the opinion of a significant referent as part of his/her own belief structure. Via identification, the person seeks to establish a belief structure that conforms to the one possessed by the referent. As a result, a person is cognitively affected by others through their influence on his/her attitudes, intentions, and actions.

Mobile service consumers are usually part of a social system that can influence their perceptions, attitudes and behaviours. Consistent with the aforementioned impact of subjective norm mechanisms, there is usually a group of "important others," which is the group of people that have the highest influence on the consumer perceptions, attitudes, decisions, and behaviours. This group of important others may include family, friends, colleagues, peers and so on. When confronted with a new service offer, for example, the consumer might refer to his/her group of important others either for opinions or just to make sure that his/her decisions are not faced with disapproval from the group. In the research model (Figure 3.1), the impact of Subjective Norm follows two paths: one that affects consumer attitude leading to impact on intentions and the other goes directly to affect intentions.

Attitude (ATT) is an evaluation stage where the consumer forms a feeling towards the action by considering and comparing available options based on the available information. Subjective Norm is hypothesised to impact consumer attitude because this evaluation may – or most probably- includes soliciting the opinions of important others and incorporating these opinions into the consumer's own belief structure (internalisation). In addition, the consumer attitude towards the mobile service might also be affected by the consumer's willingness to conform to the opinions of his social group and make sure that his opinions do not contrast those of the group (identification). Thus it seems reasonable to posit that the

consumer attitude towards the mobile service offer is influenced by the opinions of his social system. This leads to the following hypothesis:

Hypothesis 7a: A consumer's perception of the social influence of important others (SN) influences that consumer's attitude (ATT) toward the adoption of mobile services.

The importance and priority different people give to different adoption factors normally vary. This applies to the Subjective Norm factor since the influence this factor has on one person might differ from another based on the priority each person gives to the opinions of other compared to his own. Lee (1990) argues that the more a person is motivated to conform to social or group norms, the more his/her actions become group-determined rather than individual-determined. As put by Venkatesh et al. (2000a, p.187) "people may choose to perform a behaviour, even if they are not themselves favourable toward the behaviour or its consequences, if they think one or more important referents think they should, and they are sufficiently motivated to comply with the referent." This rationale justifies the direct impact of subjective norm on consumer intention to adopt mobile services, leading to the following hypothesis:

Hypothesis 7b: A consumer's perception of the social influence of important others (SN) influences that consumer's intention (INT) to adopt mobile services.

In this study, adoption intention instead of adoption behaviour (or usage) is considered as the dependent variable because intention is more suitable when the information system under study is at its early stages of diffusion, which applies to the case of mobile commerce services diffusion (Hong et al. 2006a). According to TRA, attitude towards the behaviour (ATT) is the second and most immediate determinant of intentions. It is defined as "an individual's positive or negative feelings about performing the target behaviour" (Fishbein et al. 1975, p. 216). Attitude has been empirically supported as an overall affective evaluation that precedes and determines the adoption intention. The justification for this is that, all else being equal, people form intentions to perform actions toward which they have positive feelings (Davis et al. 1989). For this research, it is proposed that a consumer intention to adopt the mobile service is affected by whether he/she has a favourable or

unfavourable affect towards using the service. As a result, the following hypothesis is proposed:

Hypothesis 8: A consumer's attitude (ATT) toward the adoption of mobile services has a direct impact on that consumer's intention (INT) to adopt mobile services.

3.11. Conclusion

In this chapter, I described the conceptual scope of this thesis. This included explaining the linkages between various concepts using well-established theories such as the Social Exchange Theory, the Technology Acceptance Model and the Theory of Reasoned Action. The integration of these theories and concepts resulted in the building of an integrative research model of mobile services adoption, incorporating the interactions between consumer and service provider, between consumer and the social system and between consumer and the mobile service and also the proposition of a number of hypotheses. The identified research model and hypotheses in this chapter will be empirically examined in later chapters (Chapters 8 and 9).

The next chapter (Chapter 4: *Research Design and Method*) discusses the research design and method that will be used to empirically investigate the model and hypothesis. In Chapter 4 I present a detailed discussion and justification of the study design that I have chosen for the empirical phase of this research. In Chapter 4, I also specify the measures that I will use to assess each of the variables that I have identified, in the present chapter, as part of the conceptual scope of the study.

Chapter 4.

Research Design and Method

4.12. Introduction

This chapter examines the approach used in this study to investigate the impact of consumer-service provider factors on the consumer's attitude and intention towards adopting mobile services. These are Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI). To better understand the extent to which these factors affect consumer adoption, their impact is compared with previously established adoption factors such as perceived usefulness and perceived ease of using the mobile service (conceptualised as representing consumer-service factors) and subjective norm factor which is conceptualised as a consumer-social system factor.

The discussion in the previous chapter presented the research model (shown again in Figure 4.1), and explained the theoretical basis for each hypothesis. In this chapter, I specify and justify the research design and method(s) used to examine empirically the model and hypotheses. The discussion in this chapter provides an overall description of the empirical phase of this research, with more details provided in subsequent chapters.

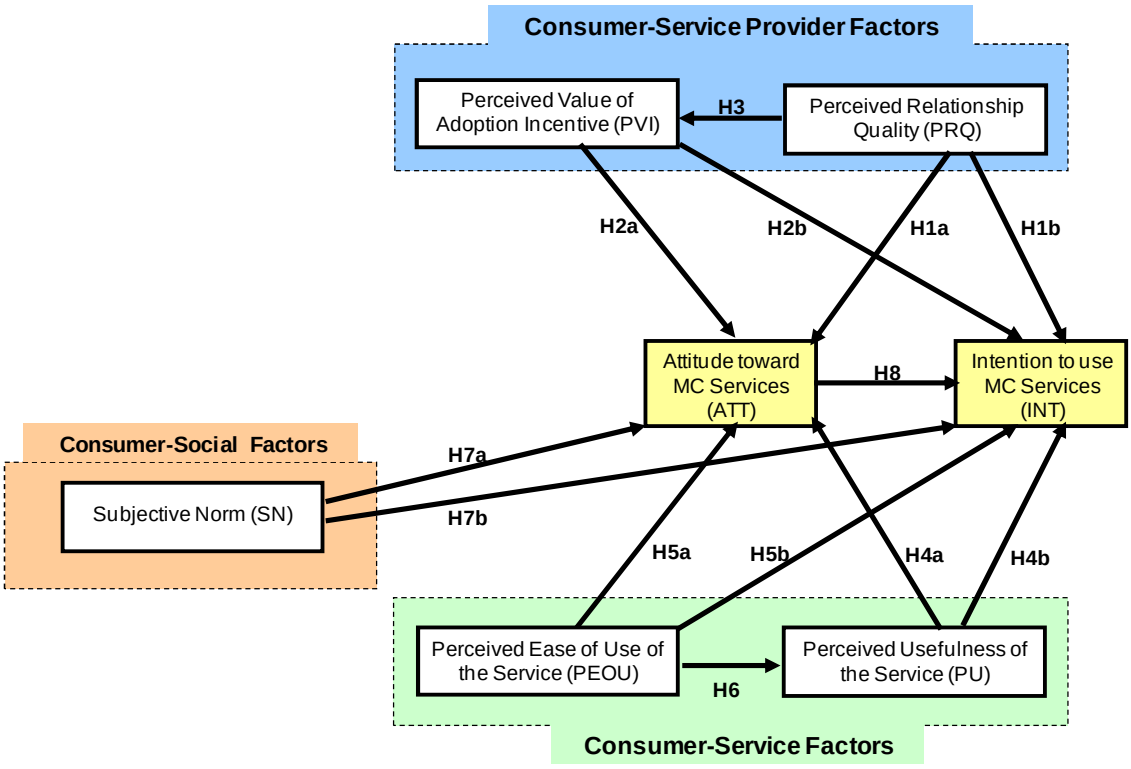


Figure 4.1 The research model

Table 4.1 The research hypotheses

Path	Hypothesis	
PRQ>ATT	**H1a**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's attitude (ATT) toward the adoption of mobile services.
PRQ>INT	**H1b**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's intention (INT) to adopt mobile services.
PVI>ATT	**H2a**	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's attitude (ATT) toward the adoption of mobile services.
PVI>INT	**H2b**	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's intention (INT) to adopt mobile services.
PRQ>PVI	**H3**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's perception of the value of the adoption incentive (PVI) offered by the service provider.

PU>ATT	**H4a**	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.
PU>INT	**H4b**	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.
PEOU>ATT	**H5a**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.
PEOU>INT	**H5b**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.
PEOU>PU	**H6**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's perception of the usefulness (PU) of the mobile service.
SN>ATT	**H7a**	A consumer's perception of the social influence of important others (SN) influences that consumer's attitude (ATT) toward the adoption of mobile services.
SN>INT	**H7b**	A consumer's perception of the social influence of important others (SN) influences that consumer's intention (INT) to adopt mobile services.
ATT>INT	**H8**	A consumer's attitude (ATT) toward the adoption of mobile services has a direct impact on that consumer's intention (INT) to adopt mobile services.

4.13. Research Design

Research that are commonly employed in social research include, experiment, case study, longitudinal and cross-sectional. Once a research design that is best for a study is specified, various quantitative and qualitative data collection methods such as questionnaires, interviews, observations, analysis of documents can be employed to collect evidence.

This research project is primarily directed at assessing and explaining relationships (correlations) between multiple aspects of a phenomenon (adoption of mobile commerce services) to better understand the causal mechanisms underlying that phenomenon. These relationships are shown in Figure 4.1 (above). A number of characteristics of this research

model indicate that a cross-sectional design, as described by De Vaus (2001), is appropriate for this study.

First, there is no time dimension integral to the conceptualisation of any of the proposed adoption factors that could affect how they are theorised or measured. Second, in this research I am interested in measuring the proposed variables based on variance or difference between individuals' perceptions rather than on how these perceptions change over time, after a change in the environment, or after a controlled intervention as in a longitudinal study, an event study, or an experiment (respectively). Therefore, the empirical stage of this study entails collecting data at one point of time. Third, the analysis of the collected data will depend on existing differences between the individuals or groups (such as demographic differences) rather than differences that result from manipulations or interventions.

Although the overall design of this study is cross-sectional, within that broad approach, two separate data gathering and analysis methods were used to enable triangulation of results. Figure 4.2, which maps the stages of this research project, shows this variation throughout the course of the study. It shows that in the first data collection stage, quantitative data was gathered using a large-scale questionnaire survey of mobile phone or services users, whereas the second stage focused on gathering quantitative data. According to Neuman (2006) a survey is a closed, structured research method that is suitable when the researcher wants to learn about people's beliefs or opinions in regard to a specific issue. Newsted, Huff and Munro (1998) list several benefits of surveys, including that they are easy to administer, allow the researcher to determine the values and relations of variables and constructs, provide responses that can be generalised from the sample collected to the population of interest (and to other similar populations), can be reused easily and provide an objective way of comparing responses over different groups, times, and places, can be used to predict behaviour, permit theoretical propositions to be tested in an objective fashion, and help confirm and quantify the findings of qualitative research (p.553). In particular, online surveys provide many advantages such as faster response time, reduced costs and elimination of human error and interviewer bias (Tam et al. 1997).

The second data gathering phase (the qualitative phase) involved a series of semi-structured face-to-face interviews with mobile phone users. Compared to the self-administered

questionnaires, interviews have the advantage of allowing the researcher to establish a dialogue with the participant allowing for existing questions to be clarified and new ones to be improvised based on the participant feedback (Arksey and Knight 1999). This phase had two principal objectives. The first was to assess whether the causal mechanisms that are accessible from the qualitative data are consistent with the ones described in the theory, therefore, providing further confirmation for the research model and hypotheses. The second objective was to enrich our understanding of the relationships between variables with rich contextual descriptions of the effects that are not apparent from the quantitative data alone. This stage can therefore be characterised as an open, interactive research method designed to understand the underlying mechanisms of the relationships between variables that were confirmed or disconfirmed using the online questionnaire results.

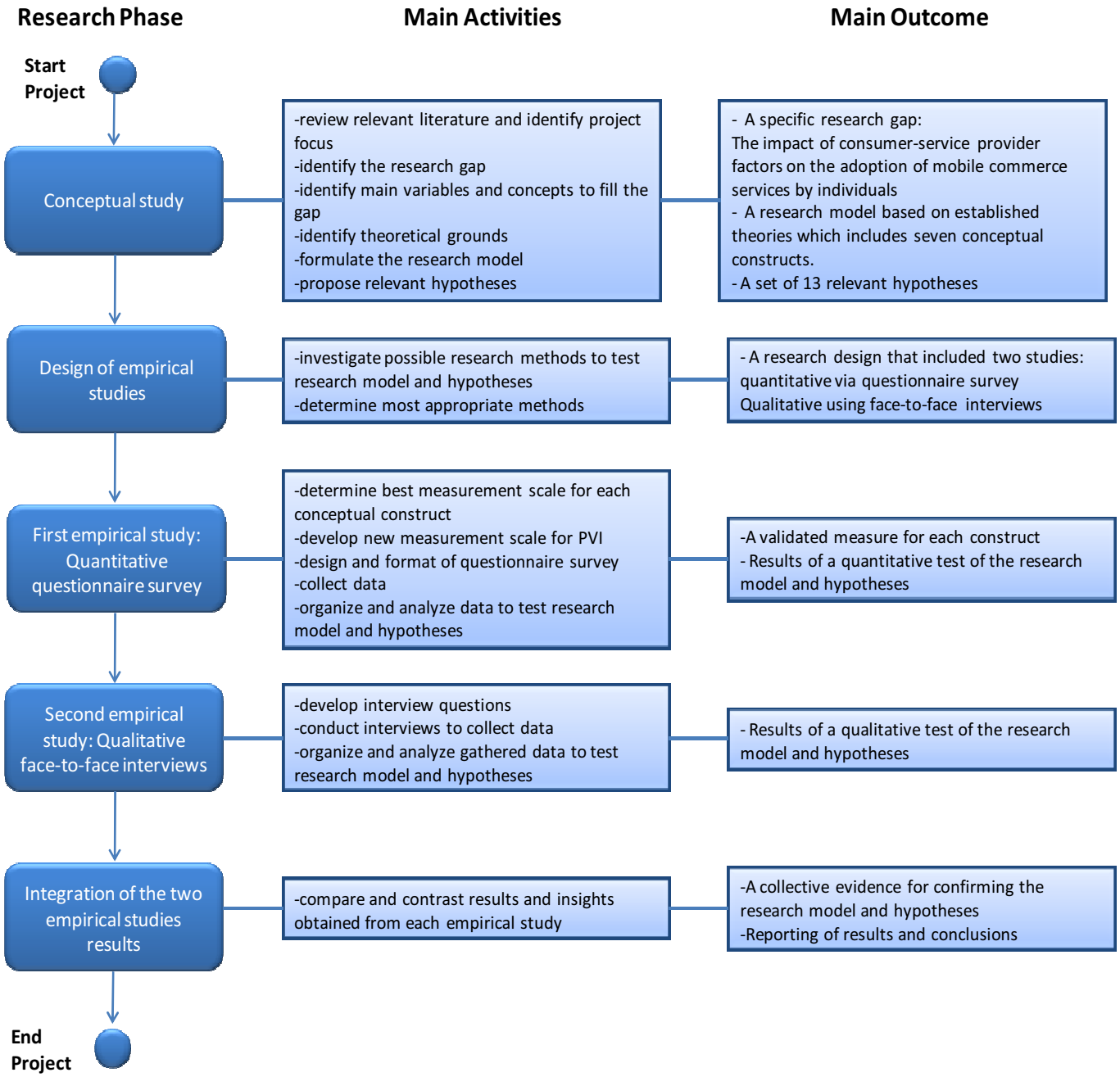


Figure 4.2 Overall research design

This combination of quantitative and qualitative approaches helped ensure the sufficiency and quality of the obtained evidence. The data collected from the questionnaire survey helped to give a broad picture of consumers' perceptions of various concepts in the study and establish the empirical validity of the research model and the proposed hypotheses. However, questionnaires are known for the constraining the collected data and insights to a set of pre-determined questions. Therefore, to complete the picture, qualitative data were collected in order to enrich the questionnaire data with more contextual insights. Interviews

with mobile phone users were conducted as the data collection method in the qualitative study phase. In the following sections, I describe the quantitative study (Section 2.4.1) and the qualitative study (Section 4.2.2) in more detail.

4.13.1. The Quantitative Study

In this section, I provide a detailed description of the quantitative study, including the specification of various variables measures, the questionnaire design and content, the sample and data collection procedures, and the data analysis. Whenever required, I provide references to upcoming chapters for more details on these aspects.

Measurement of Variables

The research model in this study includes the following variables: Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI) which were conceptualised as consumer-service provider factors; Perceived Usefulness (PU) and Perceived Ease of Use of the Service (PEOU) were conceptualised as consumer-service factors; and Subjective Norm (SN) which was conceptualised as a consumer-social system factor. In addition, the consumer adoption of the mobile service is measured by his/her Attitude (ATT) and Intention (INT) towards accepting and using the mobile service.

Generally, there are two common methods to measure a conceptual variable. One is to use existing measurement scales from the literature and the other is to create new measures. Just as the use of existing, reliable and validated scales is recommended, the creation of newly validated instruments is equally highly recommended because such effort “represents a major contribution to scientific practice in the field” (Straub et al. 2004).

To decide the best measure for each of these constructs, a thorough literature review of existing measurement scales was conducted. The suitability of existing measures was evaluated against the context, scope and objectives of measuring the variables in this study. Based on this review, existing validated scales for PRQ, PU, PEOU, SN, ATT and INT were selected. Necessary wording modifications were made to the original scales to suit them to the measurement needs of this study without affecting the original conceptual bases of such scales. Chapter 5 specifies and discusses these measures.

The wide literature review also revealed the need to develop a new measurement scale for PVI. The development process for this scale followed a comprehensive step-by-step process guided by established methodological and measurement guidelines. The complete process is explained in detail in Chapter 6.

Questionnaire Design and Content

Once measures for all variables were specified, they were entered into a web-based data-collection system. This material is shown in Appendices A and B. Appendix A contains the Plain Language Statement (PLS) that describes to participants the research objectives, the questionnaire format and content, approximate completion time, operating instructions for the online system, confidentiality provisions for information collected, and contact information.

Appendix B shows the questionnaire instrument itself, and contains five sections:

- Section A: The respondent is asked to evaluate his/her relationship with the mobile service provider (PRQ) across several aspects such as trust, commitment, satisfaction and conflict (more details on these dimensions are in Chapter 5).
- Section B: An example of an actual mobile service (the Bumper Pack Service) and the adoption incentive that came with it are shown. The respondent is asked to evaluate the value of this incentive (PVI) across several aspects such as functional value (price and quality), social value, emotional value, and new experience (epistemic) value - more details on these dimensions are in Chapter 6.
- Section C: The respondent is asked to evaluate how useful (PU) and easy-to-use (PEOU) he/she perceives the Bumper Pack service to be, and to express what important people would think of his/her acceptance and usage of the mobile service (Subjective Norm).
- Section D: The respondent is asked to express his/her attitude (ATT) and intention (INT) towards accepting and using the mobile service.
- Section E: The respondent is asked to provide some demographic information such as age, gender, education and income (to allow an assessment of the extent to which the sample of respondents is representative of the wider population of interest).

Each respondent is also asked in this section to provide some information about his/her mobile phone usage information including:

- The mobile service provider, included to allow comparison of results between mobile service providers.
- Account type (prepaid or contract), included to assess whether results were affected by the difference in 'flexibility' that prepaid consumers enjoy compared to contract consumers (who are usually bound by contracts).
- Who pays the phone usage expenses (self, someone else he/she knows, employer, etc), because a consumer who pays all phone usage expenses from his/her own budget might differ a consumer whose usage is paid for by a third party. Anecdotal observations indicate that both types of consumer are present among the young consumer populations.
- The length of the relationship with the service provider (relationship age or duration), usually regarded as important when analysing consumer-service provider relationships (see for example, Anderson and Weitz 1989; Dwyer et al. 1987; Liljander et al. 2002; Wray et al. 1994).
- Prior experience with mobile commerce services, which has previously been established as an important factor that can affect adoption perceptions (e.g. Taylor and Todd 1995a).

These demographics and mobile phone usage characteristics were used to better understand the nature of the sample of respondents and therefore assess the extent to which the results of the survey can be generalised. Each characteristic was also assessed as a potential source of systematic bias in analysis of relationships (paths) in the research model.

The measurement scale for each constructs (including PRQ, PVI, PU, PEOU, SN, ATT and INT) used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Demographic and phone usage questions were provided in a multiple choice format with, where appropriate, a blank space to fill in case the answer is not one of the listed choices – although the pilot tests of the questionnaire showed the suitability and sufficiency of the provided choices. Throughout the questionnaire, brief additional instructions were provided to help respondents to complete the questionnaire. The questionnaire was designed using the QEDML™ software developed by Philology (www.philology.com.au).

Sample Population and Sample Size

This research focuses on the population of mobile phone users in Australia in order to measure the influence of various factors on their attitude and intention toward adopting more advanced mobile commerce services. To collect the required data, the sample population was obtained from the World Mobile Internet Survey (WMIS) 2006 mailing list for Australian participants. The WMIS 2006 was conducted within the framework of an international research consortium, which consists of academics and industry researchers from over ten countries. The consortium conducts an annual survey on the trends and use of mobile data services worldwide every year since 2002. The mailing list contains 6,128 Australian mobile phone users who have indicated their consent to participate in future studies involving the use of mobile phones.

This list was used as a sample frame and email invitations were sent to all the members of the list. The use of this list provided this project with many advantages. First, it is hard to reach this many respondents within the time restriction of this research, so the list provided a more feasible option. Second, even if such a large number of respondents is possible to reach using other means, obtaining consent from each respondent before any data collection activity commences might prove to be extremely time consuming and challenging, if not impossible. Third, this list includes respondents with high diversity in terms of characteristics such as age, gender, income, education level and geographic location within Australia, which gives the results more generalisability.

From the WMIS mailing list of 6,128 mobile phone users, 4,820 respondents received the email invitation to participate in the study. Invitations to 1,308 respondents bounced back due to the email address being changed or otherwise disabled. A total of 800 responses were received (a response rate of 17 per cent, a base of 4,820 respondents). Of those 800 responses, 626 were useful and are used in the data analysis. The other 174 responses were eliminated because they were incomplete or the response pattern indicated a careless response (e.g. no variation in responses, and garbage in the written response boxes).

M-Commerce Service and Incentive Examples

As an example of a mobile commerce service, the Bumper Pack service provided by THREE was used to make the questions in the survey more relevant and realistic to the

respondents. The service was newly offered at the time of the data collection and was advertised in various media channels. This gave the study and the questions asked a timely presence. The choice of the Bumper Pack service as an MC example in this research was based on a wide and careful exploration of mobile services that were offered at the time the data were collected.

Subscribing to the Bumper Pack service gives customers access to sports (sport news and live coverage of a variety of sports, including cricket, Australian Rules football, and rugby), current affairs information (including breaking news stories, stock market, and weather), and entertainment (including searching for movie session times at local cinema, viewing the local TV guide, and finding a restaurant or bar). The services and applications offered within the Bumper Pack service cover three of the m-commerce service categories, as discussed in Section 2.2.2, including communication services, information services and entertainment services. Transaction services, which represent the highest most advanced level of mobile services, were not available in the (emerging) mobile market in Australia at the time the data were collected.

To encourage customers to subscribe to this service, THREE provided an incentive: *get the Bumper Pack service with all the features it includes for $5 a month only*. This incentive was used as an example to test the impact of PVI on other constructs in the research model.

Data Collection

The Questionnaire went live on the QEDML™ (www.qedml.com.au) server from the 24th of September 2007 until the 28th of October 2007. An email invitation to participate was sent to the 6,128 members of the WMIS list. To encourage participation, an incentive was provided in the form of draw for an 8GB Apple iPod Touch music and video player (http://store.apple.com) worth $AU299. A total of 626 useful responses were gathered and used in the data analysis.

Organising the Data and Preparing for Analysis:

The responses were imported from the QDEML server into MS Excel and were cleaned up and reformatted to suite the formats used in the SPSS - version 15 for windows- which is used for generating descriptive analysis. As part of the process, a Data Codebook

(Appendix C) was created as a guide and reference point for later analysis. The codebook specifies the naming schemes and conventions that I created and used throughout the analysis. For example, for each field in the questionnaire, the codebook specified its full name, its analysis variable name (a short version or abbreviation of the original full name), the coding system used to code each of its response(s), and whether any of its measures has to be reversed. Table 4.2 provides two examples from the codebook.

Table 4.2 Examples from the data codebook

Full variable name	SPSS variable name	Coding procedure
Ease of use scale	EASE1 to EASE6	1=strongly disagree, 5=strongly agree
Attitude toward service scale:		1= foolish, 5= wise
Wise/Foolish?	ATTWISE	1= bad, 5= good
Good/Bad?	ATTGOOD	1= negative, 5= positive
Positive/Negative?	ATTPOSTV	1= unbeneficial, 5= beneficial
Beneficial/Unbeneficial?	ATTBENEF	Reverse all ATT items

In addition to the data codebook, another document was also created that specified the coding procedures that I was to use for calculating and labelling total scores for every construct and dimension measurement scale (Appendix D). This document clearly specified the total scores required, how each is calculated, and the names assigned to each total score (two examples are provided in Table 4.3). Preparing these documents upfront helped make later analysis easier, systematic and more logical to follow.

Table 4.3 Examples of total scale scores

Scale Name	SPSS variable name	Coding procedure
Total Trust in SP Honesty	Honesty	Add all scores TRUSTH1 to TRUSTH3 Total range: 3 to 15
Total Perceived Relationship Quality	PRQ	Add all scores of all 17 items in the Relationship Quality scale

Preparation for analysis also involved checking for errors in the data and correcting them before any further analysis is accomplished. Using the SPSS software, descriptive statistics were calculated for all variables (categorical and continuous) in the questionnaire to detect out-of-range or erroneous data entries. As a result of this check, no data entry errors were found, and therefore, I was able to proceed to the actual analysis.

Data Analysis

To analyse the data collected a variety of analytical tools were used. The organisation of the collected data and the descriptive analyses were run using the SPSS version 15 for Windows. On the other hand, the examination of the research model and the hypotheses testing were performed using the move advanced technique of Structural Equation Modelling (SEM). SEM is a second generation data analysis technique (Bagozzi and Fornell 1982) that provides many advantages over the traditional first generation statistical tools such as regression, ANOVA and MANOVA.

One of the main advantages of SEM is that it allows the researcher to answer a set of interconnected enquires in a single, systematic and comprehensive analysis (Gefen et al. 2000) compared to first generation tools that can analyse only one layer of linkages between variables at a time. This means that using SEM, a single run of analysis can calculate simultaneously both the measurement model (the correlation between the measurement items and their related construct) and the structural model (the conceptualised linkages between the various constructs in the research model). Using first generation analysis, these two assessments would have to be done separately. Calculating these statistics simultaneously results in a more accurate analysis of the data (Gefen et al. 2000).

More details on the analysis and results of the quantitative study are discussed in Chapter 7 and Chapter 8.

4.13.2. The Qualitative Study

The insights gained from the quantitative study were used towards designing the second data collection stage in the form of qualitative interviews. As mentioned previously, the

objective of conducting this round of data collection is twofold. First, allow the assessment of whether the causal mechanisms that are accessible from the qualitative data are consistent with the causal mechanisms described in the theory. Second, enrich the understanding of relationships between variables with rich, contextual descriptions of effects that are not apparent from the quantitative data alone.

Therefore, the interview transcripts were intended to assess and complement the results obtained from the questionnaire. The interviews were conducted with an accessible sample of six undergraduate and postgraduate students, aged 20 to 28 years old, who are users of mobile phones. The choice of such young group of mobile phone users for this data collection stage conforms with the emphasis of the literature that young mobile phone users are the core target and main driver of mobile commerce services markets around the world (e.g., Aoki and Downes 2003). The sample included both male and female consumers with diverse experiences in using mobile commerce services. This variation in the background and experiences allowed an insightful diversity in the opinions expressed.

The interviews followed a semi-structured style that allowed the participants to freely express their views while allowing me to maintain the flow of the interviews within the focus and scope of the study. Prior to each interview session, participants were presented with a Plain Language Statement (PLS) that explained the purpose the confidentiality policy of this research (Appendix E). All participants were also asked to fill-in and sign consent forms (Appendix F). Sessions were audio tape-recorded for later analysis and future reference. Respondents were given the choice to withdraw from the interview at any point during the session, and were also given the choice to receive a feedback report on the results of the interviews and the research as a whole. Appendix G presents the list of questions that were used as a general guideline during the interview process.

More details on the analysis and results of the qualitative interviews are discussed in Chapter 8.

4.14. Conclusion

In this chapter, I highlight and justify the research design and methods used to empirically examine the research model and hypotheses that were developed in the previous chapter. In

short, a cross-sectional research design was chosen because the features that this type of design offers suit the nature and objectives of this research. Within this cross-sectional design, two empirical methods or studies were staged.

The first involved conducting a large-scale questionnaire survey of mobile phone users in Australia to examine the proposed research model and hypotheses. The results of this quantitative study were used towards designing the second data collection stage which involved conducting interviews with mobile phone users. The qualitative data collected from this second study were used towards assessing the research model and hypotheses with fresh contextual data as well as enriching the quantitative study with insights that are not possible to obtain from the questionnaire data.

The next two chapters describe in full detail the measurement scales that were used to assess various conceptual variables in the online questionnaire, as follows:

- Chapter 5 details the scales used to measure PRQ, PU, PEOU, SN, ATT and INT in the questionnaire survey.
- Chapter 6 discusses the development of the PVI scale.

The questionnaire sample characteristics are presented in Chapter 7 and the results of analysis of research model and hypotheses testing are then presented in Chapter 8. Results of the analysis of qualitative data (interviews) are presented is Chapter 9.

Chapter 5.

Conceptual Variables and their Measurement

5.15. Introduction

The research model that was developed and discussed in Chapter 3 includes six conceptual variables: Perceived Value of the Incentive (PVI), Perceived Relationship Quality (PRQ), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude toward the service (ATT) and Intention to adopt or accept the service (INT). In this and the next chapter, the derivation, operationalisation and validation of the instruments used to measure each theoretical construct in the research model is described and justified.

In this research, I used a combination of these two methods. Previously developed, tested, and validated scales from the literature were utilised to measure PRQ, PU, PEOU, ATT and INT, as described in this chapter. On the other hand, because existing perceived value scales were found unsuitable for the specific context and objectives of this study, a new scale was developed, validated and tested to measure PVI, as described in the next chapter (Chapter 6). In this chapter, Section 5.2 discusses the measurement of PRQ, while Section 5.3 describes the measurement of PU, PEOU, ATT and INT.

5.16. Measurement of PRQ

There is a general consensus in the literature that relationship quality is a higher level second-order construct that has many distinct but interrelated indicators or dimensions (Crosby et al. 1990; Dwyer et al. 1987; Gundlach and Achrol 1995; Jap et al. 1999; Kumar et al. 1995; Roberts et al. 2003). Relationship quality is a general assessment of relationship strength and the level to which a relationship fulfils the requirements and prospects of the parties concerned, given a period of successful and failed exchanges (Crosby et al. 1990).

Depending on this evaluation, relationships quality can range from true to spurious (Liljander et al. 2002) with varying impact and implications on different aspects of the exchange.

Existing studies used various dimensions or indicators to measure relationship quality depending on the specific context and objectives of each study. For example, Kumar et al. (1995) included trust, commitment, expectation of continuity, level of conflict, and willingness to invest; Roberts et al. (2003) included trust, satisfaction, commitment and affective conflict as the main dimension for evaluating relationship quality; Liljander and Roos (2002) included customer perceived relationship benefits, trust and commitment; and Wray et al. (1994) included customers' trust in a salesperson and satisfaction in the overall relationship as its basic indicators.

Based on a wide review of existing scales for measuring relationship quality (as perceived by consumers), it was found that the RELQUAL scale (Roberts et al. 2003) is the most suitable for the objectives and context of the current study. The RELQUAL (Table 5.1) is a Likert-scale that was developed to help evaluate customers' perceptions of the quality of their relationships with their service providers. According to the propositions of this study, these perceptions play a major role in influencing customers' attitudes and intentions to accept or adopt mobile commerce services offered by service providers.

Table 5.1 The original RELQUAL scale items

Relationship Quality Dimension	RELQUAL Measures
Trust in Firm Honesty	1. My service provider is honest about problems 2. My service provider has high integrity 3. My service provider is trustworthy
Trust in Firm Benevolence	1. My service provider is concerned about my welfare 2. When I confide my problems to my service provider, I know they will respond with understanding 3. I can count on my service provider considering how their actions affect me
Affective Commitment	1. I feel emotionally attached to my service provider 2. I continue to deal with my service provider because I like being associated with them 3. I continue to deal with my service provider because I genuinely enjoy my relationship with them

Satisfaction	1. I am delighted with the performance of my service provider 2. I am happy with my service provider's performance 3. I am content with my service provider's performance
Affective Conflict	1. I am angry with my service provider 2. I am frustrated with my service provider 3. I am annoyed with my service provider

There are many reasons that make the RELQUAL scale suitable for measuring customer-service provider relationship quality in this study. First, the scale is intended to measure the intangible aspects of consumer-service provider exchange (such as emotions, beliefs and attitudes) as opposed to the more tangible ones (such as actual service delivery and bills payment). This goes in line with the focus of this study which aims to measure the intangible aspects of the consumer-service provider exchange or relationship. Second, the scale was designed for cases when the interaction between customers and service providers is continuous (relational) rather than once-occurring (transactional). This profile fits the customer-service provider exchanges in mobile commerce since customer's subscription to a service would, in normal circumstances, mean a beginning of ongoing exchanges (relationship) over a period of time.

Third, the purpose of developing RELQUAL is to "come up with a scale for measuring relationship quality regardless of service type" (Roberts et al. 2003) p.183). As a result, the questionnaire used to test the scale was designed as a booklet and respondents were free to choose the service they wished to evaluate. The services evaluated ranged from hairdressers to banks to medical services and so on. Therefore, adopting the scale for the purpose of measuring customer-service provider relationships in the context of mobile commerce services is justified since its development and testing was not restricted to one kind of service.

Fourth, in their definition of relationships, the authors of the RELQUAL excluded the instances where customers are 'forced' to be in a relationship. They limited their scope to include only 'voluntary' willingness of customers to sustain and continue their relationships with service providers. The same limitation applies to the scope of this study, which is based on the fact that customers would normally 'choose' to adopt or reject a new mobile service provided by their service providers. Even in cases where customers are required to sign contracts, which give the sense of a forced relationship, the initial decision to accept a

service and sign the contract is usually voluntarily made by customers. According to this study, such voluntary action is highly dependent on customers' perception of their relationship quality with their service providers.

Finally, different kinds of statistical tests of reliability and validity of the RELQUAL scale were run by the authors. For example, it was found that the scale is in line with the literature and fulfils the psychometric criteria outlined by (Churchill 1979) and (Anderson and Gerbing 1988). Also, the reliabilities of the scale exceeded the (Nunnally c1978) recommended minimum of 0.7 for exploratory studies. In addition, the scale was tested using LISREL8 which showed a very good model fit (GFI=0.92, TLI=98, CFI=0.99). These results give more confidence in the scale validity and reliability and, therefore, further justify its use in the present research.

Based on the above reasons, this research employs the scale to measure customers' PRQ with their service providers in the context of mobile commerce services adoption. In the following section, I briefly discuss the conceptual foundations of the RELQUAL scale.

5.16.1. Conceptual foundation of the RELQUAL scale

The RELQUAL scale is based on five dimensions of relationship quality. These dimensions are: customers' trust in the service provider honesty, their trust in service provider benevolence, their affective commitment towards the relationship with service providers, their satisfaction with such relationship, and their perceived affective conflict towards their service providers. I briefly describe each of these dimensions in the following sections.

Trust

Trust exists in a relationship "when one party has confidence in an exchange partner's reliability and integrity" (Morgan and Hunt 1994, p.23). Trust is an important pre-requisite for true, strong, and long-lasting relationships maintenance and continuity (Bitner 1995; Morgan et al. 1994; Wilson 1995). Trust also helps to lessen risk perceived by each partner (Roberts et al. 2003) and therefore helps maintain the relationship over the long-run by making it easier to overcome and resolve conflicts that might arise (Wray et al. 1994).

Many authors (For example, Claycomb et al. 2002; Liljander et al. 2002) have emphasised the importance of trust in service markets (such as mobile services markets) in particular because in such markets, "customers often do not buy services per se. What they buy are implicit and explicit promises of service" (Claycomb et al. 2002, p.625). Therefore, "customers must trust service providers before they are willing to pay for promises" (Claycomb et al. 2002, p.626).

Furthermore, the existence of trust, in its genuine form, naturally incorporates the willingness or behavioural intention of each partner to *actually* rely on the other (Morgan et al. 1994). Accordingly, a customer's genuine trust in a service provider signifies his/her willingness to act upon it. In line with this, the current study postulates that trust, as an indicator of overall relationship quality, contributes to the PRQ influence on consumer attitudes and intentions to accept newer mobile commerce services.

For a customer to trust a service provider it is important that the service provider is capable of offering honest, credible, as well as caring, helpful, benevolent and fair treatment to the customer outside the zone of their agreed-upon commitments or contracts (Kumar et al. 1995; Morgan et al. 1994). Consistent with these various qualities, the RELQUAL scale views and measures trust through two dimensions: trust in the service provider honesty and trust in the service provider benevolence. The following two sections briefly define and describe these two dimensions.

PRQ Dimension 1: Trust in Service Provider Honesty

Trust in firm honesty (also referred to as integrity or credibility) is defined as "the extent to which the customer believes that the firm's word can be relied on, that they are sincere, and that they will perform their role effectively and reliably" (Roberts et al. 2003, p.174).

As put by Buttle (1996), building trust means that the service provider has to ascertain that its customers know that it will stand behind its promises of service delivery, quality, accuracy, and so on. As a result, customers' perception of the service providers' honesty or credibility determines a big part of the customers' overall trust and, therefore, their relationship quality perceptions.

PRQ Dimension 2: Trust in Service Provider Benevolence

Roberts et al. (2003) define this concept as "a customer's perception of the extent to which the firm is concerned about the welfare of the customer" (p. 174). This simply means that in order to create this kind of trust, service providers have to keep the advantage of customers in mind outside the range of their agreed-on commitments (through contracts, for example). Charity, public services, getting involved with people in various occasions, helping in case of national tragedies, providing additional promotions and gifts, standing for customer rights and numerous other initiatives can all enhance customers' perception of the benevolence of their service providers.

The impact of customers' perception of their trust in service provider benevolence on their relationship quality perceptions and, consequently, on their attitudes and intentions to invest in the relationship cannot be underestimated. If a customer believes that the service provider cares about his/her welfare it might improve his/her perception of the quality of his/her relationship with the firm. Consequently, this positive perception might encourage the customer to accept new ideas (services) and be willing to consider these services and pay for them (Liljander et al. 2002).

PRQ Dimension 3: Affective Commitment

The existence of a partner's commitment in a relationship is defined as "believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely" (Morgan et al. 1994).

Commitment is postulated by Hennig-Thurau and Klee (1997) to be one of the main pillars of a high quality relationship. When a customer is committed, it implies that some degree of exceptionality and uniqueness exists in the relationship between him/her and the service provider, which results in minimal (if any) search for alternatives (Palmer 1995). Nevertheless, a highly committed customer might not completely ignore other alternatives, but rather maintain awareness of alternatives without actually testing them (Dwyer et al. 1987). Such commitment results in a great competitive advantage for the service provider.

As a result, the superiority that committed customers feel towards their service providers might lead them to be more willing to accept or try new ideas or services offered by the service providers because customers perceive such offers to be "superior to the competitors' offerings" (Liljander et al. 2002, p. 595). The present study considers this link between customers' affective commitment, as an indicator of relationship quality, and customers' attitudes and intentions to accept and use newer mobile commerce services offered by their service providers.

PRQ Dimension 4: Satisfaction

Satisfaction in a relationship is described as a positive emotional status which results from a party's evaluation of the experiences and outcomes from the relationship over time (Anderson and Narus 1990; Crosby et al. 1990; Storbacka et al. 1994). Thus, a customer who evaluates experiences with a service provider over time as positive should be more satisfied and assess the perceived quality of the relationship positively (Lages et al. 2005).

Customer satisfaction is one of the most commonly studied indicators of relationship quality. Customer satisfaction is known for its positive effect on customer behaviour patterns and impact on firms' profitability (Keiningham et al. 2003; Kotler 1994). When a customer is satisfied, a firm can gain an extremely valuable competitive advantage over competitors as it becomes harder for competitors to lure such customers away from their current service providers (Shaw 1996). Research also indicates that there is a positive association between customer satisfaction and purchase intentions (Anderson and Mittal 2000; Keiningham et al. 2003). The current research considers this association between customer satisfaction (as an indicator of relationship quality) and customer adoption intentions in the context of mobile commerce services.

PRQ Dimension 5: Affective Conflict

Affective conflict is defined as the emotionally felt "hostility, frustration, and anger toward the other party" (Jap et al. 1999). In relationship research, conflict is assessed by the regularity, intensity, and/or length of disagreements (Anderson et al. 1990). The RELQUAL scale authors integrate affective conflict and define it as "a measure of the retained level of conflict felt by the consumer" (Roberts et al. 2003, p.179).

Customer affective conflict is a perception that is built over time with past experiences and expectations playing a great role in its formation. It is an indicator of relationship quality that associates negatively with high quality relationships. The higher customers' perceived affective conflict towards their service providers, the lower their relationship quality perceptions (Roberts et al. 2003). This association between affective conflict, as an indicator of relationship quality, and attitudes and intentions to accept and use future mobile commerce services is considered in this research.

5.16.2. Adapting the REQUAL scale for the present study

In this study, the majority of the RELQUAL original measures (Table 5.1) were retained and used to measure the PRQ construct, subject to some necessary wording modifications. The only exception to this is the satisfaction scale. The original RELQUAL includes the following items to measure satisfaction:

1. I am delighted with the performance of my service provider
2. I am happy with my service provider's performance
3. I am content with my service provider's performance

Various tests such as experts review, pre-test and pilot test, were performed to ensure the suitability of the original RELQUAL items for measuring PRQ dimensions in the context of this study. These tests revealed some concerns with the satisfaction items of the original RELQUAL scale. These items were not thought to be capturing the whole concept of satisfaction as seen by the respondents.

To resolve this, I went back to survey some literature on the measurement of satisfaction. I found that satisfaction (as a measured concept) essentially depicts, and should be measured using, three main aspects (Danaher and Haddrell 1996):

1. **Performance** (e.g. excellent, very good, good … very poor)
2. **Disconfirmation** (e.g. better than expected, as expected, worse than expected)
3. **Satisfaction** (e.g. very satisfied … very dissatisfied)

In addition, Danaher and Haddrell (1996) recommended adding one item or measure on the overall satisfaction (recommending the service provider to others). After consulting again

with expert researchers and potential respondents, the (Danaher et al. 1996) guideline for measuring satisfaction was used, as follows:

Performance: Since the RELQUAL scale uses three very similar statements that all measure service provider performance, only one statement (based on experts and respondents suggestion) was kept to represent the performance part as follows: "I am happy with my service provider's performance."

Additionally, the following statements were added in order to cover the other aspects of satisfaction as conceptualised by (Danaher et al. 1996):

Disconfirmation: "My service provider is always better than expected"
Satisfaction: "Overall, I am very satisfied with my service provider"
Overall Satisfaction: "I would recommend my service provider to people I know"

Therefore, the modified version of the RELQUAL scale includes the items shown in Table 5.2. This version was the one used in the final pre-tests and pilot tests of the questionnaire; and the one used in the data collection activities.

Table 5.2 Modified version of the RELQUAL scale as used in this study

Relationship Quality Dimension	Measures
Trust in Firm Honesty	1. My service provider is honest about problems 2. My service provider has high integrity 3. My service provider is trustworthy
Trust in Firm Benevolence	1. My service provider is concerned about my welfare 2. When I confide my problems to my service provider, I know they will respond with understanding 3. I can count on my service provider considering how their actions affect me
Affective Commitment	1.I feel emotionally attached to my service provider 2.I continue to deal with my service provider because I like being associated with them 3.I continue to deal with my service provider because I genuinely enjoy my relationship with them

Satisfaction	1.I am happy with the performance of my service provider 2.My service provider is always better than expected 3.Overall, I am very satisfied with my service provider 4.I would recommend my service provider to people I know
Affective Conflict	1.I am angry with my service provider 2.I am frustrated with my service provider 3.I am annoyed with my service provider

5.17. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) Measurement

Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the two main concepts in the Technology Acceptance Model (Davis 1989; Davis et al. 1989). This model posits that, in general, PU and PEOU are the two main determinants of user adoption of technology. As mentioned in Chapter 3, based on the Entities vs. Interactions Framework (EIF), these constructs are examined in this study as they represent two of the most commonly investigated and well-established consumer-service factors.

Perceived Usefulness is defined as "the degree to which a person believes that using a certain system would enhance his or her job performance" (Davis 1989, p.320). Perceived Ease of Use, on the other hand, is defined as "the degree to which a person believes that using a certain system would be free of effort" (Davis 1989, p.320). In this research, I adopt these concepts and their measures from pervious studies in order to measure the m-commerce consumer perception of how useful and easy to use is the mobile service. Table 5.3 lists the measures used in the current study, with necessary wording modifications to suite the study context.

Table 5.3 Measures for Perceived Usefulness and Perceived Ease of Use

Construct	Measures used	Source
Perceived Usefulness (PU)	1. I think that using the service will help me accomplish tasks faster. 2. I think that using the service will improve my performance in general. 3. I think that using the services will make me more productive. 4. I think that I will become more effective by using the service.	(Davis 1989; Davis et al. 1989)

	5. I think that using the service will make it easier to do things. 6. I think that using the service is useful to me in general.	
Perceived Ease of Use (PEOU)	1. I think that learning to use the service will be easy to me. 2. I think that I can easily make the service do what I want it to do. 3. I think that using the service will be clear and understandable. 4. I think the service will be flexible to interact with. 5. I think it will be easy for me to become skilful in using the service. 6. I think I will find the service easy to use.	(Davis 1989; Moore and Benbasat 1991)

5.18. Measurement of Subjective Norm (SN), Attitude (ATT) and Intention (INT)

As discussed in Chapter 3, the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975) postulates that a person's intention (INT) to perform or not to perform a behaviour is the immediate determinant of that action. Therefore, excluding unforeseen events, people are expected to act in accordance with their intentions. Further, the theory suggests that intentions are a function of two basic determinants:

1. *Subjective Norm (SN)*, which is the person's perception of social pressure to perform or not to perform the behaviour under consideration, i.e. what would others think of his performance of the action? Do they approve it or disapprove it?

2. *Attitude towards the behaviour (ATT*), which is the individual's positive or negative evaluation of performing the particular behaviour of interest.

These variables are well known, researched and have been repeatedly measured and tested in the Information Systems literature. Therefore, existing scales for these constructs are used to measure them in this study, with necessary wording alterations, as shown in Table 5.4.

Table 5.4 Measures for Subjective Norm, Attitudes toward the service, and Intention to adopt the service		
Construct	**Measures used**	**Original source(s)**
Subjective Norm (SN)	1. People important to me will support my use of this service 2. It is expected that people like me use this service 3. People I respect expect me to use this service	(Fishbein et al. 1975; Pedersen 2005; Venkatesh et al. 2000a)
Attitude toward the service (ATT)	1. I think that accepting and using the service would be wise/foolish 2. I think that accepting and using the service would be good/bad 3. I think that accepting and using the service would be positive/negative 4. I think that accepting and using the service would be beneficial/unbeneficial	(Davis et al. 1989; Pedersen 2005; Taylor et al. 1995b)
Intention to adopt the service (INT)	1. I will use the service in the future 2. If I buy a new mobile handset, I will pay attention to the service capability of the handset 3. If I change the service provider, I will ensure that they offer the service	(Davis et al. 1989; Venkatesh et al. 2003)

5.19. Conclusion

In this chapter, I describe the instruments used to measure Perceived Relationship Quality (PRQ), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitudes (ATT), and Intentions (INT). These measures are based on previously developed and validated scales available in the literature. In the next chapter, I describe the process through which a new measurement scale was developed and validated to measure Perceived Value of the Incentive (PVI) construct.

Chapter 6.

Perceived Value of the Adoption Incentive (PVI) Scale Development

6.20. Introduction

In this chapter, I specify the scale that I used to measure Perceived Value of the Adoption Incentive (PVI). To specify a suitable measure for PVI in the context of this study, a review of existing measurements of perceived value was conducted. This review showed that previously developed scales such as Lapierre (2000), Mathwick, Malhotra et al. (2001), Sweeney and Soutar (2001) and Petrick (2002) are either unsuitable for the specific focus of the current study (on adoption incentives in mobile commerce context) or inadequate to capture the aspects of value conceptualised in this research.

The construction process followed a careful step-by-step process that adapted various guidelines from the Information Systems field such as Lewis, Templeton et al. (2005) and Davis (1989). Figure 6.1, next, shows the overall process through which the scale was developed and tested. Throughout the scale development process, several literature reviews, more than 30 face-to-face interviews, and various techniques were used to come up with a valid and solid instrument to be used for measuring consumer's perceived value of the incentive in the data collection stage.

As shown in Figure 6.1 (explained in more detail in the following sections), the process began with a clear theoretical specification of PVI which included defining the construct, specifying its premise (purpose) and theoretical domain and dimensions. Once a solid conceptual ground was defined upfront, a master list of candidate measures or items were sought from the literature, user interviews, consultation with expert researchers, as well as the researcher's own knowledge. After that, an intensive, theoretical and empirical screening and validation process started to select the best list of measures to be included in

the pre-test of the almost-ready scale. Finally, the PVI scale was combined with measures of other constructs for the pilot test before the actual data collection began.

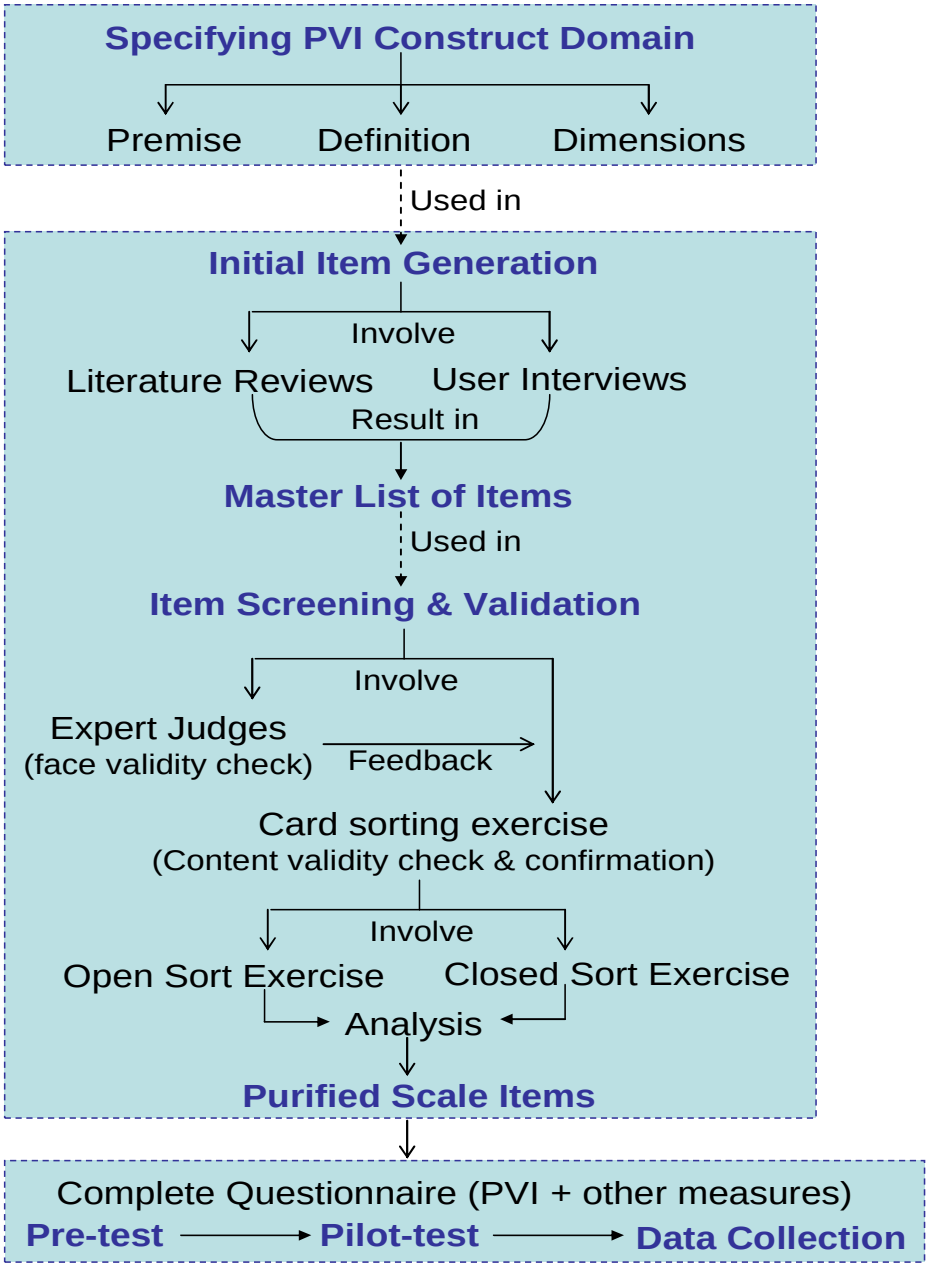


Figure 6.1 The PVI scale development and validation process

6.21. PVI domain specification

This stage is a conceptual definition of the construct and a theoretical base on which other stages in the scale development process build. Therefore, relevant literature was reviewed in order to form a precise specification of the following information:

1. The *premise,* which establishes the purpose and/or the importance of the construct
2. The *conceptual definition* of the construct, and
3. A *list of dimensions.*

The above information is used as a theoretical base for the PVI instrument construction. In Chapters 2 and 3, the purpose and importance of the PVI construct was specified. The construct was defined as:

> *The consumer's overall assessment of the utility derived from an adoption incentive offered by a company to promote a service, based on perceptions of what is received and what is given.*

Based on a review of relevant theories, I decided to use the Theory of Consumption Values (Sheth et al. 1991) as a theoretical framework for this scale development process. In the following section, I provide an overview of this theory (Section 6.2.1), its relevance to the PVI construct of this study (Section 6.2.2), and the specification of the construct's list of dimensions as proposed by the theory (Section 6.2.3).

6.21.1. The Theory of Consumption Values

The main objective of the Theory of Consumption Values (Sheth et al. 1991) is to understand why consumers make the choices they make based on a perceived value perspective. The theory is based on an intensive literature review of various disciplines in which the value concept has been investigated such as economics, social sciences, and clinical psychology (Sweeney et al. 2001). The theory identifies five consumptions values that can influence consumers' perception of overall value and, consequently, their choice behaviour. These five values are: functional value, social value, emotional value, epistemic value, and conditional value. The theory and its dimensions are based on three fundamental propositions (Sheth et al. 1991):

1. Consumer choice is a function of multiple consumption values. So a decision may be influenced by any or all of the five consumption values.
2. The consumption values make differential contributions in any given choice situation. So, for example, while one consumer in a given choice situation gives more weight to functional value and little to other values, another consumer in the same situation evaluating the same object might give more to social or emotional value and little to functional value.
3. The consumption values are independent, relating additively and contributing incrementally to choice. So consumers 'trade off' least salient values for more salient ones based on their perceptions.

As mentioned above, the current study uses this theory as a conceptual base for the process of developing a multi-dimensional scale to measure the PVI construct. The next section justifies the choice and the suitability of this theory as a theoretical framework for the PVI scale development process.

6.21.2. The Theory of Consumption Values and PVI

There are many qualities that make this theory suitable as a conceptual ground for the PVI scale development process. First, the theory was developed to provide a "broader theoretical framework of perceived value" (Sweeney et al. 2001, p.205), which makes it applicable for various types of studies on perceived value including the current research. Second, the theory can be used to predict, describe, and explain consumption behaviour based on the value perspective (Sheth et al. 1991). This goes in line with one of the main objectives of the PVI construct in this research: understanding what forms consumers' perceptions of the value of adoption incentives and how such evaluation affect consumer acceptance and use of m-commerce services.

Third, the theory is "applicable to choices involving a full range of product types (consumer nondurables, consumer durables, industrial goods, and services)" (Sheth et al. 1991, p.159). This gives it a wider applicability and does not restrict it to one type of material-product or non-material-service. Therefore, the use of this theory to examine consumers' perceived value of incentives used to promote a mobile service is justifiable. Fourth, one of the main consumer decision levels that the theory is intended to explain or predict is why consumers

choose to buy or not buy (or to use or not use) a specific product or service from a value perspective. This focus suits the current study which also aims at understand why do consumers choose to accept or reject a certain adoption incentive based on a value perception.

Because of these reasons, the current study adapts the theoretical dimensions and definitions from the theory to understand and measure consumers' perception of the value of adoption incentives. Using the theory, candidate scale items were gathered and screened to reach the best measurement tool to evaluate the PVI construct. The following section defines and describes the five value dimensions of the theory.

6.21.3. Dimensions of Perceived Value

The Theory of Consumption Values identifies five types of values that constitute the overall consumer perceived value. The inclusion of each of the values was decided based on evidence from previous literature from various disciplines as well as an empirical study conducted by the authors of the theory. The current study uses these dimensions and definitions for the conceptual construction of PVI.

The theory authors kept each dimension definition general by using the word *alternative* to indicate any kind of service or product. In the present study, this word is replaced by the word *incentive* to relate to the PVI construct. The theory of consumption values includes the following dimensions:

Value Dimension 1: Functional Value

Functional Value is defined by Sheth et al. (1991) as:

> *"The perceived utility acquired from an [incentive's] capacity for functional, utilitarian, or physical performance. An [incentive] acquires functional value through the possession of salient functional, utilitarian or physical attributes. Functional value is measured on a profile of choice attributes." (p.160)*

This dimension is conceptualised to include all values derived from the characteristics or attributes of an alternative. Examples given by the authors include reliability, durability, and price of the product being evaluated. For the current study, functional value of an

incentive can include utilities derived from price, incentive composition, and other attributes or characteristics of the incentive.

Value Dimension 2: Social Value

Social Value is defined by Sheth et al. (1991) as:

> *"The perceived utility acquired from an [incentive's] association with one or more specific social groups. An [incentive] acquires social value through association with positively or negatively stereotyped demographic, socioeconomic, and cultural-ethnic groups. Social value is measured on a profile of choice imagery." (p. 161)*

The theory authors further stated that "choices involving highly visible products (e.g., clothing, jewellery) and goods or services to be shared with others (e.g., gifts, products used in entertainment) are often driven by social value" (p.161). Mobile services such as SMS, chat services and mobile email, are usually shared with and used around others. As a result, an adoption incentive gives consumers an access to many 'socially visible' mobile services that imply many social values to the users. Therefore, consumers' evaluation of the value of such incentive would also be, to varying degrees, driven by social value. Among possible social values that a consumer can gain are the utilities derived from the enhancement of the consumer's social self-concept (Sweeney et al. 2001) as a result of accepting a valuable incentive.

Value Dimension 3: Emotional Value

Emotional Value is defined by Sheth et al. (1991) as:

> *"The perceived utility acquired from an [incentive's] capacity to arouse feelings or affective states. An [incentive] acquires emotional value when associated with specific feelings or when precipitating or perpetuating those feelings. Emotional value is measured on a profile of feelings associated with the alternative." (p.161)*

This dimension would therefore include utilities derived from feelings that result from consumer's acceptance of a 'valuable' incentive provided by a service provider.

Value Dimension 4: Epistemic Value

Epistemic Value is defined by Sheth et al. (1991) as:

> *"The perceived utility acquired from an [incentive's] capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge. An [incentive] acquires epistemic value by questionnaire items referring to curiosity, novelty, and knowledge." (p. 162)*

For the current study, this dimension would therefore include utilities derived from the incentive's capacity to provide perception of novelty, curiosity, and/or knowledge. Mobile Commerce services are still new innovations to many markets and customers. According to the authors, "entirely new experiences certainly provide epistemic value." (p.162). Therefore, accepting an incentive that comes with a mobile service would give the consumer an access to the advantage of experiencing something different than what he/she might have experienced with the traditional technologies. In short, the newness, rapid spread and growth, and the convenient information access that mobile commerce technology and services are able to provide directly relate to epistemic values such as novelty, curiosity and knowledge acquisition, consecutively.

Value Dimension 5: Conditional Value

Conditional Value is defined by Sheth et al. (1991) as:

> *"The perceived utility acquired by an alternative as the result of the specific situation or set of circumstances facing the choice maker. An alternative acquires conditional value in the presence of antecedent physical or social contingencies that enhance its functional or social value. Conditional value is measured on a profile of choice contingencies" (p. 162)*

Therefore, conditional value is derived from situational factors that moderate or condition the outcomes of each type of value. Sheth et al. (1991) gave examples of how functional and social values are conditioned based on specific situations. For example, the functional, social, and emotional values of greetings cards change on Christmas days. The same applies to conditional values that arise on specific situations like weddings, illness and emergency. As a result, conditional value is considered as a specific instance of the kinds of values, and is therefore seen less critical when the purpose is to develop a general value measure (Sweeney et al. 2001). In line with this, this study aims to develop a scale for PVI that is

general and applicable to any situation. Therefore, conditional value is not included in the theoretical dimensions that the scale development process in this chapter builds on.

In summary, the specification of the PVI construct domain yielded the following information (Table 6.1) based on the guidelines of (Lewis et al. 2005).

Table 6.1 PVI domain specification

Premise (purpose or importance) of the construct	To measure consumers' overall perception of the value of the adoption incentive offered by mobile service providers alongside the actual service. This measurement helps to establish the impact of the construct on consumer's attitude and intention towards adoption mobile commerce services.
Definition	The consumer's overall assessment of the utility derived from an adoption incentive offered by a company to promote a service, based on perceptions of what is received and what is given
List of Dimensions	1. Functional Value 2. Social Value 3. Emotional Value 4. Epistemic Value

This conceptual foundation is used to guide the scale development process, starting with initial items generation, as described in the next sections.

6.22. Initial Items generation

In this section the origins of the measurement items that were included in the final PVI scale and the way they were derived is described. This stage involved the most effort to make sure that the items are comprehensive and represent the entirety of the conceptual construct. Several iterations and a combination of extensive literature reviews, semi-structured face-to-face interviews, as well as the researcher's and other experts' knowledge were used to derive the scale items. The information obtained from these various sources were both qualitatively (using content analysis) and quantitatively (using cluster analysis) analysed and tested to ensure that, first, the construct conceptual domain is entirely represented by the final set of items and, second, the each of the measures in the final scale directly relates and is contained within the construct conceptual domain. To generate an

initial set of candidate items, two methods were used: literature reviews and user interviews, as explained in the next section.

6.22.1. Literature Review

This literature review included a large number of studies that relate in different ways to the concept of perceived value. It included studies from the Information Systems and the Marketing fields. The review expanded over both theoretical as well as empirical studies that defined, conceptualised and/or measured the Perceived Value concept. This literature review confirmed that none of the previously developed scale fits the aims and the measurement requirements for Perceived Value as conceptualised in this research Therefore, effort was made to put together a comprehensive list of candidate measurement items for the PVI scale.

The literature review resulted in a list of candidate items which included two main sets. The first involved general items that are not tailored for any specific type of incentive. These were included in their original general form in the master items list. The other set involved incentive-specific items that relate directly and specifically to the characteristics of a specific type of incentive or promotion. Examples of these two types of candidate items are shown in Table 6.2.

Table 6.2 Examples of general vs. incentive-specific items

Examples of general items	Examples Incentive-specific items
Favourable/unfavourable (d'Astous and Landreville 2003)	Fit between the web site and the promotion (Sonal and Preeta 2005)
Positive/negative (d'Astous et al. 2003)	Mail-in rebates are not worth the trouble involved (Tat et al. 1988)
I find this offer a good deal (Ong 1999)	Bonus pack offers give me more of a production than I need (Ong 1999)

A judgment had to be made about the usability of the gathered items for the context of this project. Whenever possible, effort was made for the inclusion of as many items as possible. The justification was to make the master list as comprehensive as possible and then screen

it and purify it. As mentioned previously some items needed to be rephrased to fit the context of the present research.

6.22.2. Interviews

To complement and make the list of items obtained from the literature review more comprehensive, user interviews were conducted. Fifteen semi-structured interviews were conducted with mobile phone users who represent the survey potential respondents. Semi-structured interviews were chosen over structured and unstructured interviews because they offer the flexibility of obtaining answers to specific questions while allowing the interviewee enough space to freely express his/her views. Each of the 15 interviews involved two main parts.

In the first part an open-ended questioning style was used to allow the interviewee to express and articulate his/her own views with no interruption from me. Interviewees were asked general questions about their thoughts when evaluating an incentive. In specific terms, they were asked about what constitutes a valuable incentive as opposed to an invaluable one. During this part of the interviews, no reference was made to the four Perceived Value dimensions to avoid influencing the interviewees' answers. The main objective was to brainstorm as many ideas as possible. I interrupted only when there was a need to clarify a point or to re-direct the interview. The interviewees were given all the time they needed to think and talk and were not pressured in anyway.

In the second part of the interview, I informed the participant about the four dimensions of Perceived Value and encouraged them to think of the issues they previously expressed in terms of these dimensions. The goal of this part of the interview was twofold:

1. To stimulate interviewees' ideas and help them remember any important ideas that they might have missed during the first part of the interview.
2. To empirically validate and confirm the correctness of the theoretical dimensions as they represent the overall conceptual domain of the Perceived Value construct.

The order of dimensions was not forced on respondents and they were allowed to start at any point (or dimension) they wanted. They were also allowed to leave and come back to any of the dimensions as they felt necessary for gathering their thoughts. In addition, while

interviewees were encouraged to think of the topic as deeply and widely as possible, it was made clear that they do not have to articulate about all the dimensions if they felt that any of them might not be relevant to the issue as they see it. In this case, I only asked for a brief explanation of why a dimension is not seen important. This allowed me to understand more about the dimensions and their meaning(s) as seen by respondents. Overall, the second part of the interview helped to empirically check for the relevance or irrelevance of any of the dimensions based on the responses collected from the 15 interviews.

After that, the content analysis of the 15 interviews began by reading through the data and looking for commonalities and differences among interviewees' statement. Based on this, a list of items emerged. Checking through the gathered items, similar ideas were put together and groups were formed. These groupings were checked against the dimensions to see if any new dimension(s) emerge that was not covered by the four pre-determined theoretical dimensions. At this stage, no new dimensions were found and all items generated fitted within the groups or dimensions already established. This conclusion confirmed the validity and appropriateness of the Theory of Consumption Values and its dimensions to represent the PVI concept in this research.

6.22.3. The master list of items

After that, the items generated from the interviews were compared against and combined with the set of items obtained from the literature. The two sets of items were entered in an Excel sheet and similarities and differences in meaning were checked. Some examples are provided in Table 6.3.

Table 6.3 Examples of interview statements and equivalent statements from the literature

Statement from Interviews	Equivalent statement from literature
Are there any hidden tricks in the offer? What's the catch?	Makes me feel like I'm being manipulated/Seems to be dishonest (d'Astous & Landreville 2003)
Does the offer reflect the true service behind it?	Believability of the net based promotion (Sonal & Preeta 2005)
How long will it take to be able to use the offer? (time needed to deliver)	It takes too long to receive the rebate check from the manufacturer (Peter et al 1988)

Based on this systematic comparison, the decision to keep or remove any item was based on the following criteria:

1. If an item from interviews shares the same meaning with an item from the literature, the clearest and closest to the meaning was retained and the other was removed.
2. If an item was raised in the interviews and was not previously found in the literature (or vice versa), the item was retained as a new item.
3. All other items that do not relate to the context of this study were ruled out.

The items were then revised for language and wording. Each item was phrased to give a positive sense since a positive phrasing allows you to describe the concept attributes in terms of what the attribute is rather than a potentially less definite statement of what it is not. Then items were also formatted to fit a Likert-scale style. At this stage, a total of 68 different items or statements were accumulated and were taken to the next step. As will be explained in the next section, using the Theory of Consumption Values as a conceptual framework, the 68 items were screened for a decision to include or exclude each item based on its fit with this theoretical framework.

6.22.4. Items generated vs. theoretical dimensions

As mentioned previously, the Theory of Consumption Values identifies functional value, social value, emotional value and epistemic value as the main individual values that comprise the overall perceived value. The user interviews, discussed above, confirmed the suitability of these dimensions for capturing the PVI concept in the context of this study. Therefore, these four types of values were used to further screen the 68 items generated so far.

I began by carefully classifying the 68 items or statements under the four dimensions using a set of four criteria that I established in order to ensure the objectivity of my classification across all items. The appropriateness of using these criteria was confirmed by a number of Information Systems researchers. Therefore, a statement was retained only if it fulfils all the four criteria based on the dimension it relates to. Otherwise, the statement was removed. The four criteria or decision rules are:

1. **Fulfil definition**: The statement satisfies and fulfils all important elements of the definition of the dimension the statement is classified under.
2. **Directly relates to the value of the incentive**: The statement relates directly to evaluating the incentive itself rather than the service being promoted or the service provider that offers it.
3. **Utility vs. Cost**: The core (the central idea) of the statement had to be about a 'value' aspect rather than a 'cost' aspect. For example a statement like "Accepting this incentive does not affect my budget negatively" is not included because the core of the statement is about 'negative effect on budget' which is a cost rather than value (utility) item derived from accepting the incentive. All similar statements were removed.
4. **Utility gained vs. consideration**: The statement has to relate to a 'value' or 'utility gained' from accepting the incentive rather than a 'consideration' that a person might keep in mind during decision-making process to accept or reject the incentive. Although such considerations might affect the value of the incentive as perceived by a person, they are not utility gained in themselves. For example, a statement like "Many people I know have accepted this offer" is a consideration that a person might keep in mind while making a decision to go or not go for the incentive. A customer might perceive more value in accepting an incentive if many of the people he/she knows have also accepted it. This is a consideration that might make the decision of the customer more positive towards accepting the incentive (increases the value of the incentive). However, it is not a utility gained 'from' the incentive itself. Therefore, all similar statements were removed.

Based on the above criteria, each of the 68 items is either included or removed from consideration in the next stages of the scale development process. This screening process retained a total of 28 statements that theoretically (based on the careful screening process presented here) and empirically (based on the 15 interviews conducted previously) fit and represent the domain of the concept of interest. Table 6.4 shows these 28 item statements.

Table 6.4 The 28 items classified under the four theoretical dimensions the PVI construct

Dimension	No.	Item
Functional Value	1	The incentive saves me money
	2	The incentive is worth the price I am paying for it
	3	The incentive gives me value-for-money
	4	Accepting this incentive allows me to enjoy a service of high quality
	5	Accepting this incentive allows me to enjoy a safe service
	6	Accepting this incentive allows me to enjoy a secure service
	7	Accepting this incentive allows me to enjoy a service that meets my needs
	8	Generally, the incentive meets my needs
	9	By accepting this incentive I gain many benefits
	10	Generally, this incentive helps enhance my lifestyle
Social Value	11	Accepting this incentive gives me a good image
	12	Accepting this incentive enhances my social life
	13	Accepting this incentive improves the way I am perceived
	14	Accepting this incentive helps me feel acceptable
	15	Accepting this incentive gives me social approval
	16	Accepting this incentive improves my relationships with others
Emotional Value	17	The incentive satisfies me
	18	This incentive makes me happy
	19	Accepting this incentive makes me feel proud of myself
	20	Accepting this incentive makes me feel smart
	21	I like the service being promoted by this incentive
	22	I like this incentive
Epistemic Value	23	This incentive allows me to try something new
	24	The experience that this incentive brings me is novel
	25	This incentive is not like the types of incentives I usually see
	26	This incentive fulfils my curiosity
	27	Accepting this incentive teaches me a lot
	28	Accepting this incentive answers many questions I have

6.23. Items screening and validation

After the items list has been generated and confirmed against the theoretical grounds used in this research, it was time to empirically validate the measures. With the exception of the 15 user interviews conducted above, most of the decisions and judgements so far were theory-based. Therefore, it was important that in the next stage that the items generated are empirically validated. This empirical validation combined with the theoretical validation performed previously guaranteed that the final measurement scale that will be used in the data collection stage is both valid and reliable.

In this section, the empirical validation of the scale is described. Two stages were performed; expert interviews to check for face validity (Section 6.4.1) and user card sorting exercises (also called Q-Sorting) to confirm content validity (Section 6.4.2).

6.23.1. Experts review and face validity check

According to Lewis et al. (2005), "the early and prudent use of experts in the design of philosophical elements can expedite scientific progress and make construct development projects more efficient" (p. 390). Therefore, it was important that experts in the field get involved before any empirical validation with potential survey respondents is performed.

The 28-item list was reviewed by three experts from the Information Systems field to check the items linguistically and conceptually. From this review, all items were found to be relevant and valid based on the conceptual framework and the design of the study. Some items or statements, however, needed some language improvements. Such improvements were made and all items were taken to the next stage of the scale development process.

6.23.2. Card sorting exercises and content validity check

Card Sorting or Q-Sorting is a methodology that is used to empirically check for the classification of items under different conceptual or categorical groups (see for example, Moore et al. (1991) and Storey et al. (2000) . Here, The Q-Sorting method is adapted to design exercises that serve the objectives of this research. The next sections give full details of what was accomplished at this stage of the PVI scale development process.

Method and Participants

Each of the 28 items was printed on a 3" × 5" label cards. The format and casing of words on all cards was kept consistent, and, where possible, obvious patterns in wordings were avoided. This was to avoid participants' assumption that card labels with a certain format or casing must make a group. This guaranteed that the participants would give equal attention and consideration to each individual card. A unique number, in a small text size, was printed on the back of each card to make later analysis easier. The cards labels and numbering were also entered in an excel sheet in a tabular format to allow for easier data entry of the results (as I will demonstrate later).

Once cards were prepared, 15 participants were recruited and interviewed for this stage, including:

1. Five mobile phones users (the target of this research) who are not necessarily familiar with research methodology and concepts.
2. Five graduate and/or postgraduate students who fit into the target population of this study and are familiar with research methodology and research concepts.
3. Five expert researchers who are familiar with research methodology and research concepts, but do not necessarily fit into the sample frame.

Assessing validity using these groups replicates the methodology used by Fred Davis to validate the TAM constructs (Davis 1989, p. 325). He selected 15 participants who were all experienced computer users but with different experiences, backgrounds and profiles (5 secretaries, 5 graduate students and 5 members of professional staff). Similarly, in the present study, the selected groups of mobile phone users cover a diverse pool of knowledge, backgrounds, and profiles. This provided useful insights to improve the validity of the PVI scale.

The Exercises

At the beginning of each interview session the participant was introduced to the researcher, the research topic, research objectives, the objectives of exercise and how to complete the task. After the introduction, the participant was asked if he/she had any questions or points

to clarify. All raised questions were answered. Then, the participant was asked to perform two kinds of card sorting exercises: open sort and closed sort, as described next.

- **Open-sort exercise**

All cards were spread randomly across the table; statements facing up and card numbers facing down. The participant was not informed about the numbers in small font size that were printed on the back of each card, since the numbers were used for analysis purposes only. This was to make sure that the participant gives full focus to statements and not get distracted by the cards numbers.

After that the participant was asked to sort the cards into groups based on some underlying concept that he/she sees. Simply, all cards that refer to or discuss the same or similar underlying concept had to be grouped together. At this stage, the respondent was not informed of any particular way or criteria by which to sort the cares. Therefore, the only source of decision was the participant's own evaluation and understanding of what each statement meant and how similar it is to other cards (hence the name *open sort*). Before the sorting started, a couple of points were made clear to the participant:

1. There is no minimum or maximum limit on the number of groups he/she can make.
2. There is no minimum or maximum limit on the number of cards that can be grouped together.
3. Each card had to be related to one, and only one, group. If a card can fall into more than one group, the participant had to decide about which group the card fits best within.

The participant was also requested to read and focus on the meaning of each card and avoid looking for any word patterns. This was important to emphasise to make sure that the participant focuses on the underlying concept of each statement rather than just its apparent wording order.

Once the participant had finished the exercise, I quickly flipped over the cards and recorded the cards numbers in each group. After that, the participant was asked to explain why he/she felt that cards in each group belonged together. The participant was encouraged to

talk about the underlying concept he/she saw in each group. Notes were carefully and closely recorded. This open sorting task allowed me to:

1. Gain more than my own point of view about what meaning(s) each statement conveys. A statement that means one thing to a person can mean a completely different thing to another. Therefore, doing this exercise allowed me to depict any differences in the way different people might understand each word, phrase or statement.
2. Discover which statements conceptually go in the same direction and which do not. Comparing this to the original theory-based classification of statements allowed me to discover statements that did not belong to any group. Such statements were removed from further consideration.
3. Depict any groupings or sub-groupings that I might have missed.
4. Discover any underlying concepts that existed within and among the statements that I might have not thought about or discovered. These underlying concepts were examined in terms of their relationship to the main concept being investigated (PVI) to see if there are any important concerns that needed to be resolved.

- **Closed-sort exercise**

In this exercise, I randomly mixed the cards and put them in one pile. Then I gave the participant a sheet of paper that listed the four conceptualised dimensions and their definitions. To recall, the dimensions are: functional value, social value, emotional value and epistemic value.

The participant was asked to carefully read and understand the definitions of all the dimensions and try to recognise the difference(s) among them. A short discussion followed to make sure that the participant understood each definition and that his/her understanding matches my own. In case of any differences in the way a definition was understood, the discussion brought the participant and me to a common ground. As a by-product, this discussion also allowed me to gain more insights about the conceptual meaning of each dimension, its definition and how other people view them.

Once the participant had no further questions or points to clarify, the closed sorting exercise started. The participant was asked to take one card at a time, read it, and classify it under a

dimension that he/she thinks best defines the statement. It was made clear to the participant that his/her decision to put a certain statement under a specific dimension should be based on two main criteria:

1. How well the statement reflects the definition.
2. How well the definition covers the meaning conveyed by the statement.

Therefore, compared to the open sort exercise, the participant judgment this time was based on the matching between a statement and one of a number of pre-determined and pre-defined dimensions (hence the name 'closed sort').

Once the participant was done classifying all the 28 statements, I quickly compared the differences between my theory-based classification of statements and the participant's classification. Where differences in classification of any card existed, the participant was then asked to explain why he/she thought that the statement belonged under the selected dimension. This was done for all the other statements where a statement was classified under a dimension that is different than the pre-determined classification. Notes were closely kept.

This closed sorting task allowed me to:

1. Double-check the validity of the definition of each dimension and the meaning(s) each reflects based on participants' feedback.
2. Double-check the validity of my initial conceptual classification of the statements using participants' feedback.
3. Discover any wording or language issues that made a participant classify a statement under a different dimension. Through discussions with the participants, I was able to precisely pin-point the exact source (word or phrase) that caused the difference in views. This helped to further refine statements for next stages of the process.
4. Confirm the validity of the statements for which no difference in views appeared. This way it was confirmed that such statements truly reflect the definitions they relate to and that the definitions truly cover all aspects of statements.

These open-sort and closed-sort methods were repeatedly conducted with each of the 15 participants. Once all interviews were completed, analysis started as described in the following sections.

The Analysis

Two types of analyses were performed for the card sorting exercises data. Open sort data were analysed quantitatively using cluster analysis (a methodology similar the one used by Smith (2006). Whereas, closed sort data and interview discussions were qualitatively content-analysed. The next two sections describe the analyses performed.

- **Quantitative analysis of open sort exercise data**

This analysis started by entering the results of the open sort exercise into an Excel file. The data from each of the 15 individual interviews were entered in a separate sheet. In each sheet, all statements were entered along the two dimensions: horizontally and vertically. The intersection cell of each card (or statement) on the horizontal dimension with the same card on the vertical dimension was filled with "1." The "1" means that each card is 100 per cent associated with itself. This was repeated for all the 15 sheets and all cards in each sheet. A graphical representation of this is provided in Figure 6.2.

Using the data collected from the open sort exercise, the rest of the data entry was completed by filling an intersection cell with "1" if a participant thought that the two cards that horizontally and vertically intersect at the cell are associated with each other and has, therefore, put them in the same group. Otherwise, the cell is filled with a "0" for any two cards that were not put together in one group by the participant. This process was repeated for all 15 interviews each in its own Excel data sheet.

Once all data was entered, the results from all 15 excel sheets were combined for analysis in an "overall" sheet. Same as the individual sheets, the "overall" sheet consisted of a horizontal and vertical dimensions containing statements (or cards) numbers from 1 to 28 (similar to the sheet shown in Figure 6.2 next). In this sheet, each cell contained a formula that calculates the average of the data entries in all similarly positioned cells across the 15 individual interviews sheets. The overall sheet was also used to check for any missing values or data entry errors in other sheets.

Calculated averages ranged from “1” to “0.” A calculated average of “1” meant that 100 per cent of all the 15 participants thought that the two cards are associated together and that they both fall in the same group and talk about the same underlying concept. On the other side, a “0” average meant that no one (or 0 per cent) of all the 15 participants thought that the two cards talk about the same underlying concept or that they should be grouped together. The rest of the cells contained averages ranging between the two ends: 1 and 0.

To make the calculated averages more meaningful, Conditional Formatting tool from Microsoft Excel was used in the “overall” sheet. Conditional formatting allows the user to differentiate some cells (using colours, fonts and other text styles) based on a preset criterion. In this analysis, conditional formatting was used to indicate (using colour and bold styles) the cells where the calculated average was 0.45 or higher. This formatting helped to make the higher averages stand out and their group becomes more apparent.

A cell value of 0.45 or 45 per cent means that at least 45 per cent of the 15 participants think that the two cards linked to the cell horizontally and vertically are similar and should be grouped together. The choice of the 45 per cent threshold was based on repetitive trials of different thresholds. A more strict or higher threshold (e.g. 60 per cent or higher) makes it less likely to find a clear pattern of groupings considering all the 15 interviews. On the other hand, a low threshold (say 30 per cent or less) means that far more cells will be grouped together. This latter case might result in a harder to interpret pattern of cells or groupings. After a number of trials, I found that the 45 per cent threshold is the best to use to get meaningful information out of the available data. This threshold also perfectly sits in the 0.4-0.5 threshold for exploratory factor analysis (Hulland and Richard Ivey School of 1999).

After that, the positions and order of some rows and columns were changed to get better groupings of highly associated cards. If a column of a certain card was moved along the horizontal dimension, the row of the same card number was repositioned by the same distance along the vertical axis. This way the accuracy of the interpretations using conditional formatting was guaranteed.

- **Qualitative analysis of closed sort and discussions data**

The closed sorting exercise and discussions data were carefully content-analysed. Reading through the 15 interviews data and notes allowed me to gain better insights and be able to specifically pin-point problematic cards or statements among the 28 statements. To do this, it was important that I first define the criterion that makes a card 'problematic.' A problematic card was identified as the one that most participants thought that it does not belong to the value dimension it was theoretically classified under and/or the one that repetitively appeared to have language issues.

This analysis was performed by comparing my own classification of statements under each value dimension with the participants' classification during the closed-sorting part of each interview. From this analysis a couple of problems with some cards were identified, as follows:

1. Ambiguity of some words. For example the word *safe* in the statement 'accepting this incentive allows me to enjoy a safe service,' what does safe mean exactly?
2. Double-meanings conveyed by some words when read by different people. For example, the word *image* in the statement 'accepting this incentive gives me a good image.' Image could be self image and/or social image, for instance.
3. More than one card referring to the same concept in different ways. These had to be combined. For example, statements like 'accepting this incentive allows me to enjoy a safe service' and 'accepting this incentive allows me to enjoy a secure service' both refer to how technically sound the service is.
4. Words that are 'too general' to be constrained under one single dimension. For example, the word *needs* in the statement 'generally, the incentive meets my needs' was found too general as it could mean practical needs, emotional needs, social needs, etc.
5. Some key words that are not strong enough to fully express the dimension they relate to or the meaning they are supposed to convey. For example, the word *satisfies* in the statement 'the incentive satisfies me.' While this is an emotional value statement, satisfies could be understood as functionally satisfactory.

The insights gained from this qualitative analysis were combined with and cross checked against the quantitative analysis data, as I discuss in the next sections.

The Results

The quantitative analysis that I performed for the open sort exercise data confirmed that the main conceptual dimensions (functional, emotional, social and epistemic) make a solid and valid theoretical foundation for developing the PVI scale. In the following sections, I describe the results that show how the items classify under the based on the four dimensions based on the results of the cluster analysis of the open-sort exercise data.

- **Functional value**

To recall, the 28-item list that was classified in the open-sort exercise included the following ten Functional Value measures (Table 6.5):

Table 6.5 Functional Value items from the 28-item list

Dimension	No.	Item
Functional Value	1	The incentive saves me money
	2	The incentive is worth the price I am paying for it
	3	The incentive gives me value-for-money
	4	Accepting this incentive allows me to enjoy a service of high quality
	5	Accepting this incentive allows me to enjoy a safe service
	6	Accepting this incentive allows me to enjoy a secure service
	7	Accepting this incentive allows me to enjoy a service that meets my needs
	8	Generally, the incentive meets my needs
	9	By accepting this incentive I gain many benefits
	10	Generally, this incentive helps enhance my lifestyle

The participants' classification showed two main clusters of cards, as shown in Figure 6.2:

- Group 1, which talks mainly about price and money aspects (Statements 1, 2, 3)
- Group 2, which talks mainly about the composition, the performance, the quality of the incentive and what it brings to the customer (Statements 4, 5 and 6).

	A	B	C	D	E	F	G	H	I	J	K
1		St1	St2	St3	St4	St5	St6	St7	St8	St9	St10
2	St1	1	0.9	0.9	0.0	0.0	0.0	0.1	0.4	0.1	0.0
3	St2	0.9	1	1.0	0.1	0.1	0.1	0.0	0.5	0.0	0.0
4	St3	0.9	1.0	1	0.1	0.1	0.1	0.0	0.5	0.0	0.0
5	St4	0.0	0.1	0.1	1	0.7	0.7	0.4	0.3	0.3	0.2
6	St5	0.0	0.1	0.1	0.7	1	0.9	0.4	0.2	0.3	0.1
7	St6	0.0	0.1	0.1	0.7	0.9	1	0.3	0.2	0.2	0.1
8	St7	0.1	0.0	0.0	0.4	0.4	0.3	1	0.1	0.7	0.2
9	St8	0.4	0.5	0.5	0.3	0.2	0.2	0.1	1	0.3	0.1
10	St9	0.1	0.0	0.0	0.3	0.3	0.2	0.7	0.3	1	0.2
11	St10	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.2	1

Figure 6.2 Classification of Functional Value measures by the participants[2]

As a result, Functional Value was broken into the Functional Value (Price), and Functional Value (Quality) dimensions. The appearance of these two sub-groupings from the open sort exercise added more to the strength and validity of the set of statements that have been brought to this stage of the process. That is because breaking functional value into price and quality directly conform to the way functional value has been conceptualised and empirically tested in the perceived value literature (see for example, Sweeney et al. (2001) and Roig et al. (2006)). As a result of all the above, the candidate list of items under functional value that was taken to the next stages included the following:

Functional Value (Price)

Statement 1 *The incentive saves me money*

Statement 2 *The incentive is worth the price I am paying for it*

Statement 3 *The incentive gives me value-for-money*

Functional Value (Quality)

Statement 4 *Accepting this incentive allows me to use a service of high quality*

Statement 5 *Accepting this incentive allows me to use a technically sound service*

Statement 6 *Accepting this incentive allows me to use many good services*

[2] In Figures 6.2 to 6.5, 'st' stands for 'statement' and '#' is the statement number from 1 to 28

At this stage, Statements 7 to 10 were kept aside for further consideration. It appeared at the end of all analyses that these statements needed to be completely removed (as will be shown later).

- **Social value:**

The 28-item list that was classified in the open-sort exercise included the following six social value measures (Table 6.6):

Table 6.6 Social Value items from the 28-item list

Dimension	No.	Item
Social Value	11	Accepting this incentive gives me a good image
	12	Accepting this incentive enhances my social life
	13	Accepting this incentive improves the way I am perceived
	14	Accepting this incentive helps me feel acceptable
	15	Accepting this incentive gives me social approval
	16	Accepting this incentive improves my relationships with others

The participants' classification showed that all the statements that were classified under this social value do in fact reflect the dimension and they all conceptually move in the same direction as one group (Figure 6.3). This was a strong confirmation of my initial theoretical and conceptual classification.

As a result, all the social value measures were retained as a group, with some language and structure improvements based participants' feedback. The candidate list of items under social value that was taken to the next stages included the following:

Social Value:

Statement 11 *Accepting this incentive gives me a good social image*

Statement 12 *Accepting this incentive enhances my social life*

Statement 13 *Accepting this incentive improves the way I am perceived by others*

Statement 14 *Accepting this incentive makes me more accepted by others*

Statement 15 *Accepting this incentive gives me social approval*

Statement 16 *Accepting this incentive improves my relationships with others*

	A	L	M	N	O	P	Q
1		St11	St12	St13	St14	St15	St16
12	St11	1	0.5	0.8	0.6	0.6	0.7
13	St12	0.5	1	0.5	0.6	0.8	0.8
14	St13	0.8	0.5	1	0.7	0.7	0.7
15	St14	0.6	0.6	0.7	1	0.8	0.8
16	St15	0.6	0.8	0.7	0.8	1	0.9
17	St16	0.7	0.8	0.7	0.8	0.9	1

Figure 6.3 Classification of Social Value measures by participants

- **Emotional value**

The 28-item list that was classified in the open-sort exercise included the following six emotional value measures (Table 6.7):

Table 6.7 Emotional Value items from the 28-item list

Dimension	No.	Item
Emotional Value	17	The incentive satisfies me
	18	This incentive makes me happy
	19	Accepting this incentive makes me feel proud of myself
	20	Accepting this incentive makes me feel smart
	21	I like the service being promoted by this incentive
	22	I like this incentive

The participants' classification showed that some statements moved together while not with others. There was a mixture in the strength of association among various pairs of statements in this group (Figure 6.4). However, no evident sub-groupings were apparent under the emotional value dimension.

	A	R	S	T	U	V	W
1		St20	St21	St18	St17	St19	St22
18	St20	1	0.8	0.6	0.3	0.2	0.1
19	St21	0.8	1	0.5	0.2	0.1	0.1
20	St18	0.6	0.5	1	0.5	0.5	0.3
21	St17	0.3	0.2	0.5	1	0.5	0.4
22	St19	0.2	0.1	0.5	0.5	1	0.7
23	St22	0.1	0.1	0.3	0.4	0.7	1

Figure 6.4 Classification of Emotional Value measures by participants

As a result, it was important to reconsider participants' comments from the open sort as well as the results of the qualitative analysis of the closed sort exercise. Statements 21 ("I like the service being promoted") and 22 ("I like this incentive") had the weakest support and were therefore removed from further consideration (as will be shown later). The rest of the items were retained for inclusion in the scale. At the end, the candidate list of items under emotional value that was taken to the next stages included the following:

Emotional Value:

Statement 17 *Accepting this incentive makes me feel satisfied*

Statement 18 *Accepting this incentive makes me happy*

Statement 19 *Accepting this incentive makes me feel proud of myself*

Statement 20 *Accepting this incentive makes me feel smart*

- **Epistemic value**

The 28-item list that was classified in the open-sort exercise included the following six epistemic value measures (Table 6.8):

Table 6.8 Epistemic Value items from the 28-item list

Dimension	No.	Item
Emotional Value	23	This incentive allows me to try something new
	24	The experience that this incentive brings me is novel
	25	This incentive is not like the types of incentives I usually see
	26	This incentive fulfils my curiosity

	27	Accepting this incentive teaches me a lot
	28	Accepting this incentive answers many questions I have

The participants' classification showed three main clusters under this dimension (Figure 6.5):

- Group 1 (Statements 23, 24 and 25),
- Group 2 (Statements 26 and 28) and
- Group 3 (Statement 27).

	A	X	Y	Z	AA	AB	AC
1		St23	St24	St25	St27	St26	St28
24	St23	1	0.7	0.7	0.3	0.2	0.3
25	St24	0.7	1	0.5	0.5	0.3	0.3
26	St25	0.7	0.5	1	0.3	0.2	0.3
27	St27	0.3	0.5	0.3	1	0.3	0.5
28	St26	0.2	0.3	0.2	0.3	1	0.6
29	St28	0.3	0.3	0.3	0.5	0.6	1

Figure 6.5 Classification of Epistemic Value measures by participants

The participants' classification of the epistemic value measures confirmed the definition of the dimension a posited the Theory of Consumption Values. In the theory, epistemic value is defined as it relates to three main aspects: curiosity, novelty and knowledge. Statements 23 ("This incentive allows me to try something new"), 24 ("The experience that this incentive brings me is novel") and 25 ("This incentive is not like the types of incentives I usually see") were related to the novelty aspect based on the initial classification. As Figure 6.5 shown, the classification of these statements as a single, related group was confirmed by the participants' sorting. Similarly, Statements 26 ("This incentive fulfils my curiosity") and 28 ("Accepting this incentive answers many questions I have") were also confirmed by participants' classification as one group that relates to the curiosity aspect. In addition, Statement 27 ("Accepting this incentive teaches me a lot") was originally conceptualised to reflect the knowledge aspect, and this was also confirmed by the participants' sorting and

feedback as shown in Figure 6.5. As a result, the candidate list of items under epistemic value that was taken to the next stage included the following:

Epistemic Value:

Statement 23	*This incentive allows me to try something new*
Statement 24	*The experience that this incentive brings me is novel*
Statement 25	*This incentive is not like the types of incentives I usually see*
Statement 26	*This incentive fulfils my curiosity*
Statement 27	*Accepting this incentive teaches me a lot*
Statement 28	*Accepting this incentive answers many questions I have*

The results of this quantitative analysis were also checked against the qualitative content analysis of the interviews for further confirmation, as discussed in the next section.

6.24. Integration of Findings

Triangulating the results of the two exercises strengthened the insights obtained from this validation process. Each part of the results from the quantitative open-sort exercise analysis was compared with the relevant results from the qualitative closed-sort exercise. This strategy was also followed the other way around. This continuous, cyclical triangulation of quantitative and qualitative data allowed me to find stronger evidence for each single result and, therefore, gain more confidence in the conclusions reached.

Overall, I found a high degree of conformity between the conceptual, theory-based propositions and participants' feedback and comments. This confirmed the theoretical foundation that the exercises were carefully built on. The early involvement of experts in the area has also highly contributed to such solid results.

From the quantitative and qualitative analysis, decisions were informatively made in regard to which statements to remove, which to modify and which to retain. Based on the participants' feedback from both exercises, one of the following four decisions was made in regard to each of the 28 statements:

1. Retain the statement as it is.
2. Keep the statement after considering some changes or improvements.

3. Combine the statement with another statement.
4. Remove the statement from further consideration.

Table 6.9 lists the same 28 items that were taken into the items screening and validation stage (previously shown in Table 6.4), in addition to the decision made for each of the statements:

Table 6.9 Integration of findings for each of the 28 items

Dimension	No.	Item	Decision
Functional Value	1	The incentive saves me money	Retain as is
	2	The incentive is worth the price I am paying for it	Retain (remove the word *it*)
	3	The incentive gives me value-for-money	Retain as is
	4	Accepting this incentive allows me to enjoy a service of high quality	Retain and Change to: Accepting this incentive allows me to use a service of high quality
	5	Accepting this incentive allows me to enjoy a safe service	Combine 6 and 7 and change to: Accepting this incentive allows me to use a technically sound service
	6	Accepting this incentive allows me to enjoy a secure service	
	7	Accepting this incentive allows me to enjoy a service that meets my needs	Remove
	8	Generally, the incentive meets my needs	Remove
	9	By accepting this incentive I gain many benefits	Remove
	10	Generally, this incentive helps enhance my lifestyle	Remove
Social Value	11	Accepting this incentive enhances my social life	Retain as is
	12	Accepting this incentive improves the way I am perceived	Accepting this incentive improves the way I am perceived by others
	13	Accepting this incentive helps me feel acceptable	Accepting this incentive makes me more accepted by others
	14	Accepting this incentive gives me social approval	Retain as is
	15	Accepting this incentive improves my relationships with others	Retain as is
	16	Accepting this incentive gives me a good image	Change to: Accepting this incentive gives me a good social image
Emotional Value	17	The incentive satisfies me	Accepting this incentive makes me feel satisfied

	18	This incentive makes me happy	Accepting this incentive makes me happy
	19	Accepting this incentive makes me feel proud of myself	Retain as is
	20	Accepting this incentive makes me feel smart	Retain as is
	21	I like the service being promoted	Remove
	22	I like this incentive	Remove
Epistemic Value	23	This incentive allows me to try something new	Retain as is
	24	The experience that this incentive brings me is novel	Retain as is
	25	This incentive is not like the types of incentives I usually see	Retain as is
	26	This incentive fulfils my curiosity	Retain as is
	27	Accepting this incentive teaches me a lot	I learn many new things by accepting this incentive.
	28	Accepting this incentive answers many questions I have	Retain as is

6.25. Pre-test

Now as the measurement scale is in its final development stages, a pre-test of the scale was conducted. Pre-tests are conducted in an attempt to assess the appropriateness of the instrument using a highly controlled sample. Participants in the instrument pre-test should be selected based on the research unit of analysis and should have some knowledge about the construct under investigation. The task that participants were asked to perform included completing the instrument and then commenting on matters of scale design such as clarity, terminology and understanding.

Five PhD research students from the Department of Information Systems at the University of Melbourne who also fall into the study sample frame were asked to pre-test the PVI instrument. Their feedback and comments were thoughtfully taken into consideration and enhancements were made to the instrument. Several iterations were made and a continuous test-feedback-purification cycle was administered. This pre-test resulted in some changes and modifications that were made accordingly.

Putting it all together, the pre-tested 22-item PVI scale, represented by five dimensions, looked as follows:

Functional Value (Price)

1. *The incentive saves me money*
2. *The incentive is worth the price I am paying for*
3. *The incentive gives me value-for-money*

Functional Value (Quality):

4. *Accepting this incentive allows me to use a service of high quality*
5. *Accepting this incentive allows me to use a technically sound service*
6. *Accepting this incentive allows me to use many good services*

Social Value:

7. *Accepting this incentive enhances my social life*
8. *Accepting this incentive improves the way I am perceived by others*
9. *Accepting this incentive makes me more accepted by others*
10. *Accepting this incentive gives me social approval*
11. *Accepting this incentive improves my relationships with others*
12. *Accepting this incentive gives me a good social image*

Emotional Value:

13. *Accepting this incentive makes me feel satisfied*
14. *Accepting this incentive makes me happy*
15. *Accepting this incentive makes me feel proud of myself*
16. *Accepting this incentive makes me feel smart*

Epistemic Value:

17. *This incentive allows me to try something new*
18. *The experience that this incentive brings me is novel*
19. *This incentive is not like the types of incentives I usually see*
20. *This incentive fulfils my curiosity*
21. *Accepting this incentive answers many questions I have*
22. *I learn a many new things by accepting this incentive*

6.26. Pilot test

As mentioned in the introduction of this chapter, the newly developed PVI Scale was then combined with the other constructs' measures (discussed in Chapter 5) for the final design

and pilot test of the questionnaire. Then, 15 volunteers completed the questionnaire and provided comments and feedback in regard to its format, design, clarity, understanding and ease and speed of completion. Respondents' feedback and notes were carefully studies and modifications were made to make sure that the final instrument is ready for use in the data collection stage. The final version of the questionnaire that was used for the data collection stage is presented in Appendix B.

6.27. Conclusion

This chapter discusses the process through which a new measurement scale for the PVI construct was developed, tested and validated. Specifying a sound theoretical ground prior to the actual scale development was a major reason for the high level of conformity between the empirical tests on measures and the conceptual framework used.

The dimensions of Perceived Value of the Incentive retained their validity throughout the validation tests. Functional value showed strong compliance with the way it has been empirically examined in the literature. Functional was therefore broken down into two dimensions: functional value (Price), which relates to monetary or price aspects of the incentive, and functional value (Quality), which covers the aspects of incentive composition, its technical quality and performance. The other dimensions (social value, emotional value and epistemic value) were retained as they are. The 22-item PVI scale was then combined with the measures of other constructs in a questionnaire format for pilot testing. Modifications and changes based on the pilot test were made accordingly.

In Chapter 7, I present overall descriptive analysis of the data collected from quantitative online-questionnaire. Then, in Chapter 8, I present the results of the research model examination and hypotheses testing.

Chapter 7.

Quantitative Study: Population and Sample Characteristics

7.28. Introduction

In this chapter I provide an overview of the characteristics of the target population and the sample from which data was collected. Characteristics of both groups are compared to assess the representativeness of the sample of the larger population and the extent to which conclusions derived from empirical data are generalisable to the target population. The target population of this study is the Australian mobile phone users who are also potentially the adopters of mobile commerce services. The subset actually sampled was drawn from the World Mobile Internet Survey (WMIS) 2006 mailing list which contains more than 6,128 Australian mobile phone users who have indicated their consent to participate in future studies involving the use of mobile phones. The data collection resulted in obtaining 626 useable responses (a response rate of 17 per cent, a base of 4,820 respondents who received email invitations) that were used in the data analysis of this research.

This chapter is organised as follows. First, Section 7.2 highlights the target population characteristics by providing 1) an overview of the Australian mobile market status, the potential growth, as well as the mobile service providers and their market shares (Section 7.1.1), and 2) an overview of the Australian population general characteristic and distributions including gender, age, education and income (Section 7.1.2). In Section 7.3 (sample characteristics), I present an overview of the characteristics of the survey respondents, specifically, demographic characteristics (Section 7.3.1), and mobile phone usage characteristics (Section 7.3.2).

7.29. Population characteristics

This study targets the population of mobile phone users in Australia who are also the adopters or potential adopters of mobile commerce services. In this section, some of the population characteristics that relate to the survey questions are highlighted including a general overview of the market growth status as well as the major service providers and their market shares (Section 7.1.1), and an overview of the Australian population and mobile phones users' characteristics (Section 7.1.2).

7.29.1. Mobile market characteristics

The Australian mobile market is considered one of the world leading industries in terms of mobile handsets penetration rate which is expected to exceed 100 per cent by 2008 (Johnson 2005) to reach up to 109.3 per cent in 2010 (Federation 2008). Australia's mobile phone networks currently reach over 98 per cent of the population and cover 20 per cent of the Australian land (Telstra 2003). The Australian mobile market revenue growth (including revenue from equipment such as infrastructure and network lease) has increased to 8.9 per cent in 2006 compared to 8.1 per cent in 2005 and this growth was mainly driven by equipment revenue (JPMorgan 2007).

Excluding equipment revenue, the Australian mobile services market revenue (including voice and data services) has intriguingly experienced a decline in the same 2005-06 period from 8.3 per cent down to 7.6 per cent. Reports indicate that the monthly Average Revenue Per User (ARPU) in Australian mobile market has experienced a decline from 2001 to 2006, moving from A$61.44 in 2001-02 to $52.25 in 2005-06 (Suisse 2005). However, it is generally perceived that, despite these fluctuations in the market revenue figures, the Australian mobile market compares quite favourably to other leading markets like the European (+5 to 6 per cent) (JPMorgan 2007).

Looking into the future of the Australian mobile market, reports show that the market has already reached a saturation point and that the subscriber growth rates are expected to decline to 6.4 per cent in 2008-09, 2.5 per cent in 2009-10 and decline further to 2.0 per cent in 2010-11. Therefore, further growth will largely be driven by young people moving into the market (TOTEL 2008). However, the Australian mobile commerce and content services market is expected to continue its growth in terms of total market revenues to reach

A$1.3 billion by the end of 2010, rising from A$576 million in 2006 (Frost and Sullivan 2006).

The future growth of the Australian mobile market is expected to be mainly driven by pre-paid consumers as opposed to post-paid consumers (Figure 7.1, below). In 2004-05, 43 per cent of all mobile phone services were prepaid and the number of this type of consumers is expected to grow to 47 per cent of all mobile services in 2005-06. In addition, the 2007 figures published by The Australian Mobile Telecommunications Association (AMTA) show that 9.7 million of the 19.3 million mobile handsets used in Australia are connected on a pre-paid plan. Currently there are limited mobile commerce services available to pre-paid customers. The AMTA report indicates that advanced mobile commerce services will be more available for pre-paid customers from the major mobile service providers (Barker 2007).

Prepaid plans offer a low-cost means to enter the mobile market because the consumer is not required to sign any contracts with the mobile service provider. To become a prepaid mobile user, the consumer is only required to buy a SIM (Subscriber Identity Module) card from a mobile service provider and recharge it with service credits based on his/her usage and needs without paying any periodic (e.g. monthly) phone bills as in the case of a post-paid plan. Therefore, this type of plan allows the consumer to have a better control over his/her mobile phone expenditure. The constant growth in the number of prepaid service users indicates that mobile consumers value choice and flexibility (Suisse 2005).

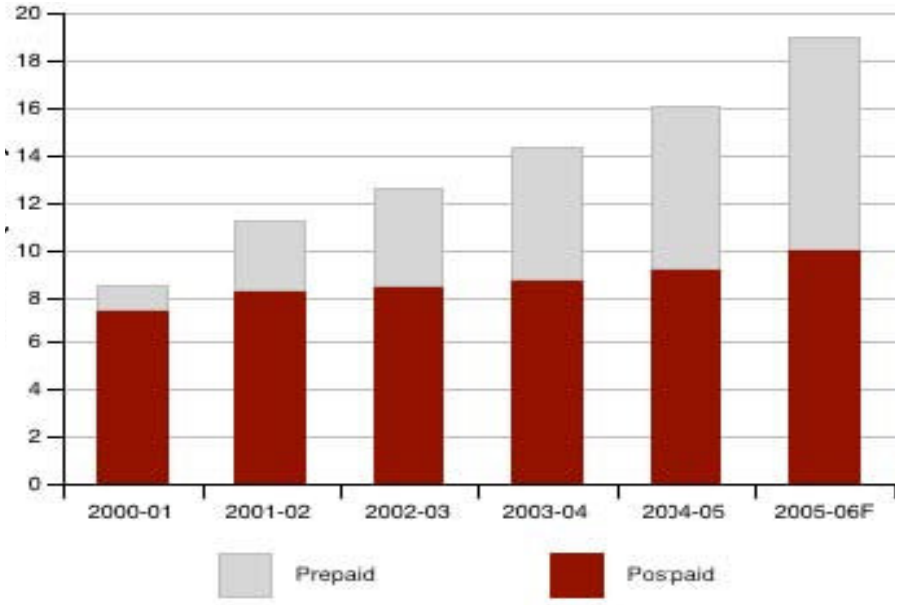


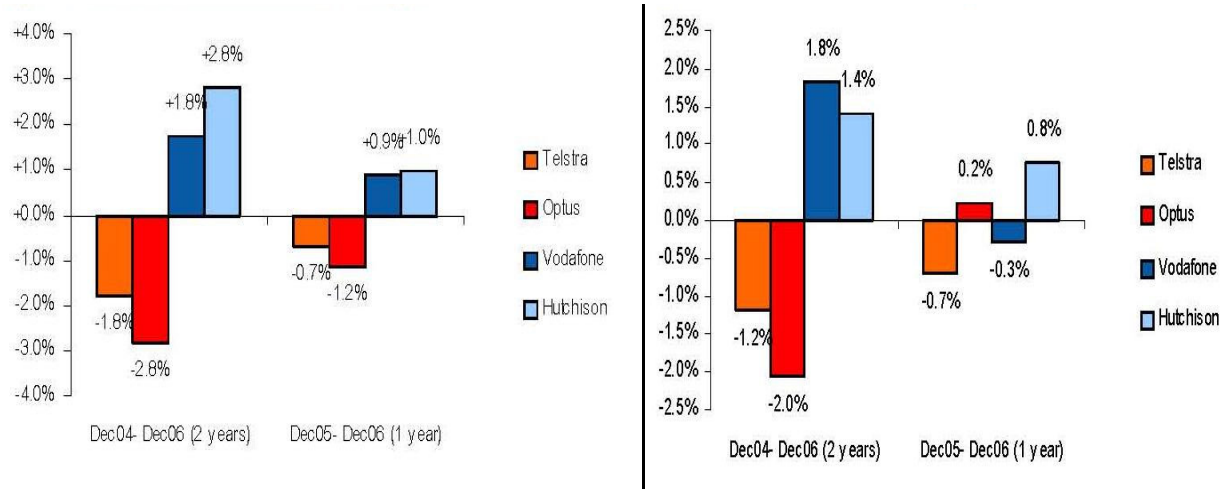
Figure 7.1 Prepaid vs. post-paid mobile phone consumers in Australia

(Source: Suisse (2005). 'F' indicates *forecast*)

Main service providers and market shares

There are four major mobile service providers in the Australian mobile market (or carrier service providers) including Telstra, Optus, Vodafone, and Hutchison (Three). These players own mobile network infrastructure and operate at the wholesale and retail levels. In addition, there are other smaller players such as Virgin Mobile, AAET, Telecom, Boost, Southern Cross Telco, Dodo, Soul, TadAust, M8 Telecom, SIMPlus, voicetalk and iiNet. In terms of market share, Telstra, Optus, Vodafone, and Hutchison control the largest shares in terms of total service revenue market share (excluding equipment revenue) and total subscriber market shares.

For the total service revenue market share which includes the mobile commerce market revenues, reports show that Telstra is progressively losing more of its market share in favour of Hutchison and Vodafone, while Optus has been the biggest loser among the major four mobile providers in the Australian market (JPMorgan 2007). These same market share changes also apply when considering the total subscriber market share measure. Figure 7.2 below shows the Australian market shares and their changes in terms of total revenue and subscriber base shares as reported in 2007.



Market share by revenue (exc. Equipment revenue) Market share by subscriber

Figure 7.2 Mobile phone market shares in Australia

(Source: JPMorgan (2007))

The current globally employed technology for enabling the provision of mobile commerce services is the Third Generation or 3G technology platform. For the Australian mobile market, this technology is used by all the four major service providers: Telstra, Optus, Vodafone, and Hutchison. Figure 7.3, next, shows the 3G market shares for the main players in the Australian market which can also be an indication of the Australian mobile commerce market shares. As the figure shows, Hutchison (Three) has gained the largest market share (42 per cent) among all the other mobile service providers, followed by Telstra (34 per cent), Vodafone (15 per cent) and Optus (9 per cent).

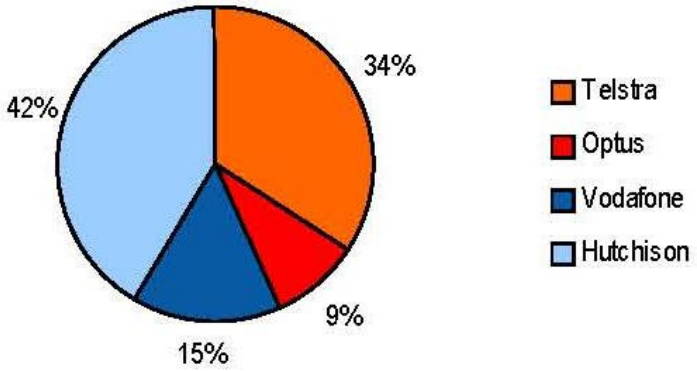


Figure 7.3 3G market shares in Australia

(Source: JPMorgan (2007))

Current predictions show that the gap between Hutchison and the other service providers will rapidly decline as the service provider's initial competitive advantage in the 3G market is being slowly eroded (TOTEL 2008). However, other reports confirm that Hutchison will continue outpacing the other major players in the period 2008-10 in terms of average annual subscriber growth rate (Federation 2009). More changes are expected in the market share statistics as latest reports indicate that the Australian Competition and Consumer Commission (ACCA) has approved a merger between Vodafone and Hutchison in Australia which will known as Vodafone-Hutchison Australia (VHA) (Federation 2009).

7.29.2. Population demographics

This section provides an overview of distribution of the Australian population based on four dimensions that were part of the survey questions: gender, age, education and income. The purpose of this section is to provide an idea of the characteristics of Australian population in general and mobile phone users in particular and therefore provide bases for evaluating the generalisability of the results of this questionnaire results.

Gender

The ABS indicates that by June 2009, the total population of Australia will reach 21,813,652 people (ABS 2009). The general distribution of the Australia population by gender is as follows (Table 7.1). As the statistics show, the Australian total population distribution by gender is quite even between males and females as there is one male for every female.

Table 7.1 Australian population distribution by gender (CIA (2009a), 2009 estimate)

at birth	1.06 male(s)/female
under 15 years	1.05 male(s)/female
15-64 years	1.03 male(s)/female
65 years and over	0.84 male(s)/female
total population	1 male(s)/female

Age

According to a Telecommunications Today study that was conducted by the Australian Government in 2007, the 18-30 and 31-40 age groups constitute the main adopters of

mobile and other telecommunications technology in Australia (ACMA 2007). Table 7.2 describes the general distribution of the Australian population by age groups and their behaviour towards mobile technology adoption.

Table 7.2 Behavioural segments for Australian ICT consumers (ACMA (2007))

Consumer Segment	Enthusiastic embracers	Mainstream followers	Technology non-adopters
Age range	Tend to be younger age group (18-30).	Tend to be aged between 31-50 years.	Tend to be older age group (50-60+)
Definition	Enjoy knowing and using new services/technology. Knowledgeable and aware of latest technology.	Try to keep up with services on a required basis. Follow the lead of enthusiastic embracers and did not want the hassle of seeking out information and catching up on every new development.	Need help or do not see a need to adopt new technology. Unlikely to take up new technology unless pushed or helped by someone else.
Mobile and other technology usage characteristics	Likely to actively use their 3G mobile for internet services. Likely to do without landline telephone. Heavier internet users who had traded up to faster speeds and or wireless access.	While they may have had a 3G capable mobile phone, they were using it solely for communication. Likely to be users of both landline telephone and mobile. Moderate internet users.	Likely to be users of landline telephones and some used mobiles. Do not see the need for certain mobile services. Internet is used invariably less.

Education

Formal education in Australia is provided through schools, Technical and Further Education institutions (TAFE), universities and other higher education institutions. There is a diverse range of courses offered through these institutions. In 2006, one in every four Australians were attending an educational institution (ABS 2006). The Australian Bureau of Statistics (ABS) also reports that the level of educational attainment in the Australian

community has risen steadily with each successive generation. Table 7.3 shows the distribution of the Australian population across various education levels.

Table 7.3 Educational profile for the Australian population

	Students (a)	
Type of institution	**'000**	**%(b)**
Pre-school	307.8	6.7
Primary school	1,696.8	37.0
Secondary school	1,275.1	27.8
TAFE (Vocational education that provides specialised technical courses with direct relevance to industry)	428.0	9.3
University or other tertiary institution (higher education)	745.4	16.3
Other	128.0	2.8

Notes: These statistics exclude overseas visitors in Australia for less than one year and people who did not state whether they attended an educational institution or the type of institution they attended. Source: ABS (2006).

Income

The Australian Bureau of Statistics (ABS) reports that for the 2005-2006 period the average disposable annual income for Australian households is AU$33,488 (AU$644/week) (ABS 2007). The report showed the mean income for Australian households by dividing income figures into five equal proportions, as shown in Table 7.4.

Table 7.4 Household income and income distribution, Australia, 2005-06 (ABS (2007))

Proportion	Lowest	Second	Third	Fourth	Highest	Overall
weekly mean income	255	414	565	746	1,239	644
Annual income (weekly multiplied by 52 weeks in the year)	13,260	21,528	29,380	38,792	64,428	33,488

7.30. Sample characteristics

This section presents a general overview of the characteristics of the sample of respondents to the online questionnaire. This overview allows us to compare the characteristics of the sample with the characteristics of the population, as reported in the Section 7.1 above and, therefore, gain a better insight into the extent to which the study results and findings are generalisable.

Section 7.2.1 describes the demographic characteristics (age, gender, education and income) of the sample. Then Section 7.2.2 describes the mobile phone usage characteristics of the sample, including: their distribution among the various mobile service providers in Australia, relationship age distribution, account types (pre-paid or post-paid), mobile usage payment (who pays), and prior experience in using mobile commerce services.

7.30.1. Demographic characteristics

This section describes the sample demographic distributions including gender, age, education and income.

Gender

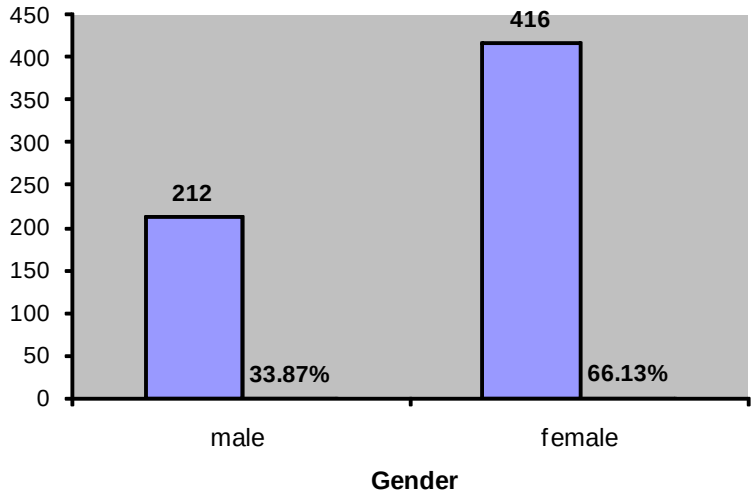


Figure 7.4 Sample distribution by gender

Figure 7.4 shows that there are 212 males (33.9 per cent) and 414 females (66.1 per cent) making up a total of 626 respondents. As with all other studies that utilise an online survey for data collection, there is usually little control over how many males versus females to participate. In this study, the sample includes at least 200 participants from each gender group; therefore, each gender is adequately represented in this study.

The larger number of females compared to males in the study sample might be due to the fact that the initial research through which the WMIS list was developed targeted a number of women magazines websites and therefore more females participated in the study and listed in the mailing list. However, this imbalance in the sample gender distribution did not affect the research results because no significant differences in mobile commerce adoption and behaviour were found between females and males (as will be discussed in Section 8.3 of the next chapter).

Age

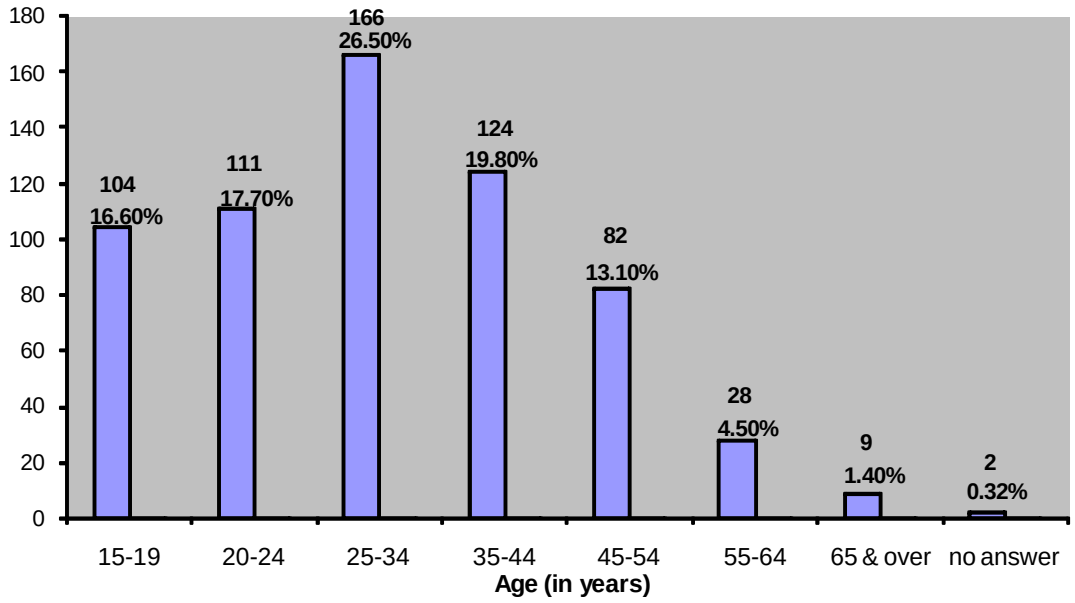


Figure 7.5 Sample distribution by age

Eight age groupings are shown in Figure 7.5. The sample can further be categorised into three groups based on participant age:

- The "young" group (younger than 25 years old) which includes 215 respondents comprising 34.3 per cent of the sample.

- The “middle age” group (from 25 to 44 years old) which includes 290 respondents, making up 46.3 per cent of the sample.
- The “older” group (45 years old and over) which includes 119 respondents and comprises 19 per cent of the sample.

This distribution shows that the sample is closely spread across various age groups. There are at least 119 respondents from each age group. The fact that the majority of the sample (80.6 per cent) is in the 15-44 years age group is especially advantageous for the generalisability of the results of this study because, according to the ‘telecommunications today’ study, the 18-30 and 31-40 age groups are the main driving power behind mobile and telecommunications technology adoption in Australia (ACMA 2007), as shown in Table 7.2 (Australian consumer behavioural segments) above.

Education

Figure 7.6 shows the distribution of the sample by the highest level of education the respondent has achieved. Overall, the majority of the sample is educated to highly educated, with almost 70 per cent of the sample having achieved certificate level or better.

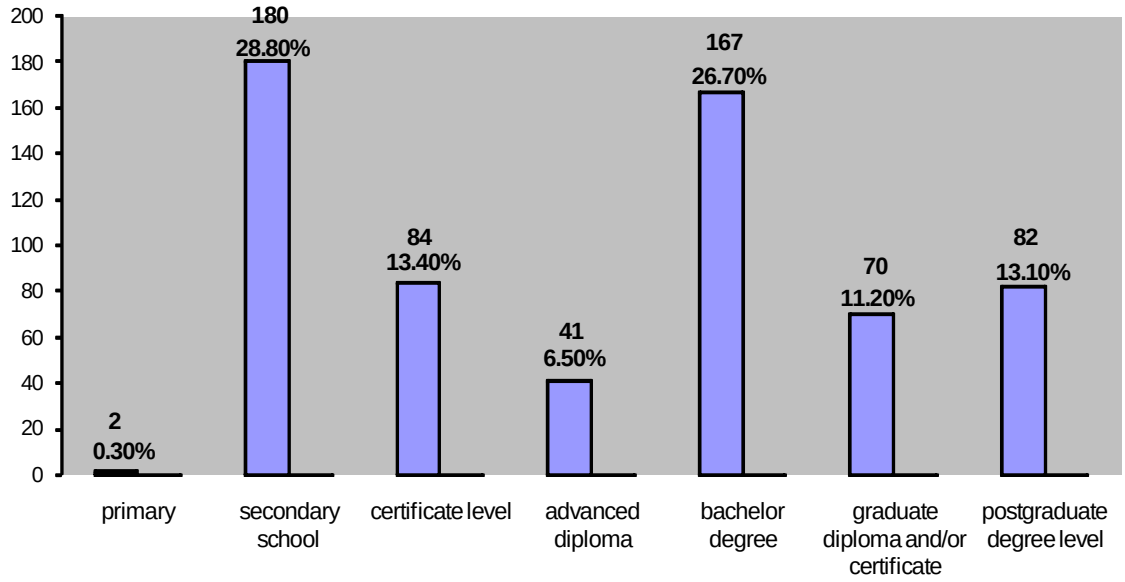


Figure 7.6 Sample distribution by highest educational level

The majority of the sample (292 respondents or 46.6 per cent) have at least certificate level, advanced diploma or bachelor degree. One-hundred and eighty respondents (28.75 per cent) have at least a secondary school certificate. In contrast, the most highly educated group consists of 152 respondents (24.3 per cent) who have graduate diplomas, graduate certificates or postgraduate degrees. This distribution shows that the vast majority of the sample in this study is generally educated with at least secondary school certification.

This distribution reflects the Australian literacy and educational profile which shows that 99 per cent of the total adult population is literate (CIA 2009b). Furthermore, 67 per cent of the population has attained at least upper secondary education while 33 per cent of the population has attained tertiary education (OECD 2008).

Income

Figure 7.7, next, shows the distribution of the sample based on annual income level. The distribution shows that the majority of the respondents (48.4 per cent) earn $25,000 to $100,000 annually. On the other hand, a total of 266 respondents (42.5 per cent) earn $24,000 or less annually, while 6.2 per cent make $101,000 or higher annually. Comparing this sample distribution with the ABS figures on the Australian population income distribution (Table 7.4, above) shows that the sample in this study is generally representative of the various average income groups in Australia.

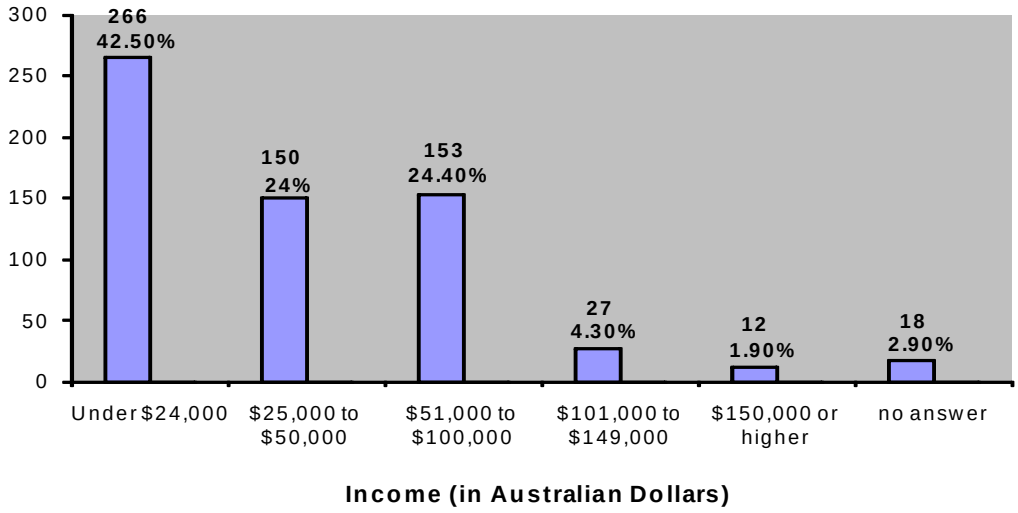


Figure 7.7 Sample distribution by annual income

7.30.2. Mobile phone and mobile services usage characteristics

In this section, I provide an overview of the mobile usage characteristics of the sample, including:

- Service providers: who is the mobile service provider of the respondent?
- Relationship age: for how long has the participant been a customer of his/her service provider?
- Account type: is the participant a pre-paid or a contract customer?
- Mobile usage payment: who pays for the participant's mobile usage expenses?
- Prior experience: Does the participant have any prior experience with m-commerce and other advanced mobile services?

The following sections describe the sample based on each of the above characteristics.

Service providers

Figure 7.8 shows the distribution of the sample across major Australian mobile phone service providers.

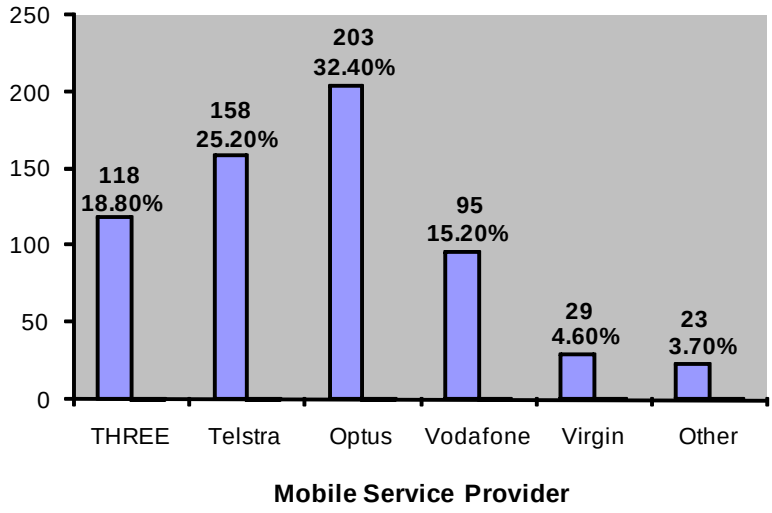


Figure 7.8 Sample distribution by service provider

As Figure 7.8 shows, every major mobile service provider in Australia is represented in the sample. The majority of participants have an account with Optus (203 respondents). In addition, there are 158 customers from Telstra, 118 from Three and 95 from Vodafone. There were also some customers from other smaller service providers such as AAET, Telecom, Boost, Southern Cross Telco, Dodo, Soul, TadAust, M8 Telecom, SIMPlus, voicetalk and iiNet. Due to the low number of observations for these providers (both individually and jointly), they are collectively labelled 'Other.'

The Australian mobile markets statistics as shown in Figures 7.2 and 7.3 (above) show that the market is mainly dominated by four major players or service providers: Telstra, Optus, Vodafone and Hutchison (Three). As this study sample distribution by mobile service providers (Figure 7.8) demonstrates, each of these major mobile service providers is represented in the sample (with at least 95 customers), in addition to other smaller service providers like Virgin and others. The fact that respondents in this sample come from the various mobile service providers in Australia is advantageous for this study which examines consumer-service provider relationship impact on consumer perceptions because it helps remove any 'single firm' bias from the data and the obtained results and conclusions.

Relationship age

The distribution of respondents based on how long have they been customers of their current service provider (relationship age) is shown in Figure 7.9 below. A total of 106 respondents (16.9 per cent of the sample) have been with their current service provider for one year or less, 218 customers (34.8 per cent) have a relationship age of one to three years, 149 customers (23.8 per cent) have continued with their current service providers for at least three to five years, and 153 customers (24.4 per cent) have a relationship age of over five years.

Relationship Age is known to be an important factor when one examines consumer-service provider relationships (see for example, Anderson et al. 1989; Dwyer et al. 1987; Liljander et al. 2002; Wray et al. 1994). In these studies, relationship age was found as a determinant of the quality and strength of a relationship. The proposition here is that usually the longer a relationship lasts, the stronger it becomes and the higher quality it would possess. The

available sample in this study provides a wide range of relationship age periods spanning from as short as less than three months to longer than five years (Figure 7.9). This distribution enhances the validity of the results that pertain to the impact of relationship quality on other variables because the relationship quality impact is examined across different age periods. As a result, this would enhance the external validity and generalisability of the research results and conclusions.

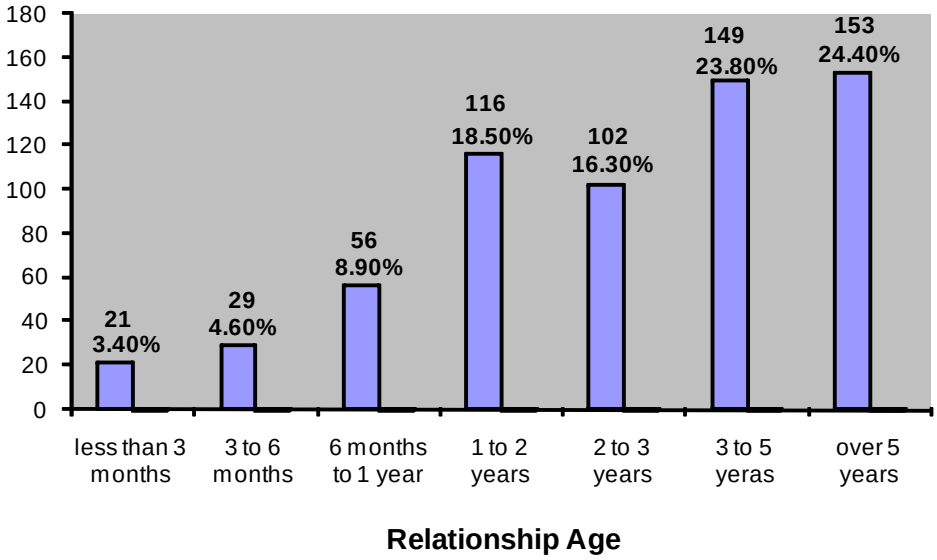


Figure 7.9 Sample distribution by relationship age

Account types

Figure 7.10 shows the sample distribution based on account type: prepaid or contract (post-paid).

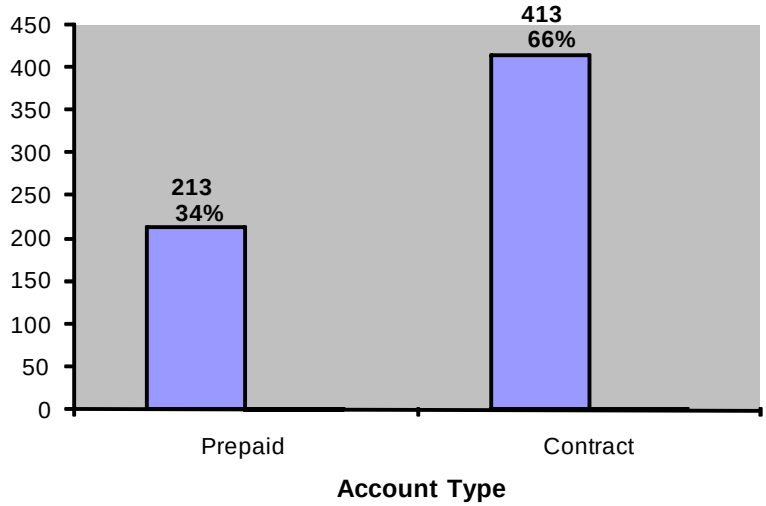


Figure 7.10 Sample distribution by account type

The above figure shows that 66 per cent of the respondents have a contract account which means that they are usually bound by a contractual obligation to stay with the current service provider for agreed-upon period of time and have to pay bills on regular basis. In contrast, 34 per cent of the sample is prepaid customers that usually do not sign any contracts and do not pay regular bills and can easily switch to another service provider at any time.

Mobile usage payment

This mobile usage characteristic poses the question 'who pays for the mobile phone usage expenses?' Figure 7.11 depicts the distribution of the respondents based on this criterion.

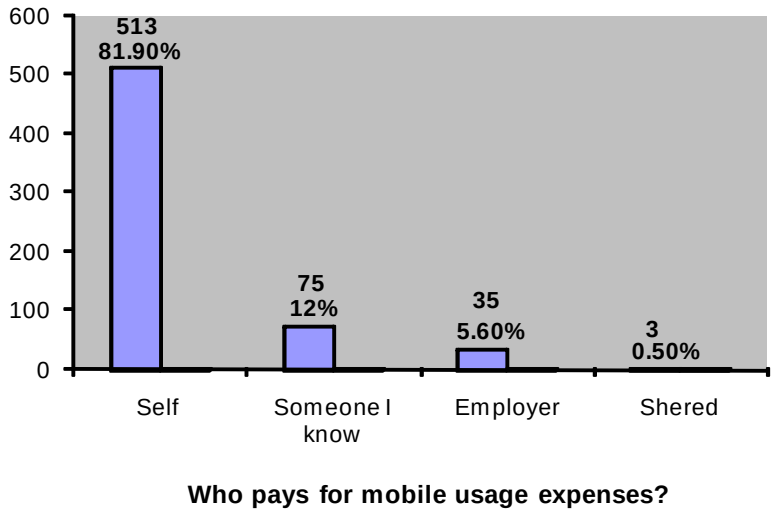


Figure 7.11 Sample distribution by 'who pays the mobile phone usage expenses'

The above figure shows that the vast majority of the respondents (82 per cent) pay their mobile services usage expenses by themselves. On the other hand, usage expenses of a total of 17.5 per cent of the sample are paid by someone else such as husband, partner, father, son or employer. In addition, a very small group (three respondents) indicated that their usage expenses are shared between themselves and someone they know (e.g. husband, partner, father, son or employer).

It is important and advantageous for this research that the sample includes all these categories because the results and the implications of each variable might differ for each category. For example, the attitude and intention perceptions to adopt new mobile services of a consumer who pays all phone usage expenses from his/her own budget might vary from a consumer who gets to use the mobile for free.

Prior experience

Figure 7.12 shows the distribution of the sample based on their prior experience in using mobile services.

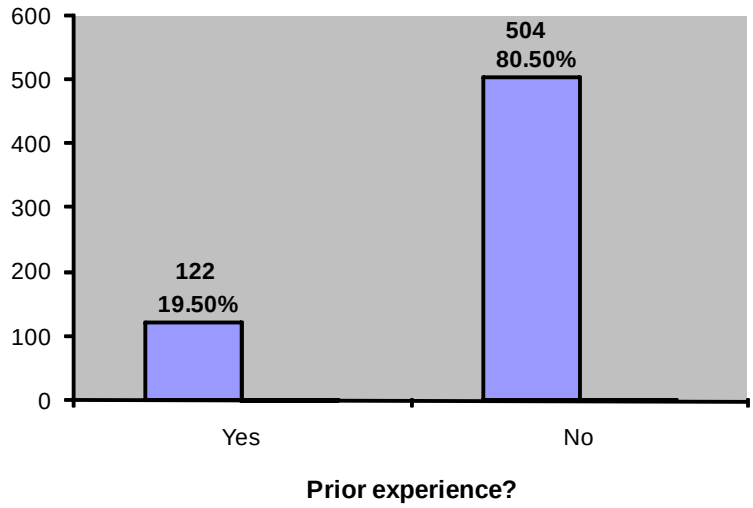


Figure 7.12 Sample distribution prior experience in using m-commerce

As shown, 122 respondents (19.5 per cent) are current users of (or have previous experience) with m-commerce services such as Bumper Pack service. This group is classified as customers with prior experience. On the other hand, 504 respondents (80.5 per cent) are currently non-users of the Bumper Pack service and had no previous experience with similar mobile commerce services.

The above sections establish that the sample used in this study is adequately representative of various characteristics of the general population of mobile phone users in Australia.

7.31. Conclusion

This chapter highlights the characteristics of the study target population which includes mobile phone users in Australia. Specifically, it provides an overview of general characteristics of the Australian mobile market (market status and growth and service providers and market shares) and the Australian population (gender, age, education and income). The chapter also provides an overview of the characteristics of the sample of respondents, specifically, demographic characteristics and mobile phone usage characteristics.

Chapter 7

The descriptive results presented in this chapter show that based on the demographic and mobile phone usage characteristics that were collected in the questionnaire and comparing with the characteristics of the target population, the sample used in this study is quite representative of the population of mobile phone users in Australia. Chapter 8 presents the results of the research model analysis and hypotheses testing based on the questionnaire survey data.

Chapter 8.

Quantitative Study Analysis and Results

8.32. Introduction

In this chapter, I present the results of two parts of the quantitative study analyses:

1. The examination of the measurement model of this research (Section 8.5). The Measurement Model 1) specifies the measures or indicators used to assess or measure each construct in the research model and 2) evaluates the extent to which a set of measures are consistent in what they are intended to measure (Gefen et al. 2000).
2. The examination of the structural model and the reporting of hypotheses testing (Section 8.6). The Structural Model is a representation of the liking dependence relationships among constructs in the research model (Gefen et al. 2000).

As mentioned in Section 4.2.1, the Structural Equation Modelling (SEM) technique is used to carry out the above two analysis. However, before I present the results of these analyses, I first provide and overview of the statistical distribution of the various constructs that are examined in this research (Section 8.2) and present the results of testing for confounding effects of sample characteristics (demographic and mobile phone usage characteristics) on various paths in the research model (Section 8.3).

I then discuss the important issue of construct specification and misspecification and, thereby, determine how each construct in the research model is conceptualised and modelled or specified in this analysis (Section 8.4). Specifying this up front is important since the misspecification of constructs in a structural model is a serious issue that might jeopardise the theoretical and practical validity and implications of a research project. For

easier reference, I present again the research model (Figure 8.1) and hypotheses (Table 8.1), as introduced in Chapter 3.

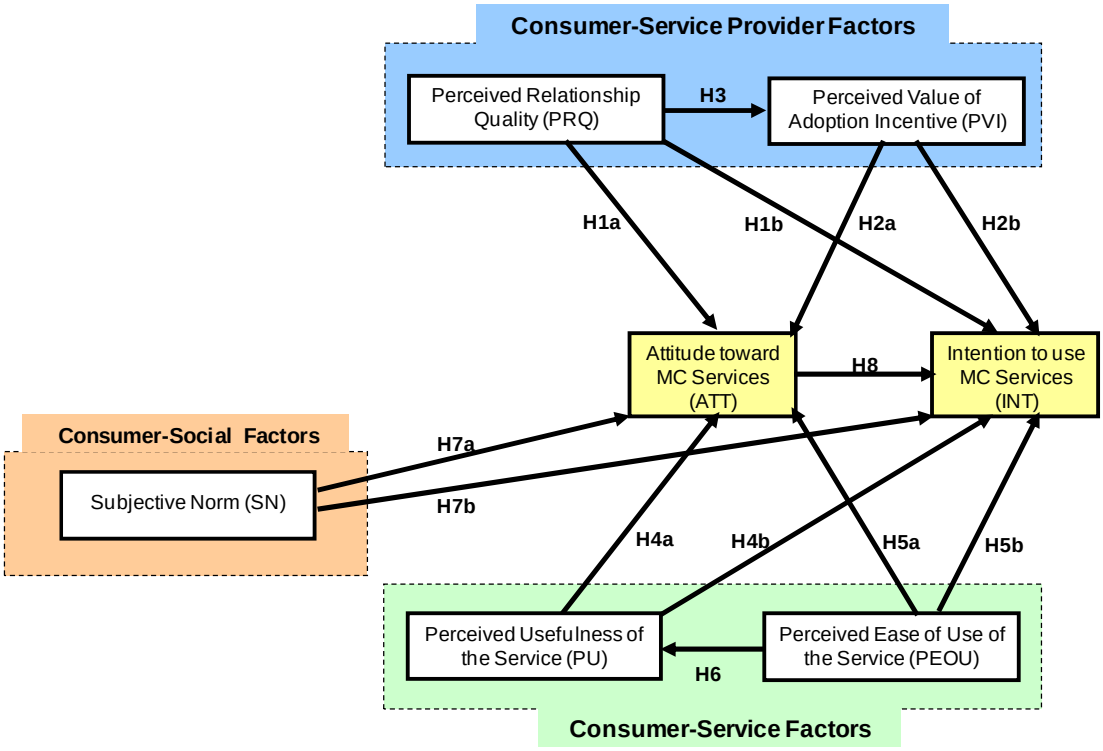


Figure 8.1 The research model

Table 8.1 The research hypotheses

Path	Hypothesis	
PRQ>ATT	**H1a**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's attitude (ATT) toward the adoption of mobile services.
PRQ>INT	**H1b**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's intention (INT) to adopt mobile services.
PVI>ATT	**H2a**	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's attitude (ATT) toward the adoption of mobile services.
PVI>INT	**H2b**	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's intention (INT) to adopt mobile services.

PRQ>PVI	**H3**	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's perception of the value of the adoption incentive (PVI) offered by the service provider.
PU>ATT	**H4a**	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.
PU>INT	**H4b**	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.
PEOU>ATT	**H5a**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.
PEOU>INT	**H5b**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.
PEOU>PU	**H6**	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's perception of the usefulness (PU) of the mobile service.
SN>ATT	**H7a**	A consumer's perception of the social influence of important others (SN) influences that consumer's attitude (ATT) toward the adoption of mobile services.
SN>INT	**H7b**	A consumer's perception of the social influence of important others (SN) influences that consumer's intention (INT) to adopt mobile services.
ATT>INT	**H8**	A consumer's attitude (ATT) toward the adoption of mobile services has a direct impact on that consumer's intention (INT) to adopt mobile services.

8.33. Distribution of Latent Constructs

This section describes the distribution of the various constructs in the research model. The objective is to provide a general picture of the respondent's evaluation of each perception or construct in the research model and therefore understand more about the characteristics of the sample in this research. Table 8.2, next, the statistical distribution (maximum, minimum, mean and standard deviation) of the scores of the various constructs is presented.

The maximum and minimum scores are based on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The mean scores represent the average of the scores of the whole sample (626 respondents) on every scale in the questionnaire including: Perceived Relationship Quality (PRQ) measured by trust in service provider honesty, trust in service provider benevolence, affective commitment towards the service provider, satisfaction with the service provider and affective conflict with the service provider), Perceived Value of the Incentive (PVI) measured by functional value (price), functional value (quality), social value, emotional value and epistemic value; Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Subjective Norm (SN), Attitude toward the mobile service (ATT) and Intention to adopt the mobile service (INT).

Table 8.2 The un-standardised PLS scores of the all variables in the research model

Variable	N	Minimum	Maximum	Mean	Std. Deviation
trust in SP honesty	626	1.00	5.00	3.21	0.85
trust in SP benevolence	626	1.00	5.00	2.75	0.91
affective commitment toward the SP	626	1.00	5.00	2.51	1.00
satisfaction with the SP	626	1.00	5.00	2.96	0.87
affective conflict toward the SP	626	1.00	5.00	3.82	1.09
Perceived Relationship Quality (PRQ)	626	1.00	5.00	3.12	0.78
price value	626	1.00	5.00	2.94	1.04
quality value	626	1.00	5.00	3.22	0.90
social value	626	1.00	5.00	2.19	0.96
emotional value	626	1.00	5.00	2.55	1.00
epistemic value	626	1.00	5.00	3.02	0.83
Perceived Value of the Incentive (PVI)	626	1.00	5.00	2.82	0.77
Subjective Norm (SN)	626	1.00	5.00	2.63	0.89
Perceived Ease of Use (PEOU)	626	1.00	5.00	3.58	0.81
Perceived Usefulness (PU)	626	1.00	5.00	2.87	0.91
Attitude toward the mobile service (ATT)	626	1.00	5.00	3.20	0.90
Intention to adopt the mobile service (INT)	626	1.00	5.00	3.14	1.07

Note: Based on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

The mean score for each of the variables in the above table (the column labelled 'Mean') is graphically presented in Figure 8.2, and a discussion of the results follow.

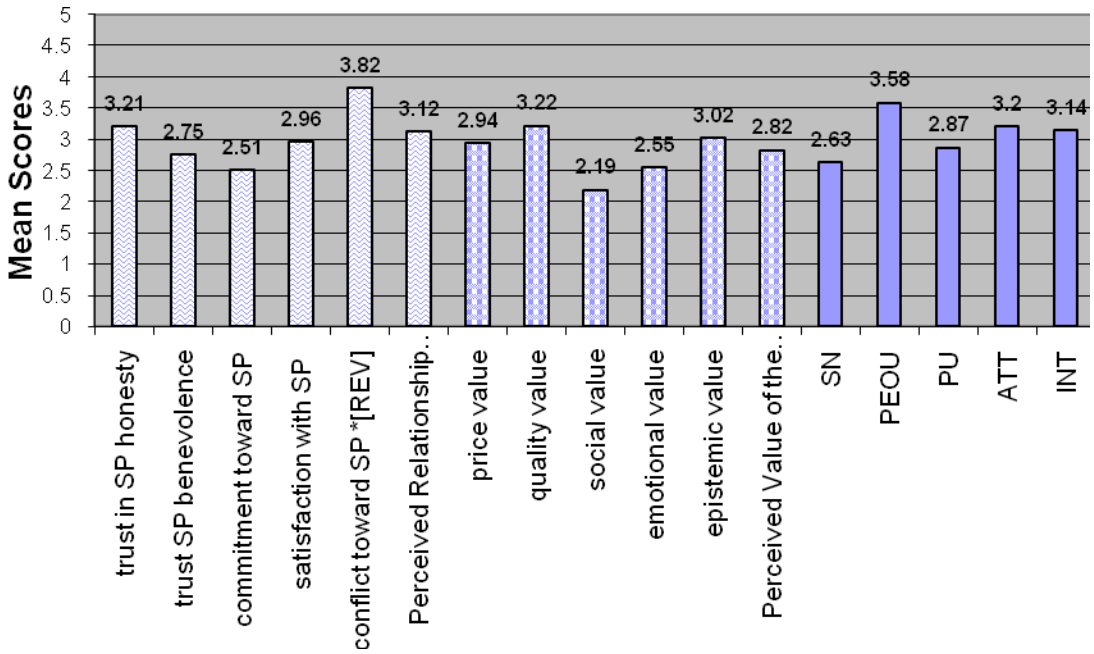


Figure 8.2 Sample mean scores for each variable

Note: Based on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). *[REV] indicates a reversed scale. 'SP' stands for service provider.

Figure 8.2 shows that the mobile phone users in this sample generally have above-average relationship quality perceptions (PRQ) towards their mobile service providers. This is emphasised by the fact that the mean scores of every dimension of the PRQ variable are above average. As explained in Chapter 4, the affective conflict scores were reversed in order to calculate the total affective conflict and total PRQ (both shown in the figure above). Generally, there is a high level of trust in mobile service providers' honesty combined with a low level of conflict. In addition, mobile phone consumers are generally committed toward and satisfied with their mobile service providers.

For the Perceived Value of the Incentive (the Bumper Pack), the respondents generally evaluated the value of this incentive as highly valuable. They thought that this incentive gives them high functional value (both price and quality) and high epistemic (new

experience) value. The incentive also gave the respondents high emotional value and a moderate social value.

In addition, the respondents think that the mobile service being studied is (or would be) easy to use and quite useful. On the other hand, the influence of important people on respondents (subjective norm, SN) does not seem to have a great impact on them compared to ease of use and usefulness. Finally, the respondents seem to have a highly positive attitude toward advanced mobile services (ATT) matched with high intention (INT) to adopt such services.

8.34. Testing for Confounding Effects

Prior to testing the research model and confirmation of hypotheses, it is important to ensure that respondent characteristics do not have a confounding effect on the results. Based on this, I have tested if the sample characteristics (demographic and mobile phone usage) have moderator effect on any of the paths in the research model.

The tests showed that neither demographic characteristics nor mobile usage characteristics confound the result. It was observed that none of these characteristics present any systematic bias in the data. Therefore, further analysis can proceed with no issues of results bias based on respondent characteristics. The following chapter examine the research model and test the hypotheses.

8.35. Construct Specification

While scale development and testing techniques take up a considerable space in the field of Information Systems, new issues and concerns are always raised to improve these practices. One of the recent concerns is the issue of misspecifications of conceptual constructs. The specification of constructs involves a careful examination of the ‘conceptual’ relationships between the main construct and its measurement indicator(s). This is particularity important when using Structural Equation Modelling (SEM) technique because it allows the simultaneous analysis of the data and the examination of the structural and measurement models.

The main objective from the examination of construct conceptualisation is to determine if the construct should be conceptualised and modelled as a formative construct or as a reflective construct. When the measurement indicator(s) are conceptually distinct and independent components of a construct, the construct-indicator relationship is conceptualised and modelled as formative. In formative constructs, when a measurement indicator is excluded, part of the conceptual domain or definition of the construct is consequently omitted (MacCallum and Browne 1993). Ideally, therefore, the selection of constructs should be ontologically complete (assesses all components of the construct). On the other hand, when the measurement indicators are effects or manifestations of the construct, the construct-indicators is conceptualised and modelled as reflective. In this case, dropping one of the measures or indicators does not alter the conceptual domain of the construct because the indicators are just different ways to reflect the same underlying meaning of the construct.

The correct specification of constructs is of great importance because both the analysis and interpretation of results depend on the way the construct was specified. Typically, researchers focus on the relationships between constructs and often neglect examining the relationships between constructs and their measures (Edwards and Bagozzi 2000; Mackenzie 2001). This construct misspecification increases the chances for measurement inaccuracy (Petter et al. 2007) which could lead to serious effects on the structural model (Jarvis et al. 2003; MacKenzie et al. 2005). This cascading effect that put at risk both the measurement and structural models, could lead to potential errors in research findings and conclusions by possibly affirming a path (hypothesis) in the research model when it is in fact insignificant (also known as a Type I error) or, alternatively, rejecting a path when it is actually significant (also known as a Type II error) (Jarvis et al. 2003; Mackenzie 2001; MacKenzie et al. 2005). Ultimately, this seemingly trivial issue of construct misspecification could ultimately lead to incorrect results and jeopardise meaningful theory understanding and advancement (Edwards et al. 2000). The risks that the Information Systems, or any research field for that matter, could suffer from the errors that result from construct misspecification are best described by Petter et al. (2007):

> "The danger of Type I error is that we, as researchers, may build new theories and models based on prior research that finds support for a given relationship that does not actually exist. This may affect the implications of our research

> for both academia and practice. The danger of Type II error is that some interesting, valuable research may not be published if many of the relationships within the model are found to be nonsignificant. Studies with interesting insights may be published to a smaller audience in second-tier journals or not at all because one or more constructs were misspecified." (p.631)

Despite the significance of the issue on the theoretical and practical implications of empirical studies, the construct-indicator relationships have rarely been examined even in the top (A+) Information Systems journals. Motivated by such a critical concern, Petter et al (2007) examined whether formative constructs have, in fact, been mistaken for reflective constructs by Information Systems researchers. They conducted a review of complete volumes of the two of the IS top journals, MIS Quarterly and Information Systems Research (ISR), over a three-year period (2003-05). They found a great deal of construct misspecifications in the field. Many constructs have mistakenly been specified, modelled and analysed and, therefore, the results of the research might have been wrongly interpreted. The authors found a misspecification level of a surprising 30 per cent in the Information Systems top journals, compared to a 29 per cent level in the marketing field which was found by Jarvis et al. (2003). As a result, before examining the measurement and structural models in my research, I took the time to ensure that I have correctly conceptualised and modelled the various constructs in my research model.

To help identify whether a construct should be specified as reflective or formative, a set of four decision rules or criteria were proposed by Jarvis C. et al. (2003) and adopted by Petter S. et al. (2007) and Mackenzie S. et al. (2005). I summarise these decision rules in the Table 8.3, below. It is important, however, to note that these rules were developed to serve as guidelines only. Therefore, the specification of a construct as being formative or reflective is to a great extent subjective and depends on the view of the researcher and available theoretical evidence because "many constructs that we use in IS are not purely reflective and not purely formative and tend to be modelled simply as reflective" (Petter et al. 2007, p.632).

Table 8.3 Decision rules to identify formative- vs. reflective-indicator constructs		
Decision Rule and questions to ask	**Formative Construct**	**Reflective Construct**
1. Direction of causality from construct to measure implied by the conceptual definition	Direction of causality is from items to Construct	Direction of causality is from construct to items
Q1: Are the indicators (items) (a) defining characteristics or (b) manifestations of the construct?	Indicators are defining characteristics of the construct	Indicators are manifestations of the construct
Q2: Would changes in the indicators/items cause changes in the construct or not?	Changes in the indicators should cause changes in the construct	Changes in the indicator should not cause changes in the construct
Q3: Would changes in the construct cause changes in the indicators?	Changes in the construct do not cause changes in the indicators	Changes in the construct do cause changes in the indicators
2. Interchangeability of the indicators/items	Indicators need not be interchangeable	Indicators should be interchangeable
Q1: Should the indicators have the same or similar content? Do the indicators share a common theme?	Indicators need not have the same or similar content/indicators need not share a common theme	Indicators should have the same or similar content/indicators should share a common theme
Q2: Would dropping one of the indicators alter the conceptual domain of the construct?	Dropping an indicator may alter the conceptual domain of the construct	Dropping an indicator should not alter the conceptual domain of the construct
3. Co-variation among the indicators	Not necessary for indicators to covary with each other	Indicators are expected to covary with each other
Q1: Should a change in one of the indicators be associated with changes in the other indicators?	Not necessarily	Yes
4. Nomological net of the construct indicators	Nomological net for the indicators may differ	Nomological net for the indicators should not differ
Q1: Are the indicators/items expected to have the same antecedents and consequences?	Indicators are not required to have the same antecedents and consequences	Indicators are required to have the same antecedents and consequences

To clarify and demonstrate how these decision rules can be applied to indentify if a construct should be specified as reflective or formative, Table 8.4 presents two examples of previously specified constructs: "Life Stress in the Past Year" which is specified as a formative construct and "Timelessness" which is specified as a reflective construct.

Table 8.4 General example for applying Jarvis et al. decision rules

Construct	Indicators	Decision rules check	Type of construct
Life stress in the past year (Example adapted from Netemeyer et al. (2003))	1- job change 2- death of a loved one 3- birth of a child 4- illness	1- It is counterintuitive that life stress generates death of a loved one or birth of a child. The opposite is more intuitive. 2- Indicators are not interchangeable and do not share a common theme. Dropping one of the indicators will affect the coverage of the conceptual domain (life stress in the past year). 2- Logically, the indicators are not expected to strongly correlate. 3-. Each indicator reflects a unique aspect of stress with its own antecedent and consequences.	Formative
System Timeliness: "the degree to which the system offers timely responses to requests for information or action" (Wixom and Todd 2005)	1- It takes too long for the system to respond to my requests. 2- The system provides information in a timely fashion. 3- The system returns answers to my requests quickly.	1- Indicators are manifestations or effects of timeliness 2- Indicators share a common theme and interchangeable. They all relate to the essence of the timeliness concept. 3- Indicators are expected to positively correlate 4- Indicators share the same/similar antecedents and consequences	Reflective

The correct specification of a construct as either reflective or formative does not only affect its conceptual implications, as mentioned above, but also determines the way the construct and its indicators should be modelled (or drawn) in the structural model. In Structural Equation Modelling (SEM), the direction of the arrows between the construct and its

measures depends on whether the construct is specified as formative or reflective. The direction of the arrows ultimately determines the underlying equations and calculations that the SEM program performs. Figure 8.3, next, shows that in the case of a reflective construct the arrows originate from the construct and point at the indicators. The direction of arrows is reversed (point towards the construct) when the construct is specified as formative.

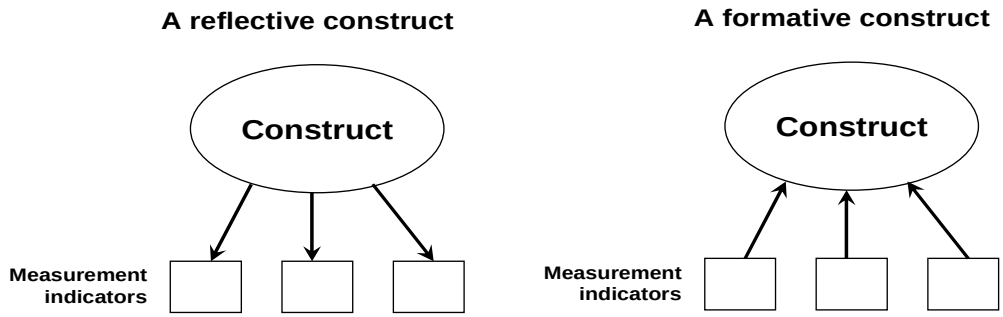


Figure 8.3 A simplified representation of how reflective and formative constructs are drawn in structural equation modelling

To specify the constructs in my research model and the way I should draw them in the structural model, I used the following logic. First, I investigated and determined the dimensionality of the construct (should I conceptualise the construct as uni-dimensional or as multi-dimensional?); then, depending on the construct dimensionality, one or all of the following conceptual relationships were examined and specified as either reflective or formative: the construct-indicator relationships, the construct-dimensions relationships, and/or the dimension-indicators relationships. Figure 8.4, graphically represents this logic-flow. Of course, this process was guided by the solid theoretical foundations from existing research as well as my own understanding of the issue that this research examines.

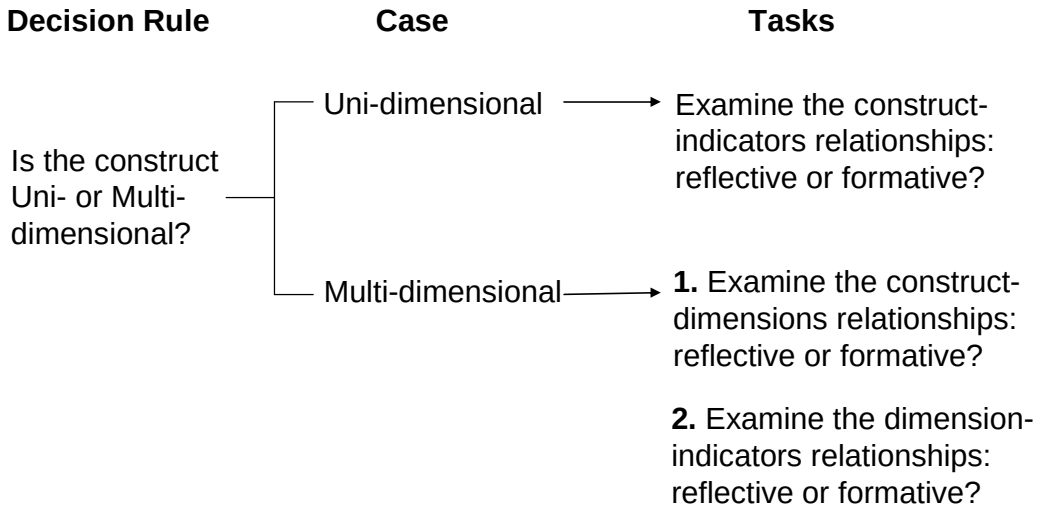


Figure 8.4 Logic flow used to specify constructs in this research

As the figure shows, the first decision in specifying a construct is to determine if it is a uni-dimensional, where the construct is assessed directly using a number of indicators, or a multi-dimensional construct, where the construct is represented by a number of dimensions or sub-constructs which are assessed by a number of indicators. A uni-dimensional construct connects directly to its measurement indicators and the construct is therefore called a first-order construct. On the other hand, a multi-dimensional construct connects to its dimensions, which in turn connect to the measurement indicators and the construct in this case is called a second-order construct.

Essentially, the decision to model and analyse a construct as uni-dimensional or multi-dimensional depends on the scope of the researcher's theoretical interest as well as the nature of the construct being studied (MacKenzie et al. 2005; Petter et al. 2007). Figure 8.5 shows a graphical representation of how uni-dimensional and multi-dimensional constructs are represented in a structural equation model. To simplify, the constructs in this figure are not specified as reflective or formative.

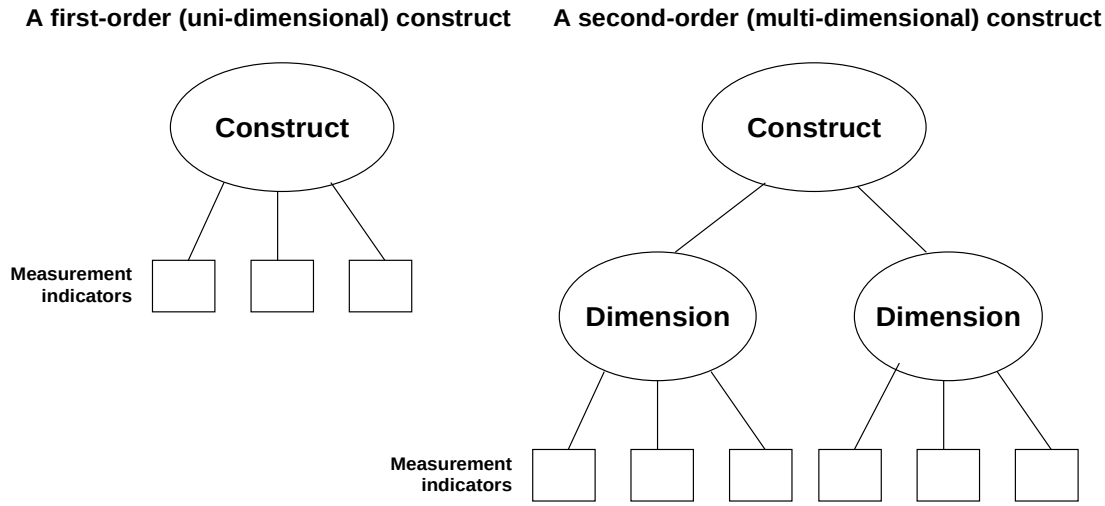


Figure 8.5 A simplified pictorial depiction of first-order and second-order constructs

Once the dimensionality of the construct is determined, the next decision in specifying a construct is to examine the conceptual relationships (the connecting lines in Figure 8.5 above) between the construct-indicators relationships for one-dimensional constructs and among construct-dimensions and dimension-indicators relationships for multi-dimensional constructs. The Jarvis et al. (2003) decision rules, listed in Table 8.3 above, are commonly used to determine if each of these layers of relationships should be specified as formative or reflective.

The research model (Figure 8.1 above) includes seven conceptual constructs: Perceived Relationship Quality (PRQ), Perceived Value of the Adoption Incentive (PVI), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Subjective Norm (SN), Attitude (ATT) and Intention (INT). The theoretical specification of each of these concepts was based on well-known and well-established theoretical frameworks and models (as discussed in Chapter 3). In terms of measurement, with the exception of PVI for which I developed a new scale, I adapted the measurement specification (and indicators) from the existing literature. Therefore, the existing research provided me with sufficient theoretical and empirical evidence on the way I should specify and conceptualise each of these constructs. As such, only the way I should model my PVI scale in the structural model needed more careful examination. In the following paragraphs, I present some of the available evidence to justify the way I represented the various constructs in my Structural Equation Modelling (SEM) analysis.

First, the PEOU, PU, SN, ATT and INT constructs come from a well-established technology and innovation adoption research tradition in which these variables have most commonly been conceptualised and measured as uni-dimensional first-order reflective constructs. Table 8.5 lists some exemplar references. By examining the indicators I am using to measure these constructs and in light of the way the constructs have been specified, I also conceptualised and examined these constructs as uni-dimensional first-order variables with reflective indicators.

Table 8.5 Specification of PEOU, PU, SN, ATT and INT in this research

Construct	Indicators used in this research	Construct specification	Studies with same construct specification
Perceived Ease of Use (PEOU)	1. I think that learning to use the service will be easy to me. 2. I think that I can easily make the service do what I want it to do. 3. I think that using the service will be clear and understandable. 4. I think the service will be flexible to interact with. 5. I think it will be easy for me to become skilful in using the service. 6. I think I will find the service easy to use.	Uni-dimensional with reflective measures	(Bhattacherjee and Premkumar 2004; Brown and Venkatesh 2005; Davis 1989; Davis et al. 1989; Gefen et al. 2003; Moore et al. 1991; Van der Heijden 2004; Venkatesh et al. 2000a; Wixom et al. 2005)
Usefulness (PU)	1. I think that using the service will help me accomplish tasks faster. 2. I think that using the service will improve my performance in general. 3. I think that using the services will make me more productive. 4. I think that I will become more effective by using the service. 5. I think that using the service will make it easier to do things. 6. I think that using the service is useful to me in general.	Uni-dimensional with reflective measures	
Subjective Norm (SN)	1. People important to me will support my use of this service. 2. It is expected that people like me use this service. 3. People I respect expect me to use this service.	Uni-dimensional with reflective measures	(Bock et al. 2005; Hong et al. 2006a; Pavlou and Fygenson 2006; Premkumar et al. 2008; Venkatesh et al. 2000b)

Attitude (ATT)	1. Wise/foolish 2. Good/bad 3. Positive/negative 4. Beneficial/unbeneficial	Uni-dimensional with reflective measures	(Ajzen et al. 1980; Fishbein et al. 1975) Most, if not all, empirical adoption studies included the same specification for attitude and intentions
Intention (INT)	1. I would use the service in the future. 2. If I buy a new mobile handset, I will pay attention to the service capability of the handset. 3. If I change my current service provider, I will ensure that they offer the service.	Uni-dimensional with reflective measures	

As for PRQ, the RELQUAL scale (Roberts et al. 2003) I adapted in this study builds on the specification of relationship quality as a multi-dimensional second-order construct with reflective dimensions and reflective indicators connected to each dimension. In addition, a large number of existing studies on relationship quality also conceptualise the construct in this way (e.g. Crosby et al. 1990; Dorsch et al. 1998; Dwyer et al. 1987; Gundlach et al. 1995; Hennig-Thurau 2000; Jap et al. 1999; Keating et al. 2003; Kumar et al. 1995; Smith 1998). Based on this, I also specify PRQ as a second-order construct with reflective dimensions and reflective indicators connected to each dimension.

In this study, PVI is also conceptualised as a multidimensional construct based on the Theory of Consumption Values (Sheth et al. 1991) – as discussed in Chapter 6 – which also conceptualises this construct as formative. This multidimensional formative conceptualisation of the perceived value construct is also supported by a considerable number of previous studies (De Ruyter et al. 1998; De Ruyter et al. 1997; Khalifa 2004; Roig et al. 2006; Sanchez et al. 2006; Turel et al. 2007; Woodruff 1997). These studies also specified the dimension-indicator relationships for this construct as reflective. Since I developed a new set of indicators to measure each dimension, I needed to carefully examine and establish whether the relationship between each dimension and its indicators is reflective or formative. As mentioned above, this determines the way I would model these relationships in the SEM analysis. The result of this examination, based on Jarvis C. et al. (2003) criteria is presented in Table 8.6.

Table 8.6 The PVI scale items specification				
Dimension	**Construct Definition**	**Indicators**	**Construct type**	**Reasoning**
Functional Value (Price)	The perceived utility acquired from an incentive's capacity for functional, utilitarian, or physical performance. An incentive acquires functional value through the possession of salient functional, utilitarian or physical attributes. Functional value is measured on a profile of choice attributes.	1. The incentive saves me money. 2. The incentive is worth the price I am paying for. 3. The incentive gives me value-for-money.	Reflective	Indicators are manifestations of the construct. Indicators are interchangeable and share a common theme. Each of them captures the essence of the overall domain of the construct. Indicators are expected to covary. Indicators share common antecedents and consequences.

Functional Value (Quality)	The perceived utility acquired from an incentive's association with one or more specific social groups. An incentive acquires social value through association with positively or negatively stereotyped demographic, socioeconomic, and cultural-ethnic groups. Social value is measured on a profile of choice imagery	1. Accepting this incentive allows me to use a service of high quality. 2. Accepting this incentive allows me to use a technically sound service. 3. Accepting this incentive allows me to use many good services.	Reflective	Indicators are manifestations of the construct. Indicators are interchangeable and share a common theme. Each of them captures the essence of the overall domain of the construct. Indicators are expected to covary. Indicators share common antecedents and consequences.

Social Value	The perceived utility acquired from an incentive's capacity to arouse feelings or affective states. An incentive acquires emotional value when associated with specific feelings or when precipitating or perpetuating those feelings. Emotional value is measured on a profile of feelings associated with the alternative.	1. Accepting this incentive enhances my social life. 2. Accepting this incentive improves the way I am perceived by others. 3. Accepting this incentive makes me more accepted by others. 4. Accepting this incentive gives me social approval. 5. Accepting this incentive improves my relationships with others. 6. Accepting this incentive gives me a good social image.	Reflective	Indicators are manifestations of the construct. Indicators are interchangeable and share a common theme. Each of them captures the essence of the overall domain of the construct. Indicators are expected to covary. Indicators share common antecedents and consequences.

Emotional Value	"The perceived utility acquired from an incentive's capacity to arouse feelings or affective states. An incentive acquires emotional value when associated with specific feelings or when precipitating or perpetuating those feelings. Emotional value is measured on a profile of feelings associated with the acquisition of the incentive."	1. Accepting this incentive makes me feel satisfied. 2. Accepting this incentive makes me happy. 3. Accepting this incentive makes me feel proud of myself. 4. Accepting this incentive makes me feel smart.	Reflective	Indicators are manifestations of the construct. Indicators are interchangeable and share a common theme. Each of them captures the essence of the overall domain of the construct. Indicators are expected to covary. Indicators share common antecedents and consequences.

Epistemic Value	The perceived utility acquired from an incentive's capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge. An incentive acquires epistemic value by questionnaire items referring to curiosity, novelty, and knowledge	1. This incentive allows me to try something new. 2. The experience that this incentive brings me is novel. 3. This incentive is not like the types of incentives I usually see. 4. This incentive fulfils my curiosity. 5. Accepting this incentive answers many questions I have. 6. I learn many new things by accepting this incentive.	Reflective	Indicators are manifestations of the construct. Indicators are interchangeable and share a common theme. Each of them captures the essence of the overall domain of the construct. Indicators are expected to covary. Indicators share common antecedents and consequences.

To summarise, the seven constructs in my research model are specified in Table 8.7.

Table 8.7 Structural model specification for all constructs				
Construct	**Specification**			
	Dimensionality (1^{st} or 2^{nd} order)	Construct-indicator relationship	Construct-dimension relationship	Dimension-indicator relationship
PRQ	Second-order	n/a	Reflective	Reflective
PVI	Second-order	n/a	Formative	Reflective
PU	First-order	Reflective	n/a	n/a
PEOU	First-order	Reflective	n/a	n/a
SN	First-order	Reflective	n/a	n/a
ATT	First-order	Reflective	n/a	n/a
INT	First-order	Reflective	n/a	n/a

Note: n/a = not applicable

As shown, almost all the measures used in this research are reflective. The only formative relationship in the structural model is the one between the PVI construct and its dimensions. All other relationships are reflective.

The SEM analysis in this research was carried out using the Partial Least Squares (PLS) technique (Wold 1975). PLS is a powerful technique that has been widely used in Information Systems research. The software package used to perform the analysis was SmartPLS (Beta, Version 2.0) (Ringle et al. 2005). This variance-based or component-based method was chosen over covariance-based methods such as LISERL and Amos, because unlike the latter method which only supports reflective constructs, PLS supports both formative and reflective variables (Chin 1998b; Thompson et al. 1995) and can support both exploratory and confirmatory research (Gefen et al. 2000).

8.36. Measurement model

Prior to any model examination or hypotheses testing it is important to ensure the validity of the measurement model. This involves establishing whether the instrument measures that are used to gather the data actually measure what they are intended to measure. One of the important validities that need to be established in empirical studies, such as my research, is construct validity.

From one side, construct validity is concerned with establishing evidence of shared understanding of meaning. For the PVI scale that was entirely developed in this study, this aspect of construct validity was assured by a comprehensive process involving interviews with target respondents and experts and card sorting exercises, as discussed in Chapter 6. For the rest of the scales that were adapted from previous studies, an evidence of a shared understanding of meaning (other than the fact that they have already been validated for shared meaning by their developers) was established through an interactive pre-test and pilot test processes involving potential respondents and experts in the field, as mentioned in Chapter 6.

Another aspect of construct validity that needs to be established is the assessment of whether the measured variables behave in a way that is consistent with the way they were theoretically expected to behave. This aspect of construct validity is usually established by testing for convergent and discriminant validities.

Convergent and discriminant validity are assessed by ensuring "that, once cross-loading items are dropped, items load cleanly and exclusively on the constructs (factors) upon which they are posited to load" (Straub et al. 2004, p.393). In the following sections I discuss and assess both convergent validity (Section 8.3.1) and discriminant validity (Section 8.3.2) for the research model in this study.

8.36.1. Convergent validity

Convergent validity is exhibited when all the measures of a certain construct correlate and 'stick' together in terms of the concept they reflect. Establishing convergent validity assures the researcher that all the measures of the construct are actually measuring the same construct or concept and move in the same conceptual direction.

There are many ways to establishing convergent validity. In this research, I assess convergent validity by examining:

1. The reliabilities of items in each scale
2. The Composite reliability of each construct
3. The Average Variance Extracted (AVE)

Each of these analyses is described in the following sections.

Reliabilities of items in each scale

One way to demonstrate convergent validity in a construct is by evaluating the reliability of each measurement item in the scale that is used to measure the construct. In this method, satisfactory convergent validity is shown when all the items of a scale highly and significantly load on their respective construct.

For this study, Table 8.8 presents the loading of each measurement item on its respective construct. As shown, all the items used in this study highly and significantly load on their corresponding construct and they all exceed the 0.60 recommended thresholds for exploratory research (Nunnally 1967).

Table 8.8 Outer model loadings

(*** significant at 0.001 level)

PRQ		**PVI**	
TRUSTH1	0.68***	VPRICE1	0.64***
TRUSTH2	0.71***	VPRICE2	0.67***
TRUSTH3	0.76***	VPRICE3	0.68***
TRUSTB1	0.71***	VPERF1	0.66***
TRUSTB2	0.77***	VPERF2	0.65***
TRUSTB3	0.76***	VPERF3	0.65***
SAT1	0.77***	VEMO1	0.84***
SAT2	0.77***	VEMO2	0.84***
SAT3	0.81***	VEMO3	0.81***
SAT4	0.82***	VEMO4	0.80***
ACOMIT1	0.61***	VSOCIAL1	0.74***

ACOMIT2	0.76***	VSOCIAL2	0.75***
ACOMIT3	0.79***	VSOCIAL3	0.72***
ACONF1	0.63***	VSOCIAL4	0.73***
ACONF2	0.64***	VSOCIAL5	0.73***
ACONF3	0.64***	VSOCIAL6	0.74***
SN		VEPIST4	0.68***
SNORM1	0.85***	VEPIST5	0.73***
SNORM2	0.87***	VEPIST6	0.68***
SNORM3	0.87***	**PU**	
PEOU		USEFUL1	0.90***
EASE1	0.85***	USEFUL2	0.92***
EASE2	0.89***	USEFUL3	0.90***
EASE3	0.92***	USEFUL4	0.92***
EASE4	0.82***	USEFUL5	0.89***
EASE5	0.87***	USEFUL6	0.82***
EASE6	0.91***	**ATT**	
INT		ATTBENEF	0.89***
INT1	0.91***	ATTGOOD	0.91***
INT2	0.79***	ATTPOSTV	0.91***
INT3	0.91***	ATTWISE	0.90***

A note on abbreviations:
PRQ scale: TRUSTH = Trust in honesty, TRUSTB = Trust in Benevolence, SAT = Satisfaction, ACOMIT = Affective Commitment, ACONF = Affective Conflict.
PVI scale: VPRICE = Price Value, VPERF = Quality Value, VEMO = Emotional Value, VSOCIAL = Social Value, VEPIST = Epistemic Value.

Attitude scale: ATTBENEF = Beneficial/Unbeneficial, ATTGOOD = Good/Bad, ATTPOSTV = Positive/Negative, ATTWISE = Wise/Foolish.

Composite reliability of constructs

Another measure to support the existence of convergent validity is the composite reliability of each construct in the research model. The composite reliability of each construct assesses its internal consistency. This means that the construct is internally consistent due to the consistency (the measuring of the same concept) among the construct measures. Therefore, compared to the individual item reliability scores that I reported above, composite

reliability is a measure of the 'overall' reliability of the collection of all measures under a certain construct.

As a rule of thumb, 0.70 is suggested as a minimum benchmark for acceptable construct reliability (Hair et al. 1998; Segars 1997). As shown in Table 8.9, the composite reliability of every construct in this study is well above the suggested 0.70 threshold.

Table 8.9 Constructs composite reliabilities

Construct	Composite Reliability
PRQ	0.95
PVI	0.95
PU	0.96
PEOU	0.95
SN	0.90
ATT	0.95
INT	0.90

Average variance extracted (AVE)

Average Variance Extracted (AVE) assesses the magnitude of variance that a variable captures from its indicators compared to the amount that results from measurement error (Chin 1998a). A high construct AVE indicates that the indicators (or measure) under it are capturing the same underlying construct, which leads to the exhibition of convergent validity of the construct.

In order to support a satisfactory convergent validity, it is recommended that the AVE of each construct in the model exceeds 0.50 (Fornell 1982; Fornell and Larcker 1981). As Table 8.10 shows, in this research all constructs have exceeded this threshold.

Table 8.10 Constructs average variance extracted (AVE)

Construct	AVE
PRQ	0.53
PVI	0.53

PU	0.80
PEOU	0.77
SN	0.74
ATT	0.82
INT	0.76

From all the above, it is demonstrated that the measurement model used in this study meets and exceeds the requirements for establishing convergent validity. The following sections assess discriminant validity, which is the second criterion for establishing the adequacy of measurement model in this study.

8.36.2. Discriminant Validity

Unlike convergent validity, which assures the unity or relatedness of the measures of each construct, discriminant validity is concerned with the discrimination or differentiation among measures of different constructs. Discriminant validity is therefore exhibited when there is a low correlation between the measures of each construct in the research model. This is very important to assess since the measures of each construct are supposed to measure a different concept.

There are many ways to establishing discriminant validity. In this research, I assess discriminant validity by examining:

1. Item Cross-loadings on various constructs
2. Relationship between correlations among constructs and the square root of the Average Variance Extracted (AVE)

Each of these analyses is described in the following sections.

Cross-loadings

To show satisfactory discriminant validity, the loading of each measurement item on its corresponding construct should be higher than its loading on other constructs (Chin 1998a; Gefen et al. 2000; Straub et al. 2004). This shows that the measurement items of a construct are measuring their construct and their construct only.

Table 8.11 demonstrates the satisfaction of this criterion because all of the measurement items load highly on their own constructs but not as highly on the other construct. Although the loadings show that PU might not be completely distinct from PVI, PU indicators are clearly much more associated with their own construct than with the PVI construct. PU indicators explain around 81% of variance in PU (i.e. 0.90^2), but only 36% of the variance in PVI (0.60^2). That is a considerable difference in the explanatory power which satisfies the criterion of disciminant validity since the measurement items (USEFUL 1-6) load highly on their construct (PU) but not as highly on the other construct (PVI) (Chin 1998a; Gefen et al. 2000; Straub et al. 2004). The fact that PU and PVI seem to be related does not invalidate this cross-loadings test for disciminant validity because established guidelines acknowledge the existence of a conceptual overlap among theoretical constructs; hence the use of the phrase "but not as highly on the other constructs".

Table 8.11 Loadings and cross-loadings of items on various constructs

	PRQ	PVI	PU	PEOU	SN	ATT	INT
TRUSTH1	**0.68**	0.18	0.19	0.22	0.16	0.16	0.17
TRUSTH2	**0.71**	0.17	0.19	0.23	0.16	0.20	0.14
TRUSTH3	**0.76**	0.18	0.20	0.26	0.16	0.22	0.14
TRUSTB1	**0.71**	0.28	0.19	0.15	0.21	0.16	0.13
TRUSTB2	**0.77**	0.28	0.23	0.23	0.17	0.19	0.20
TRUSTB3	**0.76**	0.32	0.26	0.24	0.24	0.21	0.18
SAT1	**0.77**	0.20	0.13	0.29	0.11	0.17	0.13
SAT2	**0.77**	0.23	0.17	0.21	0.18	0.15	0.09
SAT3	**0.81**	0.21	0.15	0.24	0.15	0.15	0.09
SAT4	**0.82**	0.22	0.17	0.29	0.17	0.18	0.15
ACOMIT1	**0.61**	0.25	0.17	0.08	0.19	0.15	0.10
ACOMIT2	**0.76**	0.26	0.17	0.15	0.21	0.12	0.12
ACOMIT3	**0.79**	0.29	0.21	0.17	0.21	0.17	0.16
ACONF1	**0.63**	0.11	0.08	0.23	0.06	0.19	0.10
ACONF2	**0.64**	0.09	0.06	0.20	0.06	0.14	0.08

ACONF3	**0.64**	0.11	0.09	0.20	0.08	0.15	0.10
VPRICE1	0.14	**0.64**	0.52	0.19	0.38	0.50	0.52
VPRICE2	0.22	**0.67**	0.47	0.26	0.35	0.55	0.50
VPRICE3	0.21	**0.68**	0.47	0.26	0.35	0.55	0.50
VPERF1	0.29	**0.66**	0.44	0.34	0.34	0.48	0.41
VPERF2	0.29	**0.65**	0.43	0.38	0.34	0.47	0.43
VPERF3	0.26	**0.65**	0.42	0.34	0.34	0.49	0.37
VEMO1	0.27	**0.84**	0.61	0.28	0.54	0.59	0.51
VEMO2	0.29	**0.84**	0.58	0.29	0.54	0.60	0.51
VEMO3	0.27	**0.81**	0.56	0.16	0.54	0.45	0.42
VEMO4	0.27	**0.80**	0.52	0.18	0.51	0.45	0.40
VSOCIAL1	0.23	**0.74**	0.59	0.15	0.52	0.47	0.39
VSOCIAL2	0.20	**0.75**	0.51	0.06	0.54	0.37	0.34
VSOCIAL3	0.17	**0.72**	0.46	0.03	0.51	0.32	0.27
VSOCIAL4	0.19	**0.73**	0.45	0.07	0.50	0.32	0.27
VSOCIAL5	0.19	**0.73**	0.52	0.07	0.51	0.36	0.34
VSOCIAL6	0.17	**0.74**	0.46	0.09	0.51	0.35	0.30
VEPIST4	0.21	**0.68**	0.48	0.25	0.41	0.46	0.40
VEPIST5	0.21	**0.73**	0.56	0.21	0.50	0.49	0.39
VEPIST6	0.21	**0.68**	0.51	0.22	0.46	0.47	0.40
USEFUL1	0.22	0.61	**0.90**	0.29	0.54	0.53	0.52
USEFUL2	0.22	0.63	**0.92**	0.22	0.55	0.49	0.51
USEFUL3	0.19	0.61	**0.90**	0.19	0.56	0.49	0.48
USEFUL4	0.23	0.63	**0.92**	0.23	0.58	0.53	0.53
USEFUL5	0.23	0.60	**0.89**	0.26	0.52	0.53	0.50
USEFUL6	0.22	0.63	**0.82**	0.37	0.52	0.63	0.61
EASE1	0.19	0.16	0.18	**0.85**	0.13	0.19	0.21

EASE2	0.23	0.26	0.26	**0.89**	0.21	0.25	0.26
EASE3	0.25	0.27	0.26	**0.92**	0.18	0.27	0.28
EASE4	0.30	0.28	0.32	**0.82**	0.22	0.29	0.27
EASE5	0.24	0.22	0.24	**0.87**	0.16	0.26	0.25
EASE6	0.25	0.24	0.25	**0.91**	0.18	0.27	0.27
SNORM1	0.22	0.56	0.54	0.24	**0.85**	0.49	0.47
SNORM2	0.17	0.52	0.49	0.20	**0.87**	0.48	0.43
SNORM3	0.21	0.56	0.55	0.10	**0.87**	0.42	0.40
ATTBENEF	0.21	0.61	0.59	0.30	0.50	**0.89**	0.60
ATTGOOD	0.20	0.55	0.50	0.27	0.47	**0.91**	0.52
ATTPOSTV	0.24	0.57	0.52	0.28	0.48	**0.91**	0.51
ATTWISE	0.19	0.57	0.55	0.22	0.49	**0.90**	0.53
INT1	0.19	0.56	0.56	0.30	0.49	0.62	**0.91**
INT2	0.14	0.38	0.40	0.28	0.33	0.39	**0.79**
INT3	0.14	0.49	0.57	0.21	0.48	0.52	**0.91**

Relationship between correlations among constructs and the square root of AVEs

Another criterion for establishing discriminant validity is when the square root of the Average Variance Extracted (AVE) of each construct is higher than its correlation score with all other constructs (Fornell et al. 1981). This comparison shows that more variance is shared between a construct and its measures than with other constructs.

As shown in Table 8.12, the square root of the AVE of each (shown diagonally) is greater than its correlation with other constructs (the off-diagonal numbers), which satisfies this test of discriminant validity.

Table 8.12 Relationship between correlations among constructs and the square root of AVEs

Construct	AVE	ATT	INT	PEOU	PRQ	PU	PVI	SN
ATT	0.82	**0.91**						
INT	0.76	0.6	**0.87**					
PEOU	0.77	0.3	0.3	**0.88**				
PRQ	0.53	0.23	0.18	0.28	**0.73**			
PU	0.80	0.60	0.59	0.29	0.25	**0.89**		
PVI	0.53	0.64	0.56	0.28	0.31	0.7	**0.73**	
SN	0.74	0.54	0.50	0.21	0.23	0.61	0.63	**0.86**

From all the above, it is demonstrated that the measurement model used in this study meets and exceeds the requirements for establishing convergent and discriminant validities. The following section examines the structural model and tests the proposed hypothesis.

8.37. Structural model

Examining the structural model enables the assessment of its explanatory power. In other words, how much variance in the dependent variable(s) of interest can the independent variables explain or account for. In this research, one of the goals of this analysis is to examine the collective ability of the adoption factors (including PRQ, PVI, PU, PEOU and SN) to explain the variances in consumer attitudes (ATT) and intention (INT) toward adopting mobile commerce services. In PLS, this can be done by examining the R2 (variance accounted for) scores of the dependent variables of interest (ATT and INT), as shown in Table 8.13.

Table 8.13 Variance accounted for (R2) for dependent variables

Dependent Variable	R^2
ATT	0.52
INT	0.49

As shown, the proposed model explains 52 per cent of the total variance in consumer attitudes towards the service (ATT) and 49 per cent of the total variance in consumer intention to adopt the mobile service (INT). This is to say that the three sets of consumer-interaction factors (consumer-service provider interaction, consumer-service interaction and consumer-social interaction) collectively account for 52 per cent of the variance in consumer attitude toward adopting, and that these three sets of interaction factors (plus ATT) collectively account help explain 49 per cent of the variance in consumer intention to adopt.

The examination of the structural model also allows the inspection of various paths (arrows moving from one construct to another) in the research model. Each structural path in the research model represents a proposed hypothesis. The analysis of the structural model results in the acceptance (confirmation) or rejection (disconfirmation) of each hypothesis and well as the comparisons of the impact of various independent constructs on the dependent one(s).

This research aims to understand the impact that each of the variables in the research model has on consumer attitude and intention to accept and use mobile commerce services. Reaching this understanding involves not only measuring the impact of each variable but also comparing this impact with the influence of other variables in the research model. Therefore, structural path analysis is performed here in order to:

1- Confirm or disconfirm each of the previously proposed hypotheses (Section 8.4.1).
2- Compare the impact of the three sets of consumer-interaction factors (Section 8.4.2): consumer-service provider factors (PRQ and PVI), consumer-service factors (PU and PEOU) and consumer-social factors (SN).
3- Compare the unique contribution that each of the independent factors makes in predicating the dependent variable (8.4.3).

Each of these analyses is described below.

8.37.1. Confirm or disconfirm proposed hypotheses

In PLS, the strength and the significance (or insignificance) of each structural path or hypothesis can be examined. PLS calculates a path coefficient or a beta value (β) which indicates the strength of path and signifies the unique contribution that the independent

variable makes in explaining the variance in the dependent variable. In addition, in PLS the statistical significance (or insignificance) of each hypothesis or path can be examined by applying a bootstrapping analysis (Chin 1998b). Figure 8.6 presents the results of the PLS path analysis.

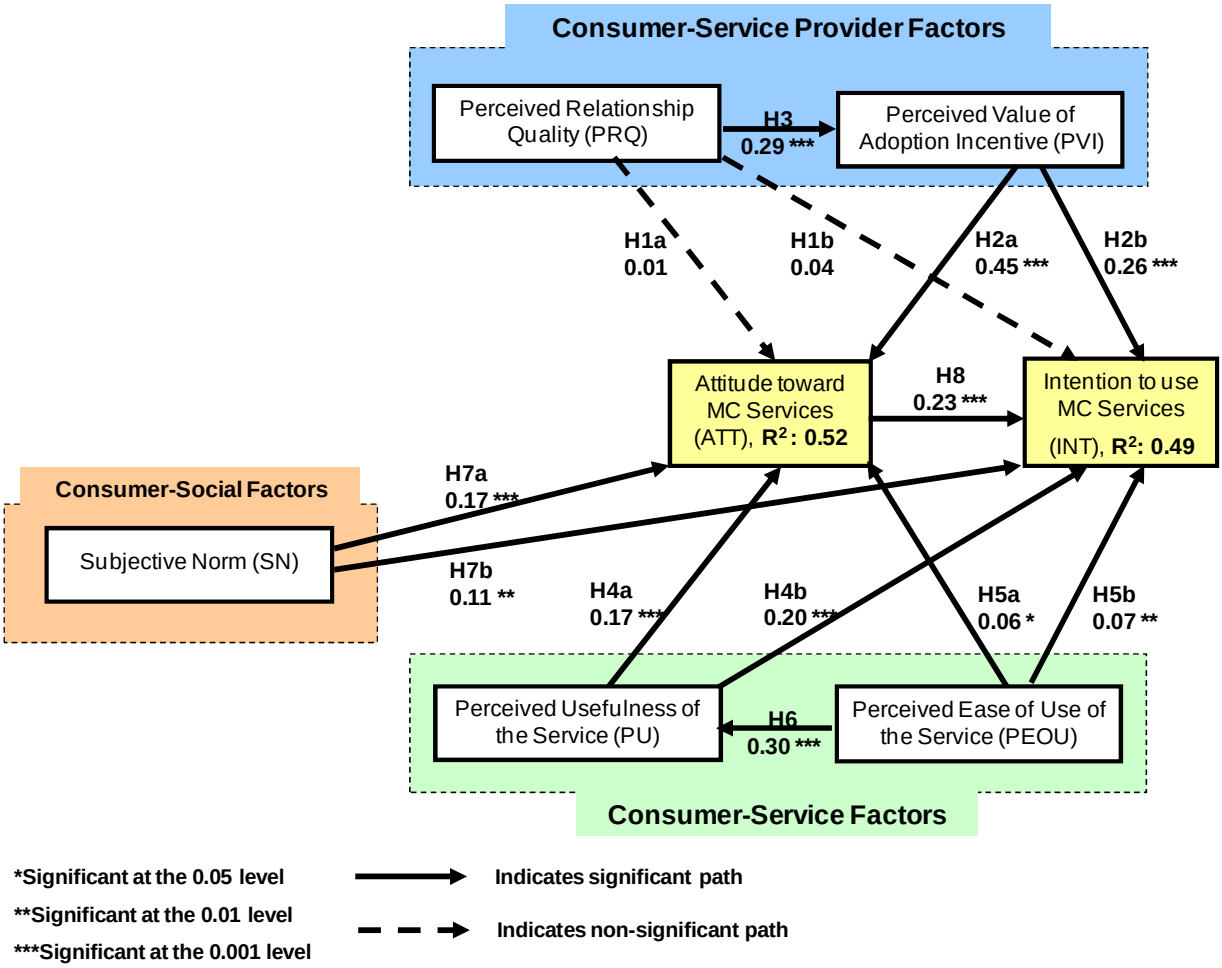


Figure 8.6 Results from PLS analysis

In the following, the PLS results for each of the three consumer-interaction factors are discussed.

Consumer-Service Provider Factors

The PLS analysis results (Figure 8.6) demonstrates all hypotheses in the research model are supported except the ones that relate PRQ directly with consumer attitude (ATT) and intention (INT) toward adopting the mobile service. Despite the insignificance of the PRQ-

>ATT and PRQ->INT paths, PRQ showed a highly significant correlation with both attitude and intention ($p<0.01$ in both cases), as shown in Table 8.14.

Table 8.14 RRQ correlation with Attitude and Intention

		PRQ	ATT	INT
PRQ	Pearson Correlation	1	.232(**)	.171(**)
	Sig. (2-tailed)		.000	.000
	N	626	626	626

** Correlation is significant at the 0.01 level (2-tailed)

This significant correlation between PRQ and both ATT and INT means that there is a (potential) effect among them. However, when modelling all the variables (PRQ, PVI, PEOU, PU, SN, ATT and IN) into one structural model in PLS, this effect does not show. Upon close examination, it was observed that the effect of PRQ (primarily an affective variable) on ATT and INT is 'absorbed' by the more utilitarian, and more statistically powerful, constructs such as PVI and PU. This might be due to the low correlation values (PRQ>ATT=0.232, PRQ>INT=0.171 in Table 8.14), which can justify why the effect of PRQ on ATT and INT is absorbed by other constructs in the model. Removing PVI and PU from the model results in PRQ having a significant impact on ATT (H1a, $\beta = 0.083$, $p < 0.05$). However, as mentioned earlier, this result does not appear when examining the whole model in one go.

This observation shows that the potential impact of PRQ needs to be closely investigated further. In the current study, this will be accomplished by collecting some qualitative data to shed more light onto PRQ and its impact on ATT and INT (as discussed in Chapter 9). For the purpose of the current quantitative analysis, I report the results of the overall model as shown in Figure 8.6, showing the insignificance of PRQ>ATT and PRQ>INT based on the available data set.

The PLS results in Figure 8.6 also shows that a consumer's positive perception of his/her relationship quality with the service provider (PRQ) strongly and significantly influences the consumer perception of the value of the incentive (PVI) offered by the service provider (H3, $\beta = 0.29$, $p < 0.001$). This significant impact of PRQ on PVI extends to all the dimensions of PVI. Figure 8.7 presents the PLS results for the research model, this time showing the significant impact of PRQ on all the individual dimensions of PVI, including price value, quality value, emotional value, social value and epistemic value.

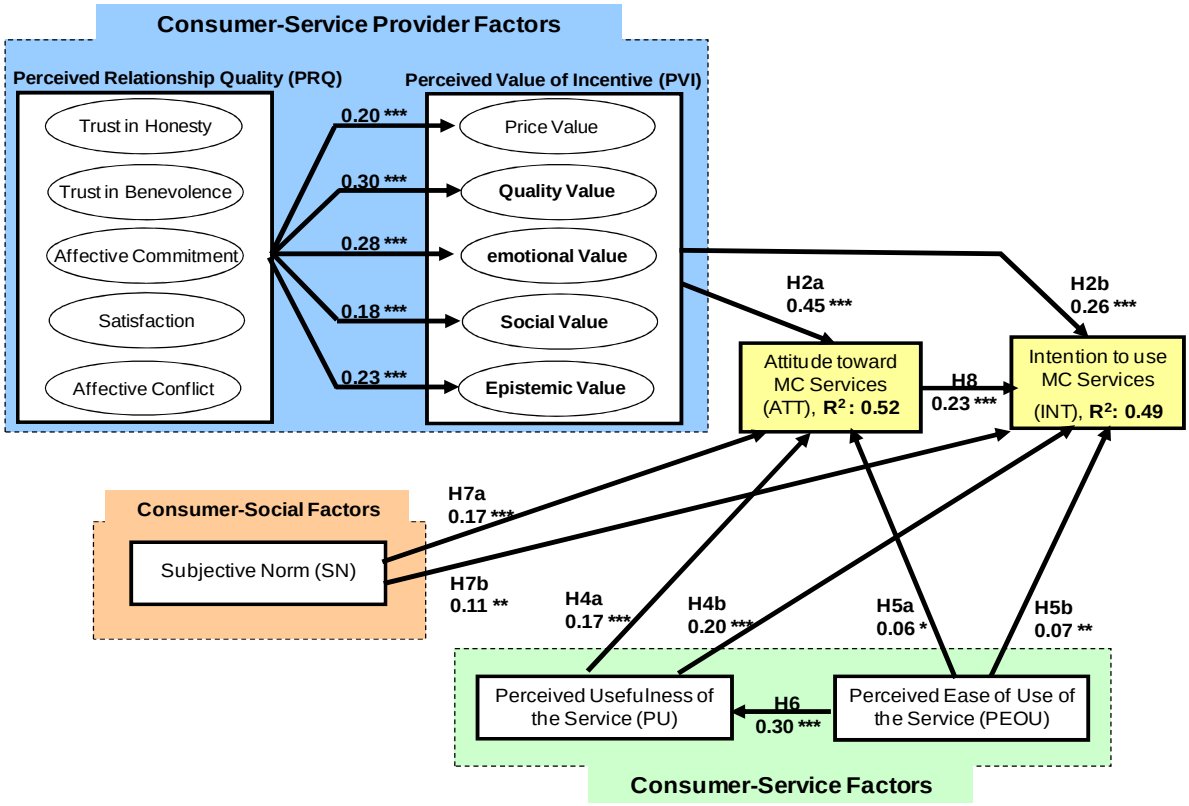


Figure 8.7 PLS results showing PRQ impact on PVI dimensions

In addition, both Figures 8.6 and 8.7 show that a higher perceived value of the incentive leads to more positive attitude (H2a, $\beta = 0.45$, $p < 0.001$) and intention (H2b, $\beta = 0.26$, $p < 0.001$) toward adopting the service. Even though PRQ has no direct impact on attitudes or intentions, this factor has a very significant impact on PVI, which in turn is one of the best predictors of attitude and intention. Therefore, this result shows that based on the current data set, the impact of PRQ on attitude and intention is fully mediated by PVI.

Consumer-Service Factors

In relation to consumer-service factors (PU and PEOU), consumer's higher perceived usefulness of the services leads to a positive attitude (H4a, $\beta = 0.17$, $p < 0.001$) and intention (H4b, $\beta = 0.20$, $p < 0.001$) toward adopting the service. Perceived ease of use positively and significantly influences mobile commerce service usefulness (H6, $\beta = 0.30$, $p < 0.001$), and also directly leads to positive attitude (H5a, $\beta = 0.06$, $p < 0.05$) and intention to adopt the service (H5b, $\beta = 0.07$, $p < 0.01$).

Consumer-Social Factors

On the other hand, in relation to consumer-social interaction factors, a higher subjective norm (SN) perception leads to a positive attitude (H7a, $\beta = 0.17$, $p < 0.001$) and intention (H7b, $\beta = 0.11$, $p < 0.01$) toward adopting the service. In addition, the path analysis results support the argument that positive attitudes toward adopting the service leads to greater intention to adopt (H8, $\beta = 0.23$, $p < 0.001$).

Thus, with the exception of the direct impact of PRQ on ATT and INT, the proposed research model and all hypotheses are empirically supported, as summarised in Table 8.15.

Table 8.15 Hypotheses confirmation results

Path	Hypothesis		Supported?
PRQ > ATT	H1a	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's attitude (ATT) toward the adoption of mobile services.	No
PRQ > INT	H1b	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's intention (INT) to adopt mobile services.	No
PVI > ATT	H2a	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's attitude (ATT) toward the adoption of mobile services.	Yes
PVI > INT	H2b	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's intention (INT) to adopt mobile services.	Yes

PRQ > PVI	H3	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's perception of the value of the adoption incentive (PVI) offered by the service provider.	Yes
PU > ATT	H4a	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.	Yes
PU > INT	H4b	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.	Yes
PEOU > ATT	H5a	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.	Yes
PEOU > INT	H5b	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.	Yes
PEOU > PU	H6	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's perception of the usefulness (PU) of the mobile service.	Yes
SN > ATT	H7a	A consumer's perception of the social influence of important others (SN) influences that consumer's attitude (ATT) toward the adoption of mobile services.	Yes
SN > INT	H7b	A consumer's perception of the social influence of important others (SN) influences that consumer's intention (INT) to adopt mobile services.	Yes
ATT > INT	H8	A consumer's attitude (ATT) toward the adoption of mobile services has a direct impact on that consumer's intention (INT) to adopt mobile services.	Yes

8.37.2. Comparing the impact of the three sets of consumer-interaction factors

This part of the analysis demonstrates the effect of the consumer-service provider factors (PRQ and PVI) compared to the impact consumer-service and consumer-social factors. To examine this, I have created a number of PLS models by retaining only one of the three interaction-factor sets (consumer-service provider, consumer-social and consumer-service) in each model and then comparing the R^2 scores of attitude and intention. Table 8.16 summarises the results of this comparison.

Table 8.16 A comparison of the impact of the three sets of entity-interaction factors on Attitude and Intention

Entity-Interaction factors included in the tested model	Paths	Attitude R^2	Intention R^2
All three sets	All	0.52	0.49
Consumer-service provider factors only (PRQ and PVI)	PRQ>ATT PRQ>INT PRQ>PVI PVI>ATT PVI>INT ATT>INT	0.47	0.45
Consumer-service factors only (PU and PEOU)	PEOU>PU PEOU>ATT PEOU>INT PU>ATT PU>INT ATT>INT	0.38	0.45
Consumer-social factors only (SN)	SN>ATT SN>INT ATT>INT	0.29	0.41

The above results show that consumer-service provider factors have the greatest impact on attitude, explaining 47 per cent of the variance in attitude compared to consumer-service and consumer-social interaction at 38 per cent and 29 per cent, respectively. This means that consumer-service provider factors are more influential in altering or influencing consumers' attitudes towards the offered mobile service.

In regard to the impact of the three sets of factors on consumer intention to adopt the service, they all (individually) account for a similar amount of variance in intentions. Consumer-service provider and consumer-service factors both have a prediction power of 45 per cent while consumer-social factors explain 41 per cent of intentions.

8.37.3. Comparing the unique contribution of each adoption factor

This test determines which single factor makes the strongest unique contribution toward predicting or explaining the variance in attitude and intention. To answer this question, we need to re-examine the beta values (β) or path coefficient for each path in the model shown

in Figure 8.6 (above). Table 8.17 lists the beta values for each significant path and ranks the predictors (independent variables) by their prediction power (β).

Table 8.17 Ranking of factors as best predictors of the dependent variables

Independent variable	dependent variable	Beta value (β)	rank order
PVI	ATT	0.452	1
PU	ATT	0.174	2
PEOU	ATT	0.057	4
SN	ATT	0.166	3
Independent variable	**dependent variable**	**Beta value (β)**	**rank order**
PVI	INT	0.256	1
PU	INT	0.203	3
PEOU	INT	0.074	5
SN	INT	0.106	4
ATT	INT	0.229	2

As the table above shows, the Perceived Value of the Incentive (PVI) is the best predictor of Attitudes toward adopting m-commerce services (ATT). In other words, PVI makes the greatest unique contribution in explaining the variance in attitude over and above the impact of other factors in the model. Looking at this from the Beta-value statistics (Table 8.17) point of view, the prediction power that PVI has on attitude is significantly higher compared to the other factors in the model. The next best predictor of attitude is Perceived Usefulness, followed by Subjective Norm and then, lastly, Perceived Ease of Use.

In terms of predicting intentions (INT), the results once again confirm that high prediction power that Perceived Value of the Incentive (PVI) has on both attitude, as discussed above, and intentions (INT). This confirms the importance of PVI as a newly added adoption factor. In addition, it is not surprising to see that attitude (ATT) is equally an important predictor of intentions. This ATT -> INT path is actually one of the most basic arguments

of the whole adoption research stream. Confirming the importance of this path in the present model shows that the model goes in line and verifies the most basic underlying assumption in all adoption research.

Apart from PVI and attitude as the main individual predictors of intention, Perceived Usefulness is the third unique contributor in explaining the variance in intentions.

8.38. Conclusion

This chapter presents the analysis of the data that I have collected during the quantitative stage of this research. The chapter begin with a description of the statistical distribution of the various latent constructs in the research model. Then, the result of examining the research model and the various paths within that model for any confounding effect presented by the characteristics of the sample is presented which confirmed that none of the sample characteristics confound the result or present any systematic bias in the data. After that, I examine the measurement and structural properties of the research model and confirm or disconfirm each hypothesis based on the available data set.

In summary, the research model and the measures used to evaluate each construct showed a very good fit. All the hypotheses that were proposed are confirmed, with the exception of the impact of PRQ on ATT and INT. Nonetheless, the analysis showed that there is a potential impact of relationship quality on attitudes and intentions, but this effect in not visible when testing the whole model with all the constructs modelled in. This is due to the absorption of a large explanatory power of the PRQ construct by the other consumer-service provider factor: PVI. On the other hand, PVI is demonstrated as the best predictor of both attitudes and intentions, even better predictor than known variables such as perceived usefulness and attitudes. Analysis of the effect of moderators on various paths in the research model was also examined. Neither demographic variables nor mobile usage characteristics showed a clear moderating effect on the various paths in the research model.

The next chapter (Chapter 9) analyses the data collected for the qualitative (interviews) stage of the data collection in this research. The analysis is performed in light of the impact of the three consumer-interaction factors sets (including consumer-service provider, consumer-service, and consumer-social factors) on consumer attitude (ATT) and intention

(INT) towards adopting advanced mobile services. In doing so, the next chapter refers back to and builds on the results found from the analysis of the online questionnaire in the present chapter. In addition to the further confirmation of the hypotheses, the next chapter also attempts to enrich the understanding of various variables or constructs and their relationships by discussing the qualitative data on how and when such relationships are more or less influential.

Chapter 9.

Interview Analysis and Results

9.39. Introduction

In this chapter, the analysis of the data collected from the qualitative study (interviews) is reported. The analysis is presented based on the three sets of consumer-interaction factors (including consumer-service provider, consumer-service, and consumer-social factors) on consumer attitude (ATT) and intention (INT) towards adopting advanced mobile services. For each adoption factor, hypotheses are discussed based on the interviews data and also by referring to what was found in the quantitative (questionnaire) analysis in Chapter 8. The analysis of qualitative data reported here complements the quantitative analysis reported in the previous chapter by:

1. Allowing the assessment of whether the mechanisms that are accessible from the qualitative data are consistent with the mechanisms described in the theory; and
2. Enriching the understanding of relationships between variables with rich, contextual descriptions of effects that are not apparent from the quantitative data alone.

The next section (Section 9.2) provides a general description of the interviews. The results are then reported in Section 9.3.

9.40. General description of study

This data collection stage involved conducting interviews with mobile phone users in order to triangulate results reported in the previous chapter, and to gain richer insights into the relationships between factors.

9.40.1. Participants

A convenience sampling method was followed by interviewing a combination of six undergraduate and postgraduate students. Table 9.1, next, provides a brief profile of the participants.

Table 9.1 Profile of participants

Participant	Age	Gender	Course	Main mobile service(s) used
Participant 1	21	Female	Undergraduate	Basic services
Participant 2	23	Female	Postgraduate	Mobile internet
Participant 3	25	Male	Postgraduate	Mobile internet
Participant 4	21	Female	Undergraduate	Basic services
Participant 5	28	Male	Postgraduate	Basic services
Participant 6	20	Male	Undergraduate	Mobile chat

Six interviews were judged sufficient for this round of data collection because a conceptual saturation point was reached when the same ideas and insights from different interviewees started to reoccur and there seemed to be no newer information to acquire other than what had been already reported by the interviewees. Although the interview participants only represent one age group of the survey sample, the observations from the interview data provide good explanation of the survey findings. The young age group was selected because Generation Y is often described as the main users of mobile phones and mobile services Aoki and Downes (2003) . This small sample included users of basic services such as SMS and MMS and more advanced ones such as Mobile internet and Mobile chat, which allowed the re-examination of the ideas proposed about consumers' progressive adoption of advanced mobile services.

One of the purposes of conducting these interviews is to further confirm the validity and applicability of the results that were obtained from the online survey. Therefore, the interviews followed a semi-structured style. This style allows the interviewee to have enough space and time to express his/her personal views and ideas. It also allows the researcher to control the flow of the interview and probe specific ideas or questions whenever needed.

Each interview began with a general description of the study, its concepts, themes, aims and objectives (Plain Language Statement in Appendix E). After that, the interview progressed by conversing about various aspects of the study in a friendly and relaxed discussion. Throughout the interviews, I avoided making any reference to the specific results that were obtained from the online questionnaire (Chapter 8) to ensure that I did not influence or bias the interviewees' flow of thoughts and opinions. Appendix G presents a list questions that were used as a general guideline during the interview process.

9.40.2. Analysis Method

The objective of the data analysis in this study was to further refine and develop the theoretical constructs to uncover the underlying mechanisms that control or moderate the impact of each adoption factor on consumer adoption perceptions. As a result, the data was analysed by reading through the interviews transcripts and highlighting relevant text to the theoretical concepts of the research. Attention was also paid to any emerging themes that suggested new constructs (none were found). This process was repeatedly carried out until all themes and ideas were extracted.

With the conceptual constructs and hypotheses in mind, descriptive codes were developed by following established guidelines for qualitative research coding procedures (Auerbach and Silverstein 2003; Neuman 2006). First, the data was organised into categories on the basis of the themes and concepts understudy. Then, codes were assigned to respondents' statements based on their relevance to specific conceptual constructs in the research model or hypotheses, as illustrated in the following excerpt from Participant 1 talking about the impact of social influence (Subjective Norm) on her attitude and intention towards adopting mobile services:

> *"My friend started telling me how good the offer is and how good the internet usage is with [a service provider] «social influence», that I finished my call and went to my flatmate and told her «attitude» that we are switching to this offer «intention» «Hypotheses H7a, H7b»"* (Participant 1)

9.41. The Results

This section analyses the qualitative study (interviews) data based on the three sets of consumer-interaction factors on consumer adoption perceptions: consumer-service provider factors (Section 9.3.1), consumer-service factors (Section 9.3.2) and consumer-social factors (Section 9.3.3). In doing so, it integrates what has been found in the quantitative study analysis (Chapter 8). For easier reference, I present the quantitative PLS results in Figure 9.1.

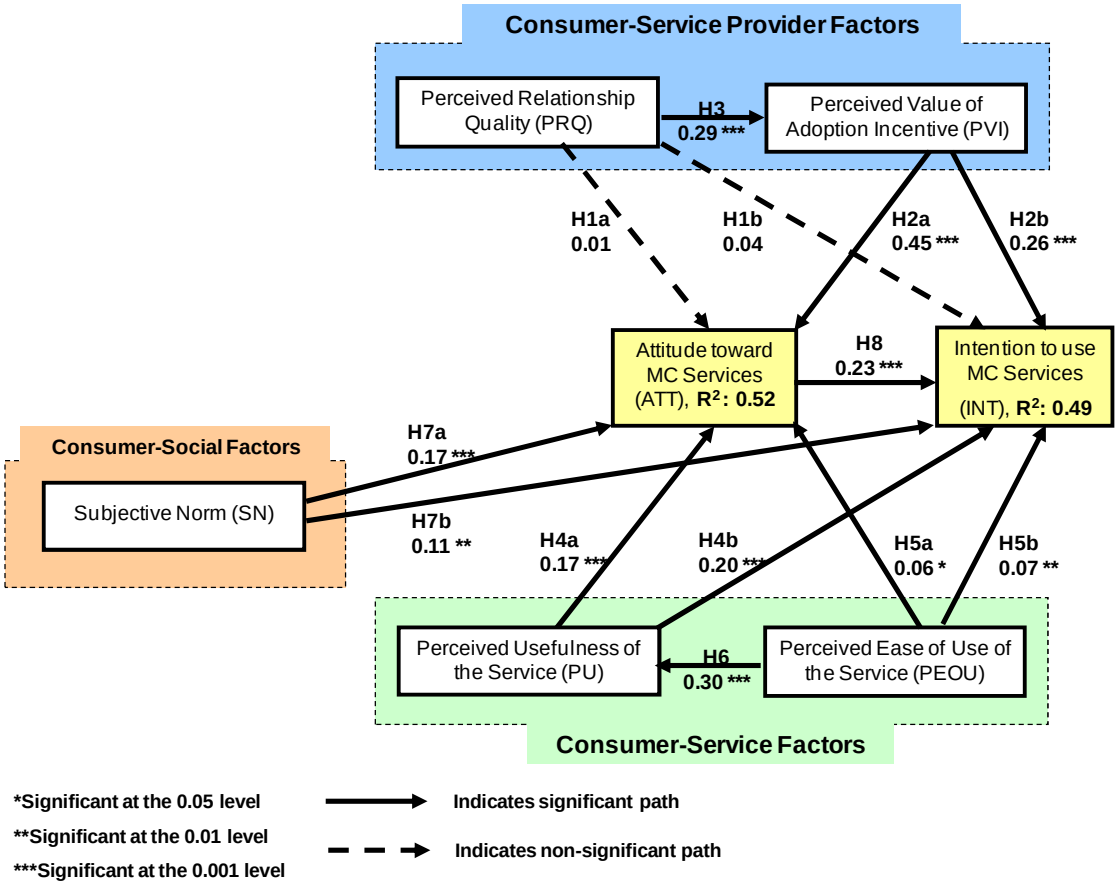


Figure 9.1 Results of PLS Analysis

9.41.1. Consumer-Service Provider Factors Impact on Consumer Adoption Perceptions

In this section, I present the interviews analysis results that pertain to the two consumer-service provider factors that are examined in this research: Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI). The impact of these two

factors on the consumer attitude (ATT) toward adopting mobile services leading to an impact on the consumer intention (INT) to adopt and the impact of PRQ on PVI are discussed in the following sections using the data collected from the interviews.

The impact of PRQ on Attitude and Intention

For the impact of PRQ on ATT and INT, the following hypotheses are examined in this research:

Table 9.2 Hypotheses for the impact of PRQ on adoption perceptions

Hypothesis		Path
Hypothesis 1a	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's attitude (ATT) toward the adoption of mobile services.	PRQ > ATT
Hypothesis 1b	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's intention (INT) to adopt mobile services.	PRQ > INT

Attitude is the consumer positive or negative feelings about performing the target behaviour (adopting the mobile service). Attitude is an evaluation stage that precedes the formation of the intention to adopt leading to the action of adoption or rejection. The quantitative data analysis from Chapter 8 showed that when testing the overall model in PLS using the data set collected from the online questionnaire, the PRQ->ATT and PRQ->INT paths are insignificant. Despite the insignificance of these paths, the analysis showed that PRQ has a highly significant correlation with both attitude and intention ($p<0.01$ in both cases), which indicates a potential impact of PRQ on both ATT and INT.

The interviews provided additional evidence of the impact of relationship quality with the service provider on the consumer attitude and intention towards accepting advanced mobile services. All the interviewees stressed the important implication of their relationship quality with their mobile service provider on their acceptance of advanced mobile services.

When asked about the importance of 'who the provider is' on their acceptance of advanced services and if this plays any role in building their perceptions toward accepting or rejecting new mobile services, the interviewees emphasised the importance of the 'provider' on their adoption perceptions, as follows:

> *"Of course [the provider is important]. If I have a good relation with the company that provides the service I would consider it more than the company which I have a bad relationship with"* (Participant 3)

> *"It's extremely important. It's all about relationship and how it goes between the customers and the providers. If you were happy … you were satisfied … then the relationship is really good … so the impression about the company will affect the new offer"* (Participant 4)

> *"If I'm going to use a service, it might be in the future that if I have any complaint or any problems or I need to deal with them [the service provider] and they don't respond well to me. I think I have to account for these things before using their service"* (Participant 5)

> *"Yes. The reputation of the provider matters because it tells you that if you take that offer what comes next. You will have to deal with that provider, so it's not just the offer itself"* (Participant 4)

These examples demonstrate that the provider of the service and the relationship quality between them and consumers play a great role in shaping consumers' perceptions towards adopting new mobile services. This impact is better understood by examining the interviewees' views on the hypotheses drawn between PRQ and both attitude (ATT) and intention (INT). Table 9.3 shows evidence from the interviews regarding the PRQ>ATT and PRQ>INT associations.

Table 9.3 Examples of support statements for the impact of PRQ on adoption perceptions

Hypothesis	Support statement examples
PRQ influence on attitudes (ATT) and intention (INT)	*"If I have a good relationship with the company, if I heard about new services, I will be interested to know about them, I will be interested to consider joining them. I would say that my first impression will be good"* (Participant 1) *"If you trust the company, if they are honest with you, and if you had a good*

	experience with them when they provided other services, definitely, you build a positive attitude towards using the new service" (Participant 5) *"If I am really happy with the company I'm dealing with and the offer is good in away providing me what I needed, then, I would definitely use it, I would try it as I have a good opinion about them"* (Participant 4) *"If I'm not happy with them because I don't trust them, then definitely I wouldn't want to go a further step for advanced services"* (Participant 2) *"If I have a good relationship with the company then I will have the intention to use the service because I know about the company and I have a good opinion about them. If my relationship is bad, then I have some bad thoughts about the company, my intention to use this service won't be that strong"* (Participant 6)

These examples show that PRQ has a strong impact on the mobile consumer acceptance of mobile services, especially advanced ones. The examples show that in both directions PRQ has an impact; if PRQ is positive, it will positively influence attitude and intention; if PRQ is negative it will result in negative attitude and intention.

Investigating the impact of PRQ on consumer adoption perceptions is one of the main objectives of this research. Therefore, in addition to confirming the PRQ>ATT and PRQ>INT hypotheses, the interviews involved a discussion of how PRQ has a greater or lesser influence on consumer attitude and/or intention. From the discussions, two main explanatory perspectives or models emerged: 1) the PRQ-Spectrum Model and 2) the Usage-Maturity Model. Both of these models aim to enrich our understanding of when and how PRQ more strongly impacts consumer ATT and INT, as discussed in the following sections.

- **Model 1: The PRQ-Spectrum Model**

In this perspective, PRQ is viewed as a spectrum or scale of levels or values. The strength of the consumer relationship quality impact on his/her attitude and intention is determined by the position of the relationship quality on that spectrum. The spectrum values range from extreme positive relationship quality to extreme negative with other levels or values spread between the two ends. By viewing PRQ this way, three main points emerge: extreme

positive, neutral and extreme negative (Figure 9.2). The PRQ-Spectrum Model identifies the points where the impact of PRQ is strongest on consumer adoption perceptions. It also identifies when the impact of PRQ is more influential on attitude (then through to intention) or, alternatively, when PRQ affects intention directly without going through the attitude building stage.

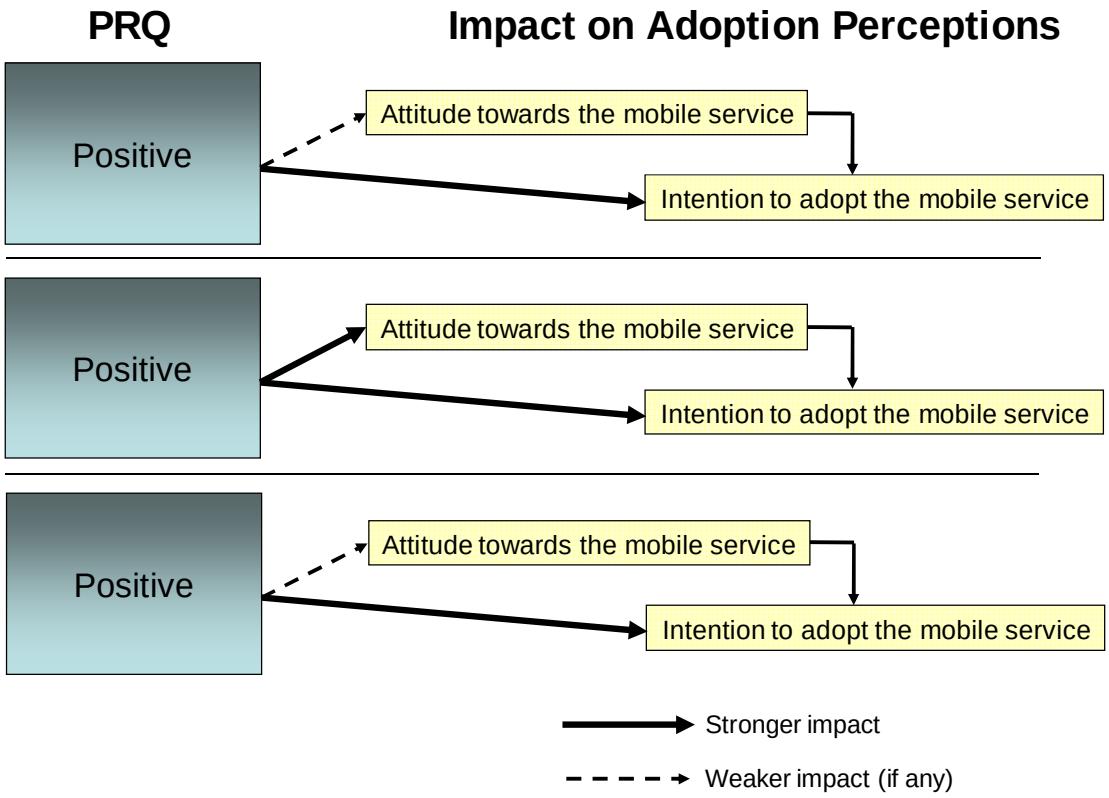


Figure 9.2 The PRQ-Spectrum Model

PRQ has a clear impact on both attitude and intention toward accepting the mobile service. However, as Figure 9.2 shows, this effect is not consistently equal on both attitude and intentions in all situations, but varies depending on how strongly positive or negative is the level of relationship quality. As the PRQ-Spectrum Model indicates:

1. When PRQ is extremely negative (very bad relationship), the impact of PRQ is direct on intentions and might not go through the attitude building stage. Therefore, in this situation, the consumer is most likely to go straight to form a negative intention to adopt and does not take the time on the attitude building stage (leading to the formation of an intention). The following extracts are examples of these ideas:

> *"If I heard something [bad] about the company from someone else, I wouldn't take the risk and deal with them. So, that would be immediately NO. I won't risk it and I won't waste my time either"* (Participant 4)

> *"If it's really a bad relationship, then I don't tend to take it [the service]'* (Participant 6)

> *"If you have a bad attitude towards the company … your intention [to take the service] would 90 per cent or more negative"* (Participant 3)

These examples show that when the relationship quality is on the extreme negative side, consumers directly build negative intentions and, therefore, do not necessarily go through the attitude building stage. In addition, it was also expressed in the interviews that the negative extremism of PRQ downplays or minimises the positive impact of other factors such as the usefulness of the service.

2. When PRQ is highly (extremely) positive (very good relationship), PRQ might directly and more strongly impact intention than attitude. For this case, the highly positive PRQ gives the consumer enough confidence about the 'provider' of the service which is an important factor in the acceptance of a mobile service. As a result, other factors (especially utilitarian ones such as 'need for the service') influence the formation of the remaining part of the intention leading to a decision to adopt or reject the service, as shown by the following statements:

> *"If you have a good attitude toward the company that would lead you to good intention to think about it … to do it or not"* (Participant 3)

> *"Sometimes, if you trust that company so much, sometimes you don't need to build your attitude towards using the service, and if you need the service you go directly for it"* (Participant 5)

In other words, the decision to accept or reject would be the result of a shared impact of PRQ and other factors that the consumer considers important. In this case, PRQ works as a 'confidence builder' since it relates to the party that provides the service. Building such confidence reassures the consumer about the future of the exchange or interaction that he/she is about to get involved in. Once this level of confidence is assured, at least to some extent, by a positive perception of PRQ, the consumer then proceeds to

evaluate or consider other important factors. However, it is important to note, as observed from the interviews, that these mechanisms might not always work in such a progressive or orderly manner and could vary from one consumer to the other.

3. When the level of PRQ is neutral between the two positive and negative extremes, the impact of PRQ could go either way (to attitude or directly to intention) depending on other important factors. In other words, if PRQ is neither extremely negative nor extremely positive, PRQ is weighted along other important factors during the attitude building and intention formation stages leading to the decision-making step. This is expressed by the following interviewee who did not express either extremely positive or extremely negative attitude towards the service provider.

   > *"I think it [PRQ] is important, but maybe other factors will also affect my intention, for example, my need for the service. Like … I will be happy to know about it, but the intention to do it and to take the service is not just about my relationship with them. It's about … do I really need it?"* (Participant 1)

   In this case, PRQ does not necessarily have higher importance compared to other factors (as in the case where it's extremely negative, for example); rather its importance depends on the importance given to it by each consumer.

To summarise, PRQ affects intentions directly, with less emphasis on attitude-building, when PRQ is either extremely positive or extremely negative. The consumer would normally depend on previously established knowledge and experiences to reach one of these two PRQ extremes. At the time of a new mobile service adoption-decision episode, this established knowledge might work as a substitute for the attitude (ATT) building stage. Therefore, using what he/she already knows, the consumer might not need to go through the attitude or evaluation stage but rather depends on the sufficiency of what he/she already knows in order to make a decision whether to adopt or reject the new service offer. As a result, as the PRQ-Spectrum model shows, the effect of PRQ in these extreme cases is stronger (and straight to) intentions and the consumer does not necessarily go through the attitude-building stage.

On the other hand, when PRQ level is neutral between the two extreme ends, its impact might go either way to attitude and/or to intention depending on other factors. In this case, the impact of PRQ is not clear-cut and therefore the consumer weighs its effect along other factors that he/she perceives to be important. The neutral state of PRQ might mean that the consumer does not have enough previous knowledge about (or experience with) the provider to enable him/her to make an adopt/reject decision based on relationship quality factor only. Therefore, in this case the consumer would normally go through the attitude-building stage to build needed knowledge and then make an educated decision. Consequently, as the PRQ-Spectrum model shows that, in the neutral relationship case, the strength and direction of the impact of PRQ could be stronger on attitude (leading to impact on intention) or straight on intention (with weaker effect on attitude) depending on the specific consumer case and what he/she knows about the service and its provider.

- **Model 2: The Usage Maturity Model**

In this perspective, the impact of PRQ grows as the consumer usage complexity grows or matures towards more advanced services. In other words, relationship quality plays a greater role in influencing the consumer attitude and intention as he/she becomes a user of more advanced services such as mobile banking, compared to basic ones such as voice and short message services (SMS). This effect results because the consumer expectations from the service provider grow as he/she becomes a more advanced user. As a result, this advancement in usage maturity towards more advance services requires a higher level of relationship quality. These ideas are expressed in the following:

> *"The more advanced services need more commitment from the company to be provided because those advanced services, like mobile banking, are not like the simple ones … because they are advanced and they encounter so many things. So, the company has to be committed to provide that service and respond to feedback from customers"* (Participant 5)

> *"If I have a good relationship with the company, I would want to have more services with them, and I trust them and start using their services. Especially something to do with internet, I feel it needs security, and this is one important thing, and I wouldn't give away security with any company. I need a strong company, a company that I trust"* (Participant 2)

"If I had a bad experience with them, I wouldn't want to try anything else from them" (Participant 4)

"If the company is not trustworthy in providing their [current] services, how would you trust them to provide the new service?" (Participant 5)

Figure 9.3 graphically represents this notion of usage complexity progression (or maturity) which requires an equal maturity in the consumer relationship quality with the service provider.

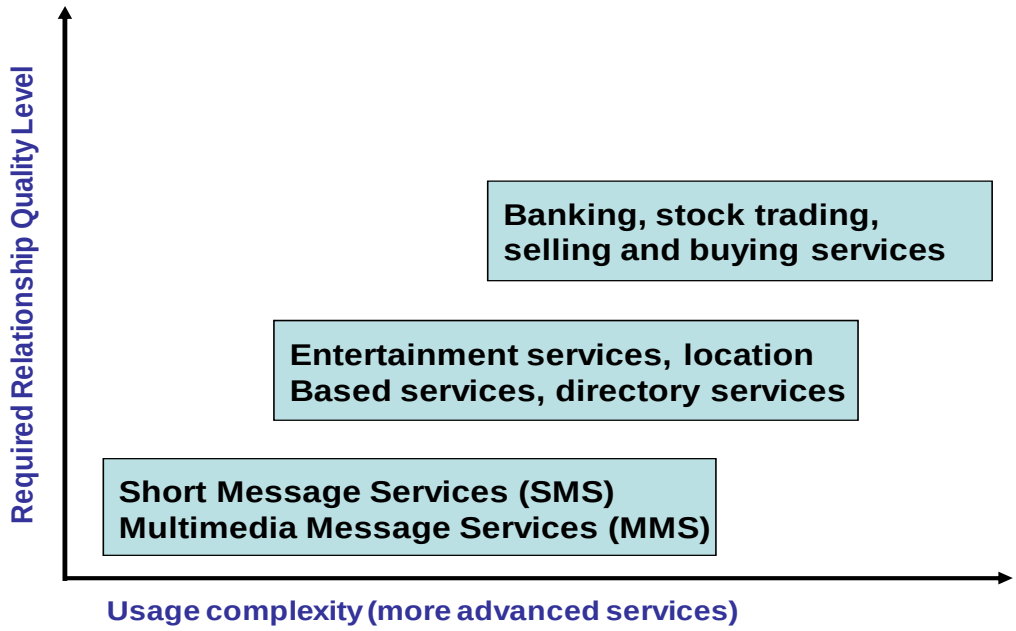


Figure 9.3 The Usage Maturity Model

The usage maturity model makes two important points. First, for the adoption of advanced services to take place and continue, a certain level of maturity in the consumer-service provider relationship quality is needed. This required level of PRQ grows as the consumer moves up the ladder to more advanced services.

Second, PRQ plays a greater role in influencing the consumer attitude and intention to adopt mobile services as his/her usage matures towards more advanced services. In other words, relationship quality has more impact on consumers who are more advanced (e.g. mobile selling and buying users) compared to its impact on basic mobile consumers (e.g. those who only use voice and SMS services).

The impact of PVI on Attitude and Intention

For the impact of PVI on consumer attitude and intention toward adopting mobile services, the following hypotheses are examined in this research (Table 9.4):

Table 9.4 Hypotheses for the impact of PVI on adoption perceptions

Hypothesis		Path
Hypothesis 2a	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's attitude (ATT) toward the adoption of mobile services.	PVI > ATT
Hypothesis 2b	A consumer's perception of the value of the adoption incentive (PVI) influences that consumer's intention (INT) to adopt mobile services.	PVI > INT

The quantitative analysis in Chapter 8 showed that a higher PVI leads to more positive attitude (H2a, $\beta = 0.45$, $p < 0.001$) and intention (H2b, $\beta = 0.26$, $p < 0.001$) toward adopting the mobile service. This strong impact of PVI on both attitudes and intention was also supported by the interview data, as presented in Table 9.5.

Table 9.5 Examples of support statements for the impact of PVI on adoption perceptions

Hypothesis	Support statement examples
PVI influence on attitudes (ATT) and intention (INT)	*"If you are satisfied with the incentive you would build up a positive attitude towards using that service. Sometimes you like things but you don't go for them unless there is a trigger, and the trigger here is the incentive. It's just that one step you need to go for that service"* (Participant 5) *"For example, one of the mobile chatting services I use is meg33 and they have a good incentive … if you invite a friend to use the service, you get credit for that chat service, you get credit for sending SMS. This is good because it gives you something. Another thing is when you try to get your friends to use it, so when you want to chat, when you want to talk to your friends, if your friends all accept your invitation to use it, then instead of calling them, you chat with them … and comparing this to calling, your chatting cost is much different"* (Participant 6)

The statements in the above table provide more evidence to support the influence of PVI on both ATT and INT. However, whether PVI impacts consumer attitude leading to an impact on his/her intention or impacts intention directly without going through the attitude stage is dependent on other factors. Many of these factors are related to the specific incentive characteristics. For example, Perceived Value of the Incentive might have a direct impact on intention if a 'limited offer' factor is putting pressure on the consumer who already perceives the incentive as high value, as shown in the following:

> *"If you have an incentive for a limited time, you'd probably go for the intention to use that service … but if you have flexible time to think about it … or if it gives you time to build up the attitude … I would think that it would affect attitude rather than the intention"* (Participant 5)

In addition, the interviewees emphasised that in order for the incentive to capture their interest and lead to adoption, it is important that the high perceived value of the incentive matches an equivalently high perceived value of the service itself in order to make the impact of PVI higher and more effective, as expressed in the following:

> *"If the incentive is really really good … it's attracting me [high incentive value], I think my attitude towards the service will be more positive. It will be even more positive if the service is good for me without considering the incentive [high service value]"* (Participant 6)

Also, the interviews showed that in order for a valuable incentive to be practically effective and valuable, in addition to many other characteristics, the incentive has to be easy to acquire, as expressed by the following consumer:

> *"My intention will be stronger if the incentive is really valuable … it doesn't cost me a lot … I get something I really want to get and it is straightforward … like sometimes to get the incentive you have to do this … you have to do that [referring to the complexity of incentive acquisition process]"* (Participant 6)

The impact of PRQ on the PVI

For the impact of relationship quality on the consumer perception of the value of the adoption incentive, the following hypothesis is examined in this research:

Table 9.6 Hypotheses for the impact of PRQ on PVI		
Hypothesis		**Path**
Hypothesis 3	A consumer's perception of the quality of the relationship (PRQ) with a service provider influences that consumer's perception of the value of the adoption incentive (PVI) offered by the service provider.	PRQ > PVI

The quantitative analysis from Chapter 8 showed that PRQ has a very significant impact on PVI, which in turn is one of the best predictors of attitude and intention. This influential impact of the consumer perception of his/her relationship quality with the service provider on the consumer perception of the value of the adoption incentive that is provided by that service provider was also demonstrated during the interviews. Table 9.7 lists some examples of interviewees' statements supporting the impact of PRQ on PVI.

Table 9.7 Examples of support statements for the impact of PRQ on PVI	
Hypothesis	**Support statement examples**
Perceived Relationship Quality (PRQ) influence on Perceived Value of the Adoption Incentive (PVI).	*"Because I have a good relationship with them, I would probably see more value in the offer [incentive] they are providing me … I will consider this offer and I will have a positive attitude towards it because of my relationship with them"* (Participant 1) *"Like if you've been dealing with the company and you are very satisfied with them and you feel that they are trustworthy and honest with you … I think that if you like the incentive you go straight to take the service. But if you had a very bad experience with the company …and even though the incentive is very good and other people think that it's good … you would not consider the incentive. So it directly affects your attitude toward the incentive"* (Participant 3) *"If it [the incentive] came from a company you trust and you've been dealing with for a long time … it will increase your trust in the incentive"* (Participant 3) *"If the service from the beginning was bad, was poor … so whatever they're providing [referring to the adoption incentive] would be the same"* (Participant 4)

As these examples show, mobile consumers associate the value of the incentive with the provider of that incentive. They refer to their relationship quality with the service provider in order to evaluate the adoption incentive and predict what happens if they accept this incentive with the service it brings.

9.41.2. Consumer-Service Factors Impact on Consumer Adoption Perceptions

In this section, I present the interviews analysis results that pertain to the two consumer-service factors that are examined in this research: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The impact of these two factors on the consumer attitude (ATT) and intention (INT) towards the adoption of advanced mobile services is discussed in the following two sections using the data collected from the interviews.

Perceived Usefulness (PU) impact on Attitude (ATT) and Intention (INT)

For the impact of perceived usefulness on consumer attitude and intention toward adoption the mobile services, the following hypotheses are examined in this research (Table 9.8):

Table 9.8 Hypotheses for the impact of PU on consumer adoption perceptions

Hypothesis		Path
Hypothesis 4a	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.	PU > ATT
Hypothesis 4b	A consumer's perception of the usefulness (PU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.	PU > INT

The online survey results, presented in Chapter 8, show that Perceived Usefulness (PU) of the service has a significant impact on the consumer attitude and intention to adopt the service. This means that a higher perceived usefulness of the service leads to a more positive attitude (H4a, $\beta = 0.17$, $p < 0.001$) and intention (H4b, $\beta = 0.20$, $p < 0.001$) toward adopting that service. The interviews provided further evidence for the influence of the service usefulness on the consumer attitude and intention to adopt the service. Table 9.9

lists some examples of interviewees' perceptions about the usefulness of mobile services in general and the impact this has on their attitude and intention to adopt the services.

Table 9.9 Examples of support statements for the usefulness of mobile services and its impact adoption perceptions

Hypothesis	Support statement examples
Perceived Usefulness (PU) influence on attitudes (ATT) and intention (INT)	*"If I can get the service from the phone with a good price … of course I will go for it. If it helps you to accomplish tasks in a quicker time, I would go for it"* (Participant 3) *"Before I use the service, I always ask myself, why do I need to use it? And, if I use it, what things will I get from using it? So if I think that it is really useful for me, I go and use it. Sometimes I don't even consider if it is really expensive or I don't like the incentives connected with it. For example the mobile chatting I use … I really find it useful for me. So I did not go and ask about the prices. I didn't think what other things they give with it. I don't tend to care about these things. Because I think it's useful to me, I just use it"* (Participant 6)

The interviews, as shown above, provide support for the hypothesis that the consumer perception about the usefulness of the service plays a great role in the formation of his/her attitude (ATT) and intention (INT) to adopt the service.

As expressed in the above examples, mobile services are generally perceived as useful. However, such usefulness is dependent on the specific task that the consumer needs to accomplish. They see more usefulness in mobile services for accomplishing immediate, quick, simple tasks that can save them time and effort. It seems from the interviews that mobile consumers are able to identify the tasks or situations where they can make the best use of the advantages of mobile services over other alternatives like the wired internet. The following are some examples.

> *"Yeah, I think that they [mobile services] are actually very useful … but it depends on what [the task is]. For pictures I need a bigger screen so they are not really very useful. To look at pictures or to look at long emails or long articles I wouldn't do them on my mobile phone, although I can read*

them, but I wouldn't do it … it's just not easy, not comfortable. But for fast things, for payments, for immediate things, they are very useful. They do the job. If they are useful I would immediately think of taking them" (Participant 2)

"Now we are more concerned about time and time-efficient technology. So, if you can use your mobile while you are, let's say, on a tram … that saves you time from going to a computer, log on to the service and log on to the website and do the task. Yeah … it provides you with a readily available service wherever you are" (Participant 5)

Perceived Ease of Use (PEOU) impact on Attitude (ATT) and Intention (INT)

For the impact of perceived ease of use on consumer attitude and intention toward adopting the mobile services, the following hypotheses (Table 9.10) are examined in this research:

Table 9.10 Hypotheses for the impact of PEOU on adoption perceptions

Hypothesis		Path
Hypothesis 5a	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's attitude (ATT) toward the adoption of mobile services.	PEOU > ATT
Hypothesis 5b	A consumer's perception of the ease of use (PEOU) of the mobile service influences that consumer's intention (INT) to adopt mobile services.	PEOU > INT

The quantitative study (Chapter 8) confirmed that perceived ease of use significantly influences and leads to positive attitude (H5a, $\beta = 0.06$, $p < 0.05$) and intention to adopt the service (H5b, $\beta = 0.07$, $p < 0.01$). These results were also confirmed during the interviews, as shown by the example statements in Table 9.11, next.

Table 9.11 Examples of support statements for impact of PEOU on consumer adoption perceptions	
Hypothesis	**Support statement examples**
Perceived Ease of Use (PEOU) influence on attitude (ATT) and intention (INT)	*"It [ease of use] is important to continue using the service, because if it's not easy to use, I will not be happy to waste my time and use the service"* (Participant 1) *"I had a friend … because she found it [the mobile service] very difficult, very complicated, she did not even look at it because just the idea of advanced technology … she found it difficult, her attitude changed and she couldn't even think of taking it"* (Participant 2) *"If it is easy to use, very handy, very quick, then my intention will be very positive and then I will go for it. But, if it's complex, I will have a bad attitude …my intention will be negative as well … and I will not go for it"* (Participant 6)

Overall, the interviewees emphasised the important impact that the ease of using the service has on their adoption perceptions (attitude and intention). However, the interviews also showed that consumer perception of the ease of using mobile services is dependent on other factors such as personal characteristics like the consumer's innovativeness (willingness to explore and use new technologies) and self-efficacy (confidence in one's ability to deal with new technologies), and the capabilities and design of the mobile handset (screen size, buttons size and layout, etc), as demonstrated by the following statements:

Consumer Innovativeness: "*I think they are complicated, but I haven't tried them yet … this affects attitude but curiosity minimises the impact of complexity on attitude … curiosity comes to the point where you want to try new things or new experience"* (Participant 5)

Self-efficacy: *"I feel that they are so complicated … it makes me feel stupid … it makes me not to go anywhere near them!"* (Participant 4)

"If the process of using the service is complicated to use, as like it's not suitable to my experience or thinking, I will not go for it. But if it's easy and to a

good [complexity] level for all people, I would go for it" (Participant 3)

Mobile handset features: *"For the service I use [mobile chat] I think they are easy to you … it depends on your mobile [device]"* (Participant 6)

9.41.3. Consumer-Social Factors Impact on Consumer Adoption Perceptions

This section presents the interview results for the impact of Subjective Norm on consumer adoption perceptions including his/her attitude (ATT) and intention (INT) towards adopting mobile services. For this aspect of the study, the following hypotheses are examined (Table 9.12):

Table 9.12 Hypotheses for the impact of Subjective Norm on adoptoin perceptions

Hypothesis		Path
Hypothesis 7a	A consumer's perception of the social influence of important others (SN) influences that consumer's attitude (ATT) toward the adoption of mobile services.	SN > ATT
Hypothesis 7b	A consumer's perception of the social influence of important others (SN) influences that consumer's intention (INT) to adopt mobile services.	SN > INT

The survey results in Chapter 8 showed that consumer-social factors have a significant impact on the consumer attitude and intention to adopt the mobile service. It was found that a highly positive Subjective Norm (SN) perception leads to a positive attitude (H7a, $\beta = 0.17$, $p < 0.001$) and intention (H7b, $\beta = 0.11$, $p < 0.01$) toward adopting the mobile service. The qualitative data collected from the interviews also confirmed these hypotheses, as shown in Table 9.13.

Table 9.13 Examples of support statements for impact of Subjective Norm on adoption perceptions	
Hypothesis	**Support statement examples**
Subjective Norm (SN) influence on attitudes (ATT) and intention (INT)	*"My friend started telling me how good the offer is and how good the internet usage is with [a service provider], that I finished my call and went to my flatmate and told her that we are switching to [that service]"* (Participant 1) *"Your friends or family around you will affect your decision to take the service or not, because they have been using it …so I trust them because they are not going to lie to me. Of course they want me to get the benefit as well, so they are going to affect my attitude toward the service"* (Participant 3) *"Sometimes you are interested in something but you feel that you don't need it, it's complex or it's not efficient for you. But when somebody comes to you and he tells you that this is a good service because this and that, I think you would go for it, at least you build the positive attitude, and on the other hand if somebody tells you that it's not a good one so it affects your attitude"* (Participant 5)

As these examples show, consumer-social factors such as Subjective Norm have a great impact on shaping the consumer attitude (ATT) and intention (INT) toward accepting and using new mobile services. However, whether subjective norm is more influential on the consumer's attitude or impacts consumer intention directly is variable and depends on many factors such as the number of people who use the service (or advise the consumer to use it) and the consumer relationship with them (how close they are), as explained by the following participant:

> *"Definitely, they [important others] would have an influence, but first it depends on how many people around me actually have it and encourage me to take it, the number, and also who those people are. Like, if they are people I consider very important and very smart in life, I would get affected immediately without even knowing what the service is because I think that … well, those people know what they are talking about and I'll learn later on about the service. But I know some people they would just*

> *get it just to seem very professional. I wouldn't get affected by those people at all"* (Participant 2)

Generally speaking, the interviews revealed that social influence might have more effect on attitude leading to an impact on intention, rather than influencing intention directly, as expressed by the following:

> *"Let's say I heard of the service and I liked it. I'll see more people … if they like it and encourage me, it wouldn't change my intention, but it would make me feel better about my decision. But I wouldn't go only for people's point of view to take it [the service]; I wouldn't have an intention to take it. It would just make me feel better about it and then other factors are what will affect the intention"* (Participant 2)

> *"Sometimes somebody advises me to use something, but you have to think about it … it's not you just go blindly and do it. Again … it comes to the necessity and the need to do it … maybe your preferences or your requirements are different"* (Participant 5)

In addition, as the following mobile user indicates, the impact of the social system on the consumer is not limited to pre-adoption perceptions only, but might also extend to affect consumer perceptions at the post-adoption stage.

> *"If you have a friend for example and he is using this service, and he tells you about all sorts of things … sometimes you just go straightaway … OK, why don't I use it? I'll use it … he is using it, it's good … he told me about it. Then, when I use it I try to discover things about it from my usage, then I go to talk to him about it … while I'm using it I get this thing or that thing, do you get the same? And do you know how to use this thing [function]? And what do you know about it?"* (Participant 6)

9.42. Conclusion

This chapter presents the analysis of the qualitative data that was collected by conducting interviews with mobile consumers. The analysis is targeted towards gaining better insights into the impact of the three sets of consumer-interaction factors (consumer-service provider, consumer-service and consumer-social) on the consumer attitude and intention towards accepting and using advanced mobile services. Therefore, the influence of each of these

three sets of factors is examined in light of the collected qualitative data and its analysis results from Chapter 8.

In summary, the interviews showed that each set of factors could influence consumers' adoption perceptions. It was found that all the constructs that this research examines have an important impact on the adoption of mobile services. In addition, the discussion with the mobile consumer during the interviews yielded some additional insights into 'how' and 'when' the impact of various factors is greater or lower. In the next chapter (Chapter 10) the results from the interview research, as presented in this chapter, are integrated with the findings from the survey research (Chapter 8) in a discussion that aims to draw important conclusions, lessons and recommendation for service providers.

Chapter 10.

Integration of Results and Discussion

10.43. Introduction

In this chapter, I discuss the implications of the findings from the quantitative and qualitative studies. To do this, I refer back to the Entities-Interaction Framework (EIF) which is introduced and discussed in Chapter 2 to discuss the implications of the three sets of consumer-interaction factors: consumer-service provider factors including PRQ and PVI, consumer-service factors including PU and PEOU and consumer-social factors that are represented by SN. I begin the discussion of each of these three sets by integrating relevant findings from the quantitative and qualitative analysis. I conclude this chapter by discussing some higher level implications based on the overall findings.

10.44. The Impact of Consumer-Service Provider Factors on Consumer Adoption

The consumer-service provider factors and its impact on consumer adoption perceptions are the main focus of this research. Two relevant factors are examined in this research: Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI). For these factors, three groups of effects (or hypotheses) were proposed and investigated:

1- The impact of PRQ on consumer attitude (ATT) and intention (INT) towards accepting and using mobile commerce services.
2- The impact of PRQ on PVI
3- The impact of PVI on consumer attitude (ATT) and intention (INT) towards accepting and using mobile commerce services.

In the following, I discuss each of these effects by integrating relevant findings from the quantitative and qualitative studies and discussing the implications of these findings on the mobile telecommunications industry in general, and mobile service providers in particular.

10.44.1. The impact of PRQ on consumer attitude and intention

The Partial Least Squares (PLS) analysis of the questionnaire data (Chapter 8) showed that the impact of PRQ on consumer attitude and intention towards accepting MC services is not significant when all the factors examined in this research are modelled into one structural path model. Nevertheless, the quantitative analysis supported the existence of a potential important impact based on the highly significant correlation between PRQ and both ATT and INT ($p<0.01$ in both cases). This potential effect was confirmed through further analysis that showed that the PRQ>ATT and PRQ>INT paths are significant when other (more dominant) factors such as PU and PVI are removed from the same structural path model. This shows that while the impact of PRQ (primarily an affective variable) exists, its effect is absorbed by the more utilitarian factors such as PU and PVI. Therefore, further evidence was needed in order to confirm the existence of the PRQ effect on consumer adoption perceptions.

Further investigation was sought through the qualitative interviews study. The qualitative data strongly and clearly confirmed the impact of PRQ on both ATT and INT. In the interviews, all participants stressed the important influence that the nature of their relationship quality with the mobile service provider has on their attitude and intention towards accepting and using mobile services. The study finds suggest that the 'provider' of the services constitutes one of the most important aspects of mobile service adoption.

The interviewees were able to identify the role that a mobile service provider play, or should play, before and after the consumer has accepted the mobile service. To confirm this, they were able to describe future scenarios or situations (such as times of conflict) were the provider is the most critical factor for successful adoption and continuous usage of mobile services. Therefore, the findings of both empirical studies provide a strong support for the impact of relationship quality on consumer adoption perceptions. These findings further emphasise the results of previous studies that investigated the critical impact of relationship quality, as perceived by consumers, on a firm's success (Bove and Johnson

2000; Claycomb et al. 2002; Dwyer et al. 1987; Hennig-Thurau et al. 1997; Jap et al. 1999; Liang and Wang 2006; Liljander et al. 2002; Wray et al. 1994).

As mentioned in the introduction of Chapter 9, in addition to re-examining PRQ hypotheses, the interviews aimed at offering more understanding of the underlying mechanisms that control the nature and direction of the impact of relationship quality on consumer perceptions. I accomplished this by proposing and discussing, in Chapter 9, two general explanatory models that explain these mechanisms: the PRQ-Spectrum Model and the Usage-Maturity Model.

While each of these models presents its own important implications they, in many ways, complement each other. The PRQ-Spectrum model provides critical insights by examining the impact of relationship quality within each service provision or adoption episode. On the other hand, the Usage-Maturity model extends this understanding by depicting the implications of PRQ within as well as between service provision or adoption episodes. This combined short- and long-term examination of the impact of relationship quality enables mobile stakeholders to make their mobile service provisions a success now and in the future.

In the following sections, I briefly present again these two models and discuss the implications they present to the mobile commerce market in general and mobile service providers specifically.

Model 1- The PRQ-Spectrum Model

This model attempts to explain the underlying mechanisms that control (or decide) the strength and direction of the impact of PRQ on ATT and INT as two related yet distinct perceptions. In this model, the level of the consumer-service provider relationship quality is viewed as a spectrum of values which has three main points or levels: extremely positive, neutral, and extremely negative relationship quality (Figure 10.1 next, first presented in Chapter 9).

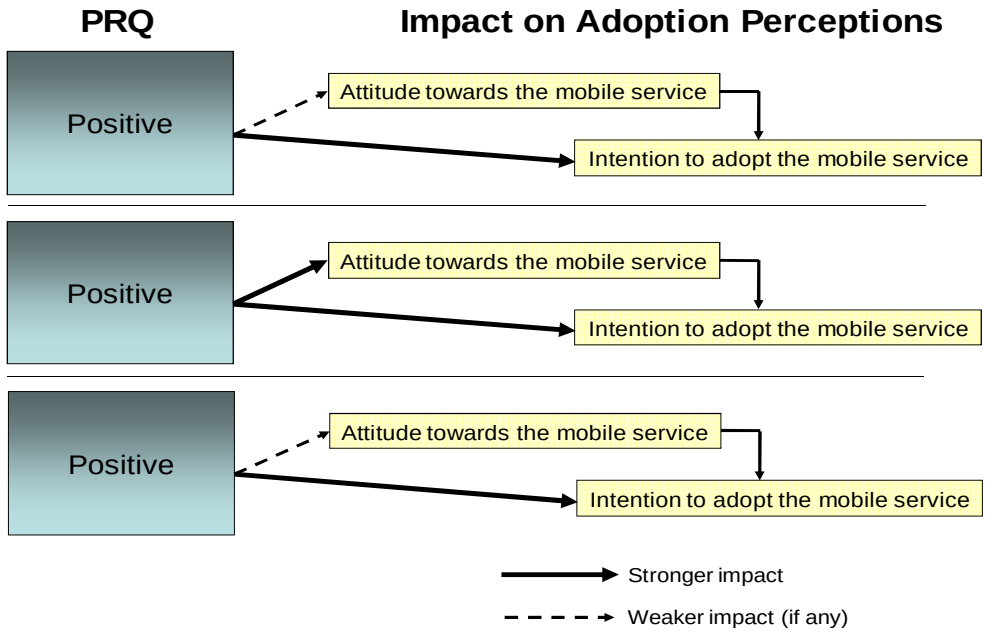


Figure 10.1 The PRQ-Spectrum Model

The PRQ-Spectrum Model represents the impact of PRQ on consumer attitude and intention based on the relationship quality strength into three levels: extremely negative (very bad relationship), extremely positive (very good relationship) and neutral (indifferent, neither negative nor positive). Basically, the model postulates that when the relationship quality is either extremely positive or extremely negative, PRQ has stronger influence on consumer intention (which is closer to the decision or action) than its influence on his/her attitude. Whereas, when the relationship quality is neutral, the impact of PRQ could stronger on attitude and/or intention, depending on the specific consumer case.

The PRQ-Spectrum model has many implications. Firstly, the most severe consequences will be experienced by the service provider when the relationship quality is extremely negative. This is because, in this case, the consumer would tend to make quick (negative) decisions or reactions depending on how bad are his/her experiences with the service provider. In addition, because of the negative experiences or relationship, the consumer tends to downplay the importance of other (possibly positive) factors such as the specific features of the mobile service because he/she would naturally attempt to avoid getting involved in an exchange that he/she predicts to be troublesome.

Thus, when the relationship quality is negative, all the efforts that are made by the service provider to enhance the features of the services are of no use. Mobile service providers invest great amounts of time and money in enhancing the features and technical details of the mobile services they offer. While this is crucial to attract adopters, the findings of this research reflect that it is critical for mobile service providers to take into consideration their relationship with consumers before attempting to provide them with more mobile services. Particularly, service providers should make every possible effort to minimise the impact of negative relationships with consumers through careful monitoring and examination of the affected group of consumers. The importance of this becomes even more evident if we consider that 1) a negative relationship perception downplays or offsets the role that potential positive aspects (e.g. service features) has on consumers, and 2) the cascading effect that negative experiences has in social settings and how these perceptions affect other consumers through social mechanisms such as *word-of-mouth*.

Secondly, it is observed in this study that a positive relationship quality with the service provider plays the role of a 'confidence builder' that re-assures the consumer about the success of the upcoming exchange. Once a person has built a sufficient level of confidence upfront, he/she would be ready to proceed to consider the details of the exchange or interaction. This same perceptual flow appears when a consumer considers a mobile service that is presented by a certain service provider. Because of such highly positive perception about the provider of the service, the consumer tends to have a starting positive perception about what comes from that service provider. Of course, this starting positive perception would not prevent the consumer from carefully evaluating every aspect of the service. The positive relationship rather works as a positive 'first impression' in the mind of the consumer that makes him/her willing to further explore the provided service.

Thus, a positive consumer relationship perception constitutes a great asset and an important competitive advantage for the mobile service provider. As a result, service providers should be able to further nurture and enhance positive relationships and use them for their advantage. This requires a clear vision of how to sustain these relationships and make the best use of them. As an example of such vision, OmanMobile (a mobile telecommunications company that operates in The Sultanate of Oman) has a group of consumers that they keep close ties with and consult at various stages of every new mobile service provision process (Dr. Amer AlRawas, CEO, OmanMobile). This group of

consumers is the first group that is allowed to try new mobile services for free. The consumers benefit by making use of the advantages of the new mobile service for free, and OmanMobile also benefits from the feedback they receive and the VIP perception they convey to these consumers; therefore creating a win-win situation for both parties. This is just one way of how precise policies and strategies are put in place to ensure that positive relationships are improved, expanded and utilised.

Thirdly, a neutral relationship quality can be described as an 'indifferent' relationship in which the consumer is not holding any clearly positive or negative perception towards the service provider. This level of relationship quality puts forth important implications for mobile service providers. In such cases, the consumer perceptions do not necessarily have a specific direction and is therefore prone to the influence of other forces such as the consumer social network and other service providers in the market. Therefore, in a way a neutral PRQ is an open field in which the service provider is competing with other forces to retain the consumer and attract him/her to adopt more services.

As a result, it is crucial that the mobile service providers have a clear image of how to manage such neutral relationships and convert them to the advantage of the firm. It is also important that the service provider is able to monitor the overall market and examine potential forces that can affect consumer perceptions towards accepting and using offered mobile services. Possible strategies that service providers can employ in order to convert these neutral relationships into positive ones include targeted advertising and marketing by clustering the markets into social groupings (e.g., students, teachers, managers, athletes, etc) and utilising these social groupings to spread a good impression about the company. Another tactic is to target some efforts towards some influential "opinion leaders" in the market such as celebrities, athletes and other high-profile customers who can influence the opinions of other customers. Using such techniques, eventually, the consumers with a neutral relationship quality in the market can be enticed to hold a more positive impression about the services provider.

Overall, the PRQ-Spectrum Model implies that the strength and direction of the impact of PRQ on consumer ATT and INT is subject to the level of the consumer-service provider relationship quality. Essentially, each level of relationship quality (negative, neutral and positive) has its own implications for the consumer, the service provider, and the general

mobile telecommunications industry. Mobile stakeholders must be able to recognise the existence of these relationship quality levels and understand the nature, requirements and implications of each on their business. Based on such understanding, they can successfully put in place and implement appropriate policies and customised strategies to suite each group of their customers.

Model 2- The Usage Maturity Model

This model provides an understanding of the impact of PRQ on consumer adoption perceptions as the consumer usage of m-commerce services progresses from basic to more advanced services. Therefore, the Usage Maturity Model incorporates the effect of relationship quality with the long-term implications that each mobile service provision or adoption episode presents (as shown in Figure 10.2, which was first presented in Chapter 9).

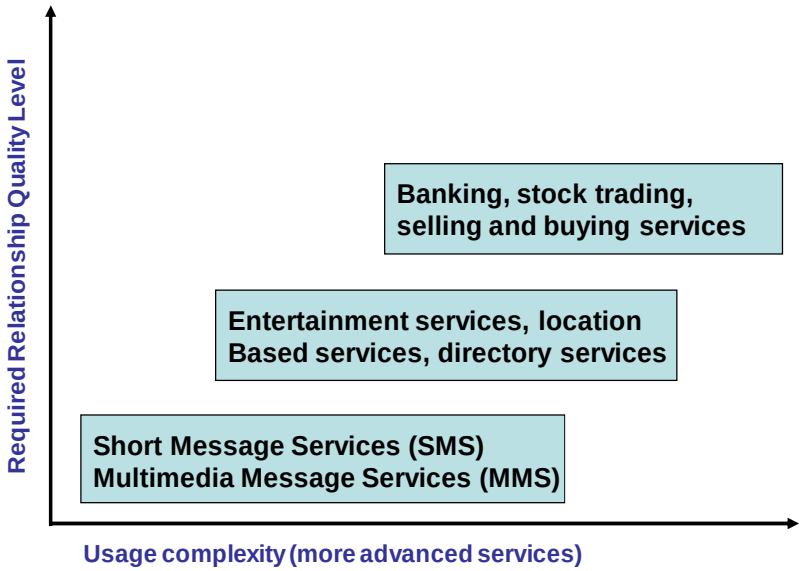


Figure 10.2 The Usage Maturity Model

In short, The Usage Maturity Model presents two main points: First, for the adoption of each level of mobile services to take place and continue, a certain (minimal) level of consumer-service provider relationship quality is required. This minimal required level of PRQ grows as the consumer moves up towards more advanced and complicated mobile commerce services.

Second, the implication and importance of the role that PRQ plays in influencing the consumer attitude and intention to adopt mobile services grows as the consumer usage matures towards more advanced services. In other words, relationship is more important and its quality has more impact on the attitude and intention of consumers who are users of more advanced services (e.g. mobile selling and buying users) compared to users of basic services (e.g. those who only use SMS services for communication purposes).

This model poses many important implications for parties involved in the consumer adoption of mobile commerce services. First, the model further confirms that a positive relationship quality is an important condition for the formation of a positive attitude and a positive intention towards accepting and using offered mobile services. For each level or class of mobile services, there is a minimum pre-requisite level of relationship quality (including trust, satisfaction and commitment and conflict) that corresponds with the nature and complexity of the service and its implications for the consumer. For example, the relationship requirement for adopting SMS and MMS services is much lower than the relationship requirements for adopting mobile selling and buying services.

If this minimum level does not exist or exists in a negative form, there is a great chance that the consumer will not accept the offered service. This rejection effect might also extend to hinder the success of future adoption of more advanced services. Relevant to these effects, service providers have a great challenge to 1) understand the level of relationship quality that is required for every service level they attempt to offer to consumers and 2) put in place and implement strategies that can ensure the existence of the required PRQ level. Ensuring this up front would result in improving the chances that the offered service would be accepted by consumers or, at least, would not be faced by rejection as a result of a low (negative) level of PRQ.

Second, as depicted by the Usage Maturity Model, mobile commerce includes a range of mobile services ranging from basic ones such as SMS and MMS to more advanced ones such as mobile selling and buying. This implies that the tasks that can be accomplished using different classes of mobile services can also range from simple ones, such as communication, to more sophisticated ones such as transactional and financial tasks. As the consumer advances towards using more complicated services and tasks, his/her expectation of more reliable, robust and consistent exchange or interaction naturally grows too. In other

words, relationship is more important and its quality has more impact on the attitude and intention of consumers who are users of more advanced services (e.g. mobile selling and buying users) compared to users of basic services (e.g. those who only use SMS services for communication purposes). If the progression in the tasks is not matched with an equivalent level of exchange quality, this will have serious implications on the current and future mobile service adoption. Therefore, service providers should be able to understand this progressive maturity in the requirements of each level of usage and accommodate suitable strategies to make sure that the consumers have the confidence they need to continue progressing towards more advanced services.

Third, at every level of usage maturity, experiences from the interaction with the service provider accumulate which then affect the consumer relationship expectations and perceptions for the next (more mature) level of service adoption. Therefore, relationship quality does not only influence the consumer current perceptions in the short run but also affects his/her longer-term perceptions. Consumer experience with the mobile service adoption at one level will influence his/her attitude, intention and decision to adopt or reject a subsequently higher level of m-commerce services. Mobile service providers must have a clear understanding of this interactive effect of short- and long-term exchanges. This poses critical implications for mobile service providers who make huge investments and aim at making mobile commerce a long-term success rather than short-term adventure.

10.44.2. The impact of PRQ on PVI

In addition to establishing the impact of consumer perceived relationship quality on his/her attitude and intention towards adopting mobile commerce services, this study also examined the influence that PRQ has on PVI. The quantitative study strongly supported the significant impact that PRQ has on PVI (H3, $\beta = 0.29$, $p < 0.001$). These results were further supported and confirmed by the qualitative study. The interviews showed that mobile consumers associate a big part of the value of an adoption incentive with the 'provider' of that incentive. The participants expressed that they refer to their relationship quality with the incentive provider in order evaluate the credibility of the offer and predict what happens if they accept the incentive with the service being promoted.

The questionnaire results also showed that the impact of PRQ on PVI extends to every single perception of value in the adoption incentive, as shown in Figure 10.3.

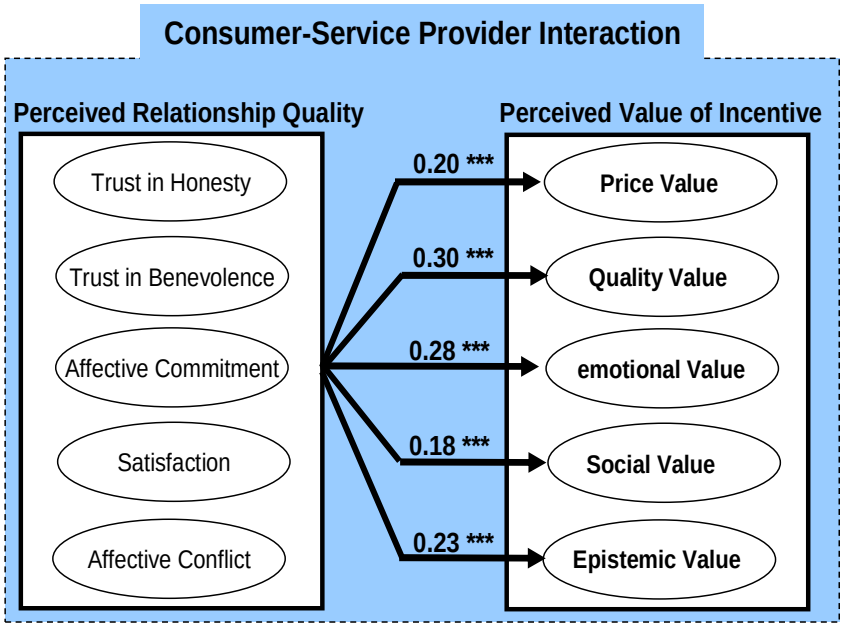


Figure 10.3 PLS results for the impact of PRQ on PVI dimensions

It is quite intriguing to find that relationship quality, which is an affective variable, does not only affect similarly affection-based values such as emotional value, social value, and epistemic value; but also extends its significant impact on utility-based values such as price value and quality value. This indicates that no matter how good the incentive is in terms of price and quality, the consumer perception of the provider of the incentive is one of the most influential factors for consumers' decision making. These findings further stress the important implication that relationship quality presents on the consumer adoption of mobile services.

For mobile services providers, offering a valuable incentive is aimed at increasing the value of the actual service and entice the consumer to adopt it. However, as demonstrated in this research, this aim cannot be achieved unless it is accompanied by a quality relationship between the giver (service provider) and the receiver (consumer). This becomes evident from the above results that showed that all kinds of values, including utility-based ones that a service provider intends to deliver to the consumer are affected by the nature of the relationship between the two parties. In other words, the difference in the nature and

amount of intended value (by the service provider) and actual perceived value (by the consumer) is largely controlled by the nature or quality of the relationship between the two.

To demonstrate, one can imagine the way relationship quality moderates delivered vs. perceived (or received) values as represented by Figure 10.4.

Figure 10.4 Intended vs. perceived values and the Relationship Quality 'tunnel'

In this illustration, the consumer-service provider is represented as a tunnel (or a channel) through which all kinds of values communicated pass between the service provider at one end and the consumer at the other end. Normally, service providers aim to deliver some type(s) of value to the consumer in a specific shape or form. As the results of this research indicate, the consumer-service provide relationship tunnel works as a proxy that re-shapes or re-forms these intended values (hence the ± sign on the consumer side in the figure) according to the relationship nature and quality. Therefore, while service providers 'intend' to deliver a certain type and level of value, the form and level in which this value reaches to the consumer is controlled, moderated or reformed by the consumer perception of their relationship.

As depicted in the figure, a certain delivered value might reach the consumer with less value or more value (as indicated by the ± sign in the figure) depending on the nature of the relationship tunnel. For example, a consumer would see higher value in an incentive when it comes from a service provider that he genuinely trusts, satisfied with, committed to, and have no conflicts with. On the other hand, when the relationship quality is negative, the 'intended' high value would be much lower in the eyes of the consumer. In a way, this takes us back to the PRQ-Spectrum and Usage-Maturity models in which I demonstrated that a negative relationship downplays the impact of other potentially positive factors or

values. Similarly, a positive relationship encourages the consumer to see more value in the offer and to be more confident to explore it further.

Overall, relationship quality has important implications on achieving successful outcomes of the actions of service providers (e.g. providing products, offering incentives, delivering value, etc). Therefore, it is not enough for service providers to 'deliver' good value to consumers, it is also important that the service providers are able to measure how much of that value is actually 'received' by consumers. Service providers should be able to develop work plans that suit the nature of their specific markets and customers. For example, it might be worthwhile to compose value using a backward strategy; starting with what the consumers see as valuable and then building on that knowledge to deliver values that would have greater chances of successful reception by consumers. Regardless of what tactic is followed, what is important is that strategies are planned and executed under a clear framework that takes the nature of the relationship with each group of consumers into consideration.

10.44.3. The impact of PVI on consumer attitude and intention

The second consumer-service provider factor that this research examines is the consumer perception of the value of adoption incentives that are offered to encourage consumer adoption of the offered mobile services. This factor is investigated in terms of its effect on consumer attitude (ATT) and intention (INT) towards accepting and using mobile commerce services.

The impact of PVI on consumer adoption perceptions was strongly supported in the quantitative study ($\beta = 0.45$, $p < 0.001$ for the PVI>ATT path and $\beta = 0.26$, $p < 0.001$ for the PVI>INT path). In fact, it was found that PVI is the best predictor of consumer adoption intention among all other factors in the research model including attitude (ATT). The qualitative study provided additional support for these effects. These findings stress the importance of consumer perception of 'value' for his/her willingness to accept the mobile service offer.

It is logical to claim that unless a person clearly perceives value in a decision or action, he/she would not progress to undertake it. The findings of this research confirmed that

value is, and should always be, the essence of all business strategies towards consumers. Value perception is essentially what drives consumers to consider and accept new ideas and offers. Therefore, it is important that mobile service providers first understand what constitutes value in the eyes of their consumers and then match these perceptions with relevant values.

In addition to confirming the impact of perceived value on consumer adoption perceptions, this research also found that PVI is also influenced by many factors such as the incentive characteristics and composition and its ease of acquisition. Therefore, service providers must carefully study these factors in the process of designing and presenting adoption incentives. Integrating this knowledge throughout the incentive creation and provision process is decisive for the effectiveness of the incentive in attracting consumers and enticing them to consider and adopt the actual mobile service.

It was also emphasised in the interviews that in order for the incentive to be perceived as valuable and therefore capture consumer interest, it is important that a high PVI matches an equivalently high perceived value of the actual mobile service that the incentive is aimed to promote. This finding presents a challenge for mobile service providers to be able to enhance and balance offered value through the incentive and the service itself so that they both complement each other value.

10.45. The Impact of Consumer-Service Factors on Consumer Adoption

The present research investigated the impact of two consumer-service factors on consumer adoption of mobile commerce services, including Perceived Usefulness (PU) and the Perceived Ease of Use (PEOU) of the mobile commerce service. The study examined impact that each of these two factors has on consumer attitude (ATT) and intention (INT) towards accepting and using mobile commerce service. The research also examined the impact that the ease of using the mobile service has on consumer perception of the usefulness of the service.

The investigation of these effects is inspired by the traditional adoption research (e.g. Davis 1989; Davis et al. 1989; Taylor et al. 1995b; Venkatesh et al. 2000a; Venkatesh et al. 2003)

and the more recent mobile commerce adoption research (e.g. Baron et al. 2006; Chen 2008; Hong et al. 2006a; Junglas 2007; Khalifa et al. 2008; Koivumaki et al. 2006; Yan et al. 2006) that examined PU and PEOU. Both the quantitative and qualitative studies in this research also strongly supported the above effects and confirmed the importance of consumer-service factors. In addition to establishing the impact of these factors, my research used the confirmation of these well-established factors as a benchmark for examining the effect of the less established consumer-service provider factors.

The interviews that I have conducted also showed that mobile services are generally perceived as useful by mobile phone users, but their level of usefulness is dependent on the specific task that the consumer intends to accomplish. It was expressed by the participants that consumers see more usefulness in mobile services for accomplishing immediate, quick and simple tasks that can save time and effort. Such results present the mobile commerce stakeholders (including designers, marketers, service providers, etc) with the challenge of being able to identify these tasks that can exploit and bring out the full range of advantages that mobile technology can offer. The findings emphasise the need to integrate a deep understanding of the consumer needs throughout the whole process from the design of the service concept to the point where it is offered in the market.

The findings also showed that the consumer perception of the ease of using the mobile service is dependent on other factors such as his/her personal characteristics including the consumer innovativeness (willingness to explore and use new technologies) and self-efficacy (confidence in one's ability to deal with new technologies or ideas). These findings emphasise that service providers need to take the time to understand the abilities of their consumers to embrace each type of mobile services. The findings also stress the importance of educating the consumers about the capabilities of mobile services and how to make the best use of them. The existence of a mismatch between the two (understanding consumer capacities and educating them) would highly impact the adoption of mobile services by consumers.

10.46. The Impact of Consumer-Social Factors on Consumer Adoption

One of the most important features of mobile technologies is the ability to use them anytime, anywhere in and around a social system. In any interactive social network, people affect each other's perceptions, attitudes, decisions and actions. This impact of this social effect (Subjective Norm) is conceptualised in this research as a consumer-social factor that has an important impact on consumer adoption perceptions. In line with previous studies that established the influence of social influence on adoption perceptions (e.g. Bouwman et al. 2008; Kim et al. 2008; Lee et al. 2007; Muk 2007a; Yang et al. 2007), both the quantitative and qualitative studies that I conducted strongly supported this effect. In addition to the importance of examining the social influence in this research, this well-established factor was also used to measure the relative importance of the consumer-service provider factors which are the main focus of this project.

It was further found that the nature and strength of the Subjective Norm impact on the consumer is variable and depends on many factors such as the number of people who use the service (or advise the consumer to use it) and the consumer relationship with these people (how close they are). In addition, it was demonstrated in this research that the impact of the social factor on the consumer is not limited to pre-adoption perceptions and decisions only, but might also affect consumer perceptions at the post-adoption stage.

These findings imply that mobile service provision and adoption mechanisms must be viewed as social processes rather than individual actions. As a result, mobile services stakeholders' strategies should be formulated around the social nature of the use of mobile commerce services. Carefully planning, developing and implementing 'social drivers,' depending on the nature of each mobile service, will greatly help mobile stakeholders to boost the adoption of struggling mobile commerce services.

10.47. Overall Findings and Implications

Based on the collective evidence that was collected in this research, and within the project theoretical and empirical boundaries, it can be confidently established that consumer-service provider factors (represented by two factors in this research: PRQ and PVI) do have a

significant impact on consumer adoption perceptions including their attitude (ATT) and (INT) towards accepting and using mobile commerce services. This impact is established through the combined evidence from the quantitative and qualitative studies.

The magnitude and extent of the effect of the consumer-service provider factors was measured by comparing the impact of these factors on consumer adoption perceptions with other well-established adoption factors from the existing literature (including consumer-service and consumer-social system factors). It was found that the former set of factors predicts and explains higher amounts of variance in both consumer attitude (47 per cent) as well as consumer intention (45 per cent) towards adopting m-commerce services, as shown in Table 10.1 (which was previously presented as Table 8.15).

Table 10.1 A comparison of the impact of the three sets of entity-interaction factors on Attitude and Intention

Entity-Interaction factors included in the tested model	Paths	Attitude R2	Intention R2
All three sets	All	0.52	0.49
Consumer-service provider factors only (PRQ and PVI)	PRQ>ATT PRQ>INT PRQ>PVI PVI>ATT PVI>INT ATT>INT	0.47	0.45
Consumer-service factors only (PU and PEOU)	PEOU>PU PEOU>ATT PEOU>INT PU>ATT PU>INT ATT>INT	0.38	0.45
Consumer-social factors only (SN)	SN>ATT SN>INT ATT>INT	0.29	0.41

This result was further emphasised by comparing the unique contribution of each adoption factor in the research model. The findings showed that PVI is the best predictor of both consumer attitude (ATT) and consumer intention (INT) towards adopting m-commerce services, as shown in the following table (Table 10.2, previously presented as Table 8.16 in Chapter 8), below.

While the results in this table only show that PVI rather than both PVI and PRQ –as related factors- is the best predictor of consumer adoption perceptions, it was previously established that PRQ has a significant and important impact not only on the PVI as a whole construct (H3, $\beta = 0.29$, $p < 0.001$), but also on each single dimension of PVI, including price value, quality value, emotional value, social value and epistemic value (please refer to Figure 10.3 previously presented in this chapter). These effects of the consumer-service provider factors, both individually and as a set, were further confirmed in the qualitative interviews as discussed in Chapter 9.

Table 10.2 Ranking of factors as best predictors of the dependent variables

Independent variable	dependent variable	Beta value (β)	rank order
PVI	ATT	0.452	1
PU	ATT	0.174	2
PEOU	ATT	0.057	4
SN	ATT	0.166	3
Independent variable	**dependent variable**	**Beta value (β)**	**rank order**
PVI	INT	0.256	1
PU	INT	0.203	3
PEOU	INT	0.074	5
SN	INT	0.106	4
ATT	INT	0.229	2

The qualitative study also provided interesting insights that explain the 'how' part of the effect of the consumer-service provider factors on consumer adoption perceptions. The discussions with mobile phone users resulted in several conceptualisations that explain some of the underlying mechanisms that control the how these factors affect consumer adoption perceptions (e.g. the PRQ-Spectrum Model, the Usage-Maturity Model, and the Intended vs. Perceived Values and the Relationship Quality 'tunnel') as discussed previously in this chapter (Section 10.2).

Based on all the above and the results and discussions from the previous chapters in this thesis, the impact of consumer-service provider factors on consumer adoption of m-commerce services can be confidently established. In addition, this research offered a better understanding of the underlying mechanisms that control the strength and direction of these

effects and their short- and long-term implications on the current and future adoption of mobile commerce services by individuals. These mechanisms all point to the need for mobile stakeholders, particularity mobile service providers, to deeply understand such mechanisms and be able to design policies, tactics, and strategies that view each mobile commerce provision and adoption episode in terms of its present and future implications.

Chapter 11.

Conclusions

11.48. Research focus

This research has presented a new framework for understanding the factors that affect the attitude and intention of consumers towards accepting and using mobile commerce services. It does this by focusing on the interaction between consumers and other important entities at the consumer adoption level. These entities include: service providers, mobile services offered and the social system. In particular, this study has highlighted the importance of two relational factors: Perceived Relationship Quality (PRQ) and Perceived Value of the Adoption Incentive (PVI) stemming from the interaction between consumers and service providers which have been overlooked by the existing literature.

By investigating the impact of the relational exchange or interaction between the consumer and the mobile service provider on the adoption of mobile commerce services by existing users of mobile technology, this study has accomplished two aims. First, it aids our understanding of the importance of relational factors in influencing an existing user of mobile communication technology to adopt more advanced m-commerce services. This understanding helps service providers devise strategies to increase the adoption rate of these services among the existing users of mobile phones. Second, it improves our understanding of the adoption process and traditional technology adoption theories by investigating the adoption processes for multi-purpose communication technologies. The present research does this by examining the impact of relational factors on the progressive adoption of more advanced m-commerce services by existing users of mobile technology. This study helps address the more general Information Systems (IS) question: *why would an existing user of a technology adopt more advanced forms of that technology*? Addressing this topic in the

context of mobile commerce services helps suggest new directions to expand traditional adoption theories beyond their original scope.

This study began by examining the existing literature on mobile commerce adoption which resulted in the development of a new conceptual representation: the Entities-Interactions Framework (EIF). This framework posits that the characteristics of four entities, the consumer, the service provider, the mobile service, the social system, and the interactions between these entities, determine whether mobile commerce services will be adopted. Particular attention is paid to the role of the service provider because, when providing mobile commerce services, the service provider plays an important long-term role in the consumer's decision to adopt. Positive relationships must occur between service providers and consumers in order for consumers to accept and continue to use mobile commerce services. The EIF was used to synthesise and analyse the extent of the coverage in the existing literature of factors related to each of these entities and the interactions among them.

This review showed that the existing literature on mobile commerce adoption by individuals generally emphasises factors that relate to the consumer, the mobile service and/or the social systems, and the interactions between these elements. The factors that relate to the service provider as one of the main entities in the mobile commerce value chain and its interaction with the consumer have not been well addressed. This study, therefore, has aimed to address this gap by investigating the impact of the interaction between the consumer and the service provider on the consumer acceptance and use of mobile commerce services.

This study primarily focuses on understanding the impact of two relational key factors: 1) PRQ, which examines how the consumer evaluates his/her relationship with the mobile service provider, and 2) PVI, which examines how the consumer evaluates incentives that are offered by the service provider to entice him/her to adopt the mobile service. The influence of these factors on attitudes and intentions, as perceived by the consumer, was investigated. By investigating the impact of these two relational factors, this research aims to answer the following research questions:

1. What is the importance of the interaction between the consumer and the mobile service provider in the adoption of advanced mobile commerce services where the consumer is an existing user of mobile technology?
2. How do relational factors influence the decision of an existing user of a mobile communication technology to adopt advanced mobile commerce services?

To answer these research questions, a research model was built that included three sets of factors that relate to the interaction between the consumer and the mobile service provider (PRQ and PVI), between the consumer and the mobile service (Perceived Usefulness and Perceived Ease of Use), and between the consumer and his/her social network (Subjective Norm). These three sets of factors were examined for their impact on consumer attitude and intention towards accepting and using mobile commerce services. The relationships between these factors in the research model are justified theoretically using well-known theories such as the Social Exchange Theory (SET) (Homans 1958), the Technology Acceptance Model (TAM) (Davis 1989; Davis et al. 1989) and the Theory of Reasoned Action (TRA) (Ajzen et al. 1980; Fishbein et al. 1975), as discussed in Chapter 3.

The research design to test the research model empirically included two studies conducted in Australia: a quantitative study using a large-scale questionnaire survey of mobile phone users and a qualitative study involving face-to-face interviews with mobile phone users.

Conducting the quantitative study involved specifying measures to empirically assess each of the conceptual variables in the research model. To establish the extent and importance of these effects on consumer adoption perceptions, it was important that their effect be compared with more established adoption factors such as perceived usefulness and perceived ease-of-use. Examined were:

1. Factors relating to the interaction between the consumer and the mobile service provider, including PRQ and PVI,
2. Factors relating to the interaction between the consumer and the mobile service, including Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), and
3. Factors relating to the interaction between the consumer and the social system, including the Subjective Norm (SN).

Previously designed, tested and validated scales were used to measure PRQ, PU, PEOU, SN, ATT and INT, but a new scale was developed to measure the PVI construct. The scale development process involved over 30 interviews with potential survey respondents and field experts. When all measurement scales had been pre-tested, the actual data collection started using an online questionnaire. A total of 626 useful responses were collected for data analysis which was accomplished using a mixture of statistical techniques ranging from simple descriptive statistics to more advanced techniques such as Structural Equation Modelling (SEM) using Partial Least Squares (PLS).

The second empirical study involved conducting face-to-face, semi-structured interviews with mobile phone users. The objectives of carrying out this round of data collection included:

1. To assess whether the qualitative data results provide evidence that is consistent with the conceptual linkages as described in the theory; and
2. To enrich the understanding of the issue under investigation with rich, contextual descriptions.

11.49. Findings in relation to the research questions

The findings of the quantitative study indicate that the PRQ and PVI are related constructs that, together with other consumer-service (Perceived Usefulness and Perceived Ease of Use) and consumer-social (Subjective Norm) factors, explain a significant proportion of variance (close to 50 per cent) in both the attitude and intention of existing mobile technology consumers towards adopting advanced m-commerce services. These results were further confirmed through the qualitative interview study which also offered new insights into the mechanisms that control the effect of these factors on consumer adoption perceptions.

In addition, the effect of relational factors between the consumer and the service provider (PRQ and PVI) was found to be more influential than other well-established and well-investigated adoption factors including those related to the service (Perceived Usefulness and Perceived Ease of Use) and the social setting (Subjective Norm). PRQ and PVI together predicted and explained more of the consumer adoption perceptions (attitude and intention)

than the other factors. In addition, PVI was the strongest individual predictor of consumer attitude and intention amongst all factors that were examined. This study also found that PVI was influenced by the consumer perception of the relationship quality with their service provider (PRQ). This answers the first research question.

The qualitative study provided several insights to help explain how relational factors influence the adoption perceptions of existing users of mobile technology. These insights include the PRQ-Spectrum model which explains the mechanisms that control the direction and strength of the impact of PRQ on both attitude and intention, as two related but distinct stages of the adoption process. The Usage-Maturity Model is another finding that aims to further explain the effect of relational factors on the adoption of more advanced m-commerce services by existing users of mobile phones. Furthermore, the PRQ 'tunnel' perspective is another model that aims to explain the interaction effect between PRQ and PVI.

11.50. Significant contributions

This research makes many contributions to both theory and practice which are discussed below.

11.50.1. Contribution to theory

The study has examined many concepts and has applied several established theoretical models and frameworks to investigate the consumer adoption of mobile commerce services. Theoretical contributions include:

Contribution 1: Provides a new way to identify adoption factors and to synthesise the existing literature

The Entities-Interactions Framework (EIF) is a simplified, but manageable, model of the factors and forces that affect the adoption of mobile commerce by individuals. This model divides the conceptual space of adoption research in terms of the entities that interact with and affect each other. Therefore, this model offers a novel lens through which researchers can identify the various parties that are involved in the adoption process (including the

technology itself, its provider, its receiver, and the surrounding context), and thus to recognise the existence of factors relating to the parties and interactions between them.

The main contribution of the EIF is that it allows the representation of factors that relate to each entity as well as factors that relate to the interaction amongst the entities in a single model. This offers a convenient method of conceptualisation that helps researchers obtain a broad picture of what forces are involved in the adoption process and thereby to specify relevant factors to this process. Additionally, such conceptualisation allows researchers to focus on a specific set of factors while, at the same time, recognise the existence and possible implications of other factors or forces.

In addition, the EIF provides a new way to synthesise the existing literature on technology adoption by allowing the classification of factors based on their relevance to the characteristics of an individual entity in the framework or to the interaction among two or more entities. Therefore, the EIF model helps to make the review of literature more focused by providing a general organising structure to the review process and reporting.

Contribution 2: Provides a new understanding of the influences on the adoption of mobile commerce services by consumers

The research model in this study investigates three sets of factors (including those that relate to the interaction between the consumer and the service provider, between the consumer and the mobile service, and between the consumer and the social system) and their impact on the adoption of mobile commerce services by consumers. This model enriches our understanding of consumer adoption of mobile commerce services in three ways.

Firstly, the research model adds to our understanding of the *individual* impact of each set of factors because it allows a flexible conceptual and empirical separation of each set. The research model was built so that each set of factors can easily be distinguished within the overall conceptual domain of the research model. Therefore, examined individually, the findings of this research contribute to a better understanding of each set of adoption factors.

Secondly, the research model allows the easy *comparison* of the impact of each of the three factors. This flexibility enhances the understanding of each set of factors because it allows us to measure its impact by contrasting it with the impact of the other sets. In other words,

this allows each set of factors to work as a benchmark on which the influence and importance of the other factors can be measured and better understood.

Thirdly, the research model enriches our overall understanding of the consumer adoption of mobile commerce services by allowing the examination of the combined impact of all three sets of factors. The understanding gained from this collective examination adds to our understanding of the mechanisms that control consumer adoption of m-commerce services and how their adoption can be enhanced.

Contribution 3: Provides new insights into traditional and contemporary adoption and diffusion research

This study combines theory from the Information Systems, psychology, social science, and marketing domains to shed new light on the voluntary adoption of multipurpose (e.g. work, leisure, communication, etc) technologies by individuals.

For example, some commonly used theories of technology adoption, such as TAM (Davis 1989; Davis et al. 1989), were developed to explain adoption mechanisms within organisational settings. In such settings, the technology is mainly used for work purposes to enhance job performance and the technology adoption decision is usually forced by the organisation. By contrast, mobile commerce services can support a wide range of activities and purposes such as work (such as checking work-related email outside the office), social (such as sending and receiving messages) and personal (such as personal banking and accounts management, music, games and leisure). In addition, the adoption of mobile services by individuals is usually voluntary. Therefore, by examining traditional technology adoption theories in the context of mobile services adoption by individuals, this study contributes to an understanding of the extent to which these theories can or cannot be directly applied to this new context.

Some studies had previously applied traditional adoption theories to the context of mobile services (e.g., Hong et al. 2006a; Hung et al. 2005). This study has further enriched these by examining known adoption factors such as usefulness, ease of use and subjective norm alongside some newly introduced relational factors (PRQ and PVI) in a single collective investigation. To the best of my knowledge, this is the first study to consider the progressive adoption process of the consumer (from a basic user of mobile phones towards adopting

more advanced m-commerce services) as part of the overall interactions among the various entities in the value chain of mobile commerce services. It offers new understanding of technology adoption by examining established and new factors in a single investigation which allows comparison of their effects.

This study enriches traditional adoption and diffusion research by examining, in the context of mobile commerce services, the progressive adoption of more advanced versions of the technology by *existing* users. It accomplishes this by investigating how the interaction between the receivers and providers of the technology determines whether an existing user will or will not progress to adopt more advanced, related yet distinct, versions of the technology. This expands the traditional research which mainly focuses on understanding the adoption process leading to initial use of the technology and/or the continued use of that same technology.

Contribution 4: Provides new insights into the importance of PRQ on mobile commerce adoption

This study investigates the relationship quality concept in the context of mobile commerce services adoption by individuals. In the mobile commerce context, there is a relational element between the provider and the receiver of the technology which makes the adoption process quite different from the adoption of traditional technologies such as personal computers or TVs. Examining this relationship is important theoretically because its impact on the adoption process has not been adequately addressed by prior adoption theories. Understanding this relationship is also of great practical importance to service providers who must maintain a good relationship with customers to stay in business. Obtaining a better understanding of the factors that affect the quality of a relationship with a customer will allow a service provider to capitalise on the advantages that positive customer relationships can offer to the business, including gaining a competitive advantage over competitors based on customer loyalty to the firm (Roberts et al. 2003), minimising customer switching (Dwyer et al. 1987), and the ability to provide customers with customised goods, enhanced value and better quality (File et al. 1993; Liljander et al. 2002).

The findings of this study show that relationship quality is an important factor that influences consumer willingness to accept and use mobile commerce services. In the mobile commerce context, there is an element of exchange over time between the consumer and the

service provider for the successful delivery of the mobile service. The success of this exchange, in both the short and long term, would largely depend on the level of mutual trust, satisfaction with each other, and commitment towards the continuity of the exchange. If these are positively established between the consumer and the service provider, the quality of the relationship is improved, which makes the consumer more willing to strengthen the relationship through his/her willingness to accept more ideas and offers from the service provider, and consequently leads to better chances for a successful exchange. In contrast, when the relationship between the two is negative, the continuity of the exchange is affected in the long run because the consumer will be less willing to advance the relationship by adopting more ideas from the service provider.

The understanding of the impact of relationship quality on technology adoption through this study contributes to the literature because it puts forth a factor that is particularly important when there is an element of exchange over time integrated in the adoption process. Traditional adoption research has mostly dealt with factors that are specific to one-time decisions (such as technology-specific factors) rather than factors that relate to adoption processes with relational elements and implications. As a result, this study expands the existing adoption research through a better understanding of the role played by relational factors in the adoption process. This is something that existing theories did not explain well.

Contribution 5: Provides new ways to understand the impact of PRQ and the mechanisms through which this impact occurs

This study also offers explanations through which the underlying dynamics of the impact of the relationship quality between the consumer and the service provider can be better understood. These explanations were presented through the PRQ-Spectrum Model and the Usage-Maturity Model (which were explained in detail in Chapters 9 and 10). Together, the two models contribute to a more insightful understanding of the impact of relationship quality on consumer adoption perceptions, while each offers its own implications and contributions to understand the mechanisms that control the effect of PRQ.

The PRQ-Spectrum model focuses on the mechanisms that control the impact of PRQ in the short term (i.e., within each mobile service adoption episode) and the PRQ effect on consumer attitude and/or intentions. On the other hand, the Usage-Maturity model focuses on how relationship quality requirements and impact varies in the long term (i.e., among

various mobile services adoption episodes) as the consumer progresses from simple to more complex mobile services. I highlight the contributions of each of these two models in the following sections.

- **The PRQ-Spectrum Model**

The traditionally established flow of the adoption process determines that consumer *beliefs* (such as PRQ) affect consumer *attitude* towards the technology (evaluation stage) which then impacts on the consumer *intention* to adopt, consequently influencing his/her action to adopt or reject. In addition, it has also been established in traditional technology adoption research that the impact of some beliefs do not necessarily follow this causal process of belief→attitude→intention, but instead might have a direct impact on consumer intention over and above their impact on the attitude-building stage. Understanding whether an adoption factor or a belief affects intentions directly or follows the belief→attitude→intention process essentially helps to determine the means through which such a belief can be controlled or manipulated to enhance the adoption process.

The PRQ-Spectrum model was developed to explain the dynamics that determine whether the impact of this newly introduced belief or factor affects intentions directly or follows the belief→attitude→intention process. The model was also designed to better understand the implications of each level of consumer relationship quality (PRQ) on the consumer attitude and intention towards the adoption of mobile services. This understanding is obtained by viewing the PRQ factor as a spectrum of values with three main points or levels: extremely positive (very good relationship), neutral, and extremely negative (very bad relationship). Then relating to the belief→attitude→intention adoption process flow, each of these three relationship levels is described in terms of whether it 1) directly impacts consumer intention, and/or 2) impacts attitude leading to an effect on consumer intention.

It was found in this research that PRQ impacts intentions directly when the quality of the relationship is on either of the two extreme ends (very good relationship and very bad relationship). When the quality of the relationship is on the neutral (average) level, the impact of PRQ would most probably follow the belief→attitude→intention process flow. This is an interesting finding, which tells us that once the service provider has examined and understood the nature of its relationship with its various customers, it must design and implement customised strategies to deal with each level of relationship. Failing to customise

strategies based on PRQ means that the firm accommodates one set of policies to deal with all its customers despite their relational differences. This would consequently make such policies unsuitable to some groups of customers and might lead to an impact on the adoption of offered mobile services and a resulting loss of business.

The explanations offered by the PRQ-Spectrum model contribute to the literature by emphasising the need to understand adoption factors as a continuum of values rather than treating them as a collective factor as done by the majority of previous adoption studies. This method allows us to better comprehend the impact of an adoption factor and how each measured level of it can have its own implications on the adoption process. This understanding makes it possible to treat each cluster of adopters according to their perception level of a certain factor rather than treating them together based on a collective (or averaged) measure. Following this perspective would eventually allow research to offer better-tailored advice to deal with various types of adopters and therefore make the conclusions drawn from adoption research more practically viable.

- **The Usage-Maturity model**

It is in the interest of all mobile commerce stakeholders to make the adoption of each mobile service an experience that leads to further adoption of other, more advanced mobile services. The Usage-Maturity model offers new insights on this progression of adoption with a service provider considering that such progression is largely influenced by the consumer relationship with the service provider. This model first postulates that for each level or class or mobile services (ranging from simple services such as SMS and MMS to more advanced ones such as mobile selling and buying), there is a minimum level of relationship quality required between the consumer and the service provider for the acceptance of these services by consumers. Second, it postulates that the strength of the impact of PRQ and the role this factor plays in influencing consumer adoption perceptions varies (increases) as the consumer progresses towards more advanced mobile services.

Therefore, the Usage-Maturity model provides a novel perspective that has not been previously proposed in the field of mobile commerce services adoption. The contribution that this model makes lies in its ability to link each adoption episode with the next one and to explain how the impact of an adoption factor might vary from one class of mobile services to another. This stands in clear contrast to the existing studies on m-commerce

adoption that generally examine each adoption factor within a single adoption episode or situation with less consideration of how the impact of this factor might change when carried over to the next adoption episode. Therefore, the Usage-Maturity model forms a sound ground for further theoretical and empirical development based on its ability to link current adoption experiences with future ones under a single conceptual framework.

Contribution 6: Provides new insights into the importance of PVI

Mobile commerce service providers invest heavily in promotions, special offers and discounts in order to increase the chances that the mobile services they introduce to the market are accepted and used by consumers or, at least, not faced with rejection. The objective of offering these incentives is to create a favourable consumer attitude towards the mobile service and to accelerate the adoption process. However, achieving this objective is subject to how much value consumers perceive in these incentives. Despite the importance of this factor in influencing consumer adoption perceptions, PVI has not been examined prior to this research.

This study, therefore, makes an important contribution by investigating, based on established theories, whether PVI has an impact on consumer adoption perceptions, what constitutes 'value' in the eyes of the consumers, and how each type of value contributes to the overall perceived value. This new understanding enriches the existing theories on technology adoption in general, and m-commerce adoption in particular by focusing on factors that are more relevant to common practices of service providers (such as offering adoption incentives).

Contribution 7: Provides insights into the interaction effects between PRQ and PVI

In addition to introducing and measuring the impact of PRQ and PVI on consumer adoption attitude and intention, this study also contributes to theory by examining the impact of relationship quality on consumer perception of the value of adoption incentives. This examination enriches our understanding of these newly introduced factors and how they affect each other.

Another theoretical contribution that this part of the project offers is the 'tunnel' concept (as discussed in Section 10.2.2). This postulates that relationship quality works as a proxy between the intended value of incentives (by service providers) and perceived value (by consumers) and how the nature of the relationship might create a discrepancy between offered value via incentives and perceived value by consumers. This improves our understanding of the factors that relate to the interaction between the consumer and the service provider and how they affect each other.

Contribution 8: Offers a validated scale for measuring PVI and validating other existing measures

Developing the PVI scale contributes to the literature in three ways. Firstly, the development of the PVI scale provides a better understanding of this theoretical object because it allows us to examine and empirically assess the validity of the theoretical components or dimensions of this construct and how these components relate to each other within the larger domain of the PVI object. Secondly, developing the scale operationalises the theoretical construct and therefore allows us to assess its relationship with other constructs in the research model, therefore enriching the conceptual understanding of the construct within a specific research context.

Thirdly, the operationalisation of the PVI construct puts forth to the research community a measurement scale that is based on careful theoretical and empirical validation process using rigorous practices and guidelines. The PVI scale can be applied to examine value in other contexts, and for other technologies and services. Researchers who intend to develop instruments can also learn from the intensive development and validation processes that are described in this thesis. The methods of data collection (e.g., interviews and card-sorting exercises), data analysis (e.g., spreadsheet cluster analysis) and scale refining and validation all provide insights on the validity and applicability of each method in the context of developing a measurement scale.

The re-examination and re-validation of existing scales to measure perceived usefulness, perceived ease of use, subjective norm, attitude and intention contribute to a better understanding of the effectiveness of these measure in examining consumer perceptions in contexts other than what they were initially developed for (mostly work settings). This practice helps to enhance our understanding of these constructs and their applicability in

examining non-traditional technologies such as mobile commerce. It also enhances our understanding of the nomological network of these constructs by the linking of the theoretical framework of each conceptual construct with the empirical framework of the measurement items used to assess each construct and understand the linkages between the two.

11.50.2. Contributions and implications to practice

The present study provides the mobile industry in general and mobile service providers in particular with a better, business-oriented comprehension of the factors that can affect the acceptance of the mobile services they offer. It provides service providers with an explanation of the mechanisms by which a mobile service provider can help the adoption of its mobile services to flourish in the long run (by incorporating relational factors) rather than focusing on short-term solutions only (e.g. service-specific concepts).

This understanding assists them to improve consumers' adoption of the mobile services they provide. It helps them review their current polices and strategies to make their current and future mobile service provisions more successful. This new understanding of the importance of relational factors on the adoption of mobile services should encourage mobile service providers to incorporate these relational aspects throughout the mobile service provision process, starting from the conceptualisation of the service to the actual provision of the service to the market. This involves collecting and using feedback through continuous monitoring of customers' relationship quality perceptions towards the firm in general and towards previous mobile services provisions in particular.

Consumer perceptions of their experiences with the service provider during previous exchanges should be carefully surveyed, analysed and used as a base for newer mobile services offers. Such strategies would allow the service provider to assess whether relational factors hinder or drive the adoption of currently provided services and therefore understand their potential impact in the future. The service provider's inability to fully understand the implications of their relationship with their customers on the adoption of mobile services might increase the risk of losing long-term revenues from customers with negative relational perceptions. It might also mean that the service provider would not be able to

utilise the potential in customers with positive relational perceptions and therefore increase the risk that such customers might be lured away by the competition.

Assuring that relational factors work positively for the service provider must involve the monitoring and examination of customer relationship quality of both adopters and non-adopters of currently provided mobile services. For adopters, this understanding helps the service provider to put together tailored strategies (through exclusive offers for current adopters, for example) that can further enrich these relationships and extend their potential advantage to the adoption of future services. For non-adopters, it helps service providers to understand what makes their customers reject the use of the mobile service and also check whether or not their relationship with the service providers has made any contribution towards their rejection decision. These efforts will not only allow mobile service providers to react quickly and make changes to their current offers based on rejection information but also ensure that their relationship with the customers will be a positive factor for future adoption episodes.

This study provides practice with a novel comprehension of how to view each mobile service offer as a consequence of the previous offer and a precedent of the next in order to enhance consumer adoption of mobile services in the short and long runs. This makes this study the first to view consumer adoption of various mobile services as a *progressive* and *continuous* process rather than as a chain of independent events. This provides practical conclusions that are more relevant to the way mobile commerce markets evolve from offering basic mobile services to providing more advanced services.

This project also provides useful insights to practice about how to enhance a consumer's perceptions of the value of adoption incentives offered by a mobile service provider. For example, it is clear which aspects of the incentive contribute more to the consumer's overall value perception and how these can be improved. In addition, the integration of the perceived value and relationship quality concepts helps mobile service providers to formulate strategies in order to enhance incentives (which are usually short term) from a longer-term perspective, through careful examination of PRQ.

One example of how short-term incentives can be aligned with long-term strategies is to 'stage' incentives over time so that once the consumer has acquired the first part of the

incentive; there are always more rewarding incentives or parts to look forward to. This strategy can replace the traditional way of offering a one-time incentive, often upon the initial acquisition of the service. Designing short-term incentives with such a long-term strategy will benefit the firm in at least three ways. First, it encourages adoption, therefore meeting the objective of a normal short-term incentive. Second, it helps to prevent or at least minimise discontinued adoption behaviour over time because there is always something for the consumer to look forward to. Third, it helps retain the consumer for longer periods of time, which gives the firm the chance to work on maintaining and enhancing the relationship with the consumer and also generate more revenues from each consumer.

Another example of how short-term incentives can be used to support long-term relational strategies is to align incentives based on customer relationship quality clusters. Essentially, this requires the classification of customers based on their relationship with the service provider. This classification of relationships can be measured by how much revenue is generated from each consumer group, the age of the relationship between the consumer group and the service provider, or any other criteria that best serves the objectives of the firm. Once this knowledge is established, the service provider customises offered incentives based on the established customer relationship quality clusters so that the incentive offered to the 'top' customer group is distinguishable from the one offered to regular customers.

In such a strategy, customers are clustered based on their relationship with the service provider and then customised variations of the same incentive are offered to each relationship cluster. Offering *customised* variations of the same incentive might work better than offering a totally different incentive to each cluster because it might help resolve or minimise any potential perceptions of neglect that customers who receive the lowest level of incentives might feel as a result of this strategy. This strategy serves the objective of a normal short-term incentive to encourage adoption of a particular mobile service and, at the same time, it is also a way to reward and distinguish loyal customers (a long-term objective).

Aligning short-term incentives with long-term relational objectives not only makes incentives more effective by ensuring that the values that are intended via these incentives are in fact perceived by consumers as they were intended, but also offers firms with

competitive advantages in the long run by enhancing efficiency and effectiveness of their offers and relationships with their customers.

11.51. Limitations

It is almost impossible for any single study to cover every aspect within the research field of interest. This study is no exception. For example, among the large range of important adoption factors, only five variables are included in the research model of this study. However, the specific choice of these five factors was not arbitrary but was based on a systematic review of the existing literature based on the justification of the Entities-Interactions Framework (EIF).

In addition, while the comprehensive PVI scale development is one of the main contributions of this research, other measures that were used to assess the rest of the factors (PRQ, PU, PEOU, SN, ATT and INT) were drawn from previous studies. While these measures went through adequate pre-tests, pilot tests and validation processes to ensure their suitability for the present research, it might have been a better solution if these measures had undergone the same extensive empirical validation process like the PVI (e.g. card sorting, interviews, experts review, etc). Doing so might have yielded more insights into ways to enhance these measures. However, given that these measures have been used and validated in many studies (and given the time and cost limitations of the current project), it was sufficient for this study that these measures were linguistically modified, pre-tested, and pilot tested to ensure their suitability for use in this study. This judgement was supported by the factor analysis results which indicated strong convergent and discriminant validities and the Cronbach alpha scores which confirmed the reliability of these scales.

Another limitation to this research is that the quantitative data was collected from a single (cross-sectional) survey. Lagged effects are therefore impossible to assess, and causality is difficult to establish. However, a cross-sectional survey was adequate for this project because the main objective from this data collection was to obtain a general picture of whether or not the newly introduced factors (PRQ and PVI) have an impact on consumer adoption perceptions. Based on this study confirmation of the impact of these factors, future

studies can be directed to assess the lagged effects of these factors by collecting data at two or more points in time.

Finally, another limitation to this project was the small number of participants in the qualitative study. It might have enhanced the generalisability of the results to a greater extent if a larger number of mobile phone users could have been interviewed. However, the main objective of the qualitative interviews was to obtain insights that were unavailable from the large amount of data collected from the quantitative study. In other words, the qualitative study was mainly conducted as a supplementary source of data to complement, enrich and validate the results of the quantitative stage.

11.52. Further Work

There are many further research avenues that can be pursued based on the present research. First, conducting a study that considers the mobile service providers' perceptions of the various concepts (such as PRQ) examined in this study, and comparing and integrating these with the consumer perceptions reported here, would be invaluable.

In addition, this study showed that for the long-term success of m-commerce, there is a need for both theory and practice to undertake more of a processual view that considers each episode of m-commerce provision or adoption in terms of how previous episodes affect it and how it is going to affect future episodes. The examination of these backward-forward mechanisms would offer more theoretical and practical understanding.

Future research can also involve further investigation and validation of the PRQ-Spectrum model and the Usage-Maturity model to examine the extent to which they can explain the underlying mechanisms of the impact of the relationship between the consumer and the service provide on the consumer decisions to accept or reject mobile services. These two models have great potential because they provide meaningful insights into the dynamics of consumer relationships and how these might affect consumer acceptance and use of offered mobile services. These insights help firms better understand the implications of their relationship with consumers and therefore help them formulate their marketing strategies in a way that enhances the outcome of their consumer relationships in both the short and long terms.

Finally, it would be also beneficial to re-examine and validate the PVI scale in a different context other than the mobile commerce domain. This will potentially determine the extent to which this instrument can be utilised in the future. Also, re-examining the research model and hypotheses in various business-to-consumer (B2C) and business-to-business (B2B) contexts would help to assess the validity of the findings of this study and also provide new insights to other research areas of interest insights.

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Appendix A: Plain Language Statement – Questionnaire

Dear Participant,

Thank for your willingness to participate in this mobile commerce adoption survey. No prior knowledge on the topic being studied is required.

By fully and thoughtfully completing this survey, you automatically enter a draw to WIN an astonishing 8GB Apple iPodTouch music and video player worth $299! (Visit http://store.apple.com for product information). Please note that respondents with unreasonable responses to the survey will not be considered in the draw.

This survey is the main research activity in my PhD research project at the Department of Information Systems, the University of Melbourne. The aim of this survey is to understand the influence of your interaction (as a customer) with your service provider on your attitudes and intentions to accept advanced mobile services. All you have to do is to report your own views about various aspects of the study as indicated in each section of the questionnaire. This survey consists of four main sections as follows:

Section A: In this section you evaluate your relationship with your service provider across several aspects such as Trust, Commitment, Satisfaction and Conflict.

Section B: Consider an example of an incentive provided by mobile service providers to encourage customers acceptance of new mobile services, you are asked to evaluate or assess the value of this incentive across several aspects such as Price, Performance, Social value, Emotional value, and new experience (epistemic) value.

Section C: In this section you are asked to state what you think about how *easy-to-use* and how *useful* you expect the usage of the service to be to you. You will also express what important people to you will think.

Section D: In this section you express your attitudes towards the service and intentions to accept/reject the service.

Finally, you are asked to provide some information about yourself and mobile phone usage.

It has been estimated that the survey will take approximately 10-15 minutes of your time to complete. At any stage of the survey you can pause and come back later to complete it by clicking on the PAUSE button then following the displayed instructions on how to get back to finish the questionnaire.

Data collected from this survey will remain confidential. No personal identification information is required (only your email to reach you if you the lucky winner!). The demographic information that you are required to provide is only used for analysis purposes and will not be released to any other party. If you have any questions regarding this questionnaire, please contact me at:

Department of Information Systems, the University of Melbourne
Level 4, 111 Barry Street, Carlton, Victoria 3010
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This research project is under the supervision of Dr. Sherah Kurnia and Associate Professor Dr. Robert Johnston. The research has received clearance from the Human Research Ethics Committee (HREC). Should you have any concerns about the manner in which this research is conducted, please do not hesitate to contact the Human Research Ethics Committee (HREC) at the following address:

Executive Officer
Human Research Ethics
The University of Melbourne
HREC application number: 0714693.1
Ph: 8344 2073; fax 9347 6739

Thank you for your valuable contribution to this important research effort. I look forward to receiving your completed questionnaire.

Yousuf S. AlHinai
PhD Candidate
Information Systems Department, the University of Melbourne

Appendix B: Questionnaire Instrument

Section A: Customer-Service Provider Relationship Quality

In this section we are interested in the way people interact with their mobile service providers and how they evaluate and think about their relationship with the service providers. Throughout this study, if you are a customer of more than one mobile service provider, think of the ONE that you interact with or use most . Also, consider that the main Company and all its dealers and shops are regarded as one entity referred to as "service provider".

On a scale from 1 to 5 where 1 is STRONGLY DISAGREE, 5 is STRONGLY AGREE and 3 is NEUTRAL, how would you describe your level of agreement with each of the following statements:

Your trust in your mobile service provider honesty					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
My service provider is honest about their problems	○	○	○	○	○
My service provider has high integrity	○	○	○	○	○
My service provider is trustworthy	○	○	○	○	○

Your trust in your service provider benevolence (goodwill and kindness towards customers)					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
My service provider is concerned about my welfare (well-being)	○	○	○	○	○
When I discuss my problems with my service provider, I know they will respond with understanding	○	○	○	○	○
I can count on my service provider to consider how their decisions and actions affect me	○	○	○	○	○
My service provider uses opportunities that arise to profit on my expense	○	○	○	○	○

Appendix B: Questionnaire Instrument

Your commitment towards your service provider					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I feel emotionally attached to my service provider	○	○	○	○	○
I continue to deal with my service provider because I like being associated with them	○	○	○	○	○
I continue to deal with my service provider because I genuinely enjoy my relationship with them	○	○	○	○	○

Your satisfaction with your service provider					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I am happy with my service provider's performance	○	○	○	○	○
My service provider is always better than expected	○	○	○	○	○
I am very satisfied with my service provider.	○	○	○	○	○
I would recommend my service provider to people I know	○	○	○	○	○

Your conflict with your mobile service provider					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I am angry with my service provider	○	○	○	○	○
I am frustrated with my service provider	○	○	○	○	○
I am annoyed with my service provider	○	○	○	○	○

Section B: Customer's Perceived Value of the Incentive

In this section, we will consider the Bumper Pack Service (originally offered by the THREE mobile service provider www.three.com.au) as an example of an advanced mobile service. Even if you are not a customer of THREE, please assume that your own service provider also provides the Bumper Pack Service the same way THREE does.

Subscribing to the Bumper Pack Service will allow you UNLIMITED ACCESS to:

- **Sports** (news and the action on Cricket, AFL, Rugby, NRL and so much more),
- **Information** (get breaking news stories, follow the stock market, check the weather around the world or check the lottery results and much more), and
- **Entertainment** (search for movie session times at your local cinema, find out what is on TV tonight, find a restaurant or bar, get a laugh at Comedy or check your stars).

To encourage customers to subscribe to Bumper Pack Service, your service provider offers an INCENTIVE: YOU GET UNLIMITED ACCESS TO ALL THE ABOVE SERVICES FOR $5 A MONTH ONLY!

In the next section, you are asked to assess the value of this INCENTIVE (that is, how valuable you think is "paying ONLY $5 a month to get the Bumper Pack Service"?) based on how much price value, performance/quality value, social value, emotional value and epistemic (new experience) value you think accepting the INCENTIVE will give you.

On a scale from 1 to 5 where 1 is STRONGLY DISAGREE, 5 is STRONGLY AGREE and 3 is NEUTRAL, how would you describe your level of agreement with each of the following statements:

Functional Value (price or value-for-money) gained by accepting the incentive					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
The incentive saves me money	○	○	○	○	○
The incentive is worth the price I am paying for	○	○	○	○	○
The incentive gives me value-for-money	○	○	○	○	○

Functional Value (performance/quality) gained by accepting the incentive					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
Accepting this incentive allows me to use a service of high quality.	○	○	○	○	○

Accepting this incentive allows me to use a technically sound service.	○	○	○	○	○
Accepting this incentive allows me to use many good services.	○	○	○	○	○

Social value gained by accepting the incentive					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
Accepting this incentive enhances my social life.	○	○	○	○	○
Accepting this incentive improves the way I am perceived by others.	○	○	○	○	○
Accepting this incentive makes me more accepted by others.	○	○	○	○	○
Accepting this incentive gives me social approval.	○	○	○	○	○
Accepting this incentive improves my relationships with others.	○	○	○	○	○
Accepting this incentive gives me a good social image.	○	○	○	○	○

Emotional value gained by accepting the incentive					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
Accepting this incentive makes me feel satisfied.	○	○	○	○	○
Accepting this incentive makes me happy.	○	○	○	○	○
Accepting this incentive makes me feel proud of myself.	○	○	○	○	○
Accepting this incentive makes me feel smart.	○	○	○	○	○

Epistemic (new experience) value gained by accepting the incentive					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
This incentive allows me to try something new.	○	○	○	○	○
The experience that this incentive brings me is novel.	○	○	○	○	○
This incentive is not like the types of incentives I usually see.	○	○	○	○	○

This incentive fulfils my curiosity.	○	○	○	○	○
Accepting this incentive answers many questions I have.	○	○	○	○	○
I learn many new things by accepting this incentive.	○	○	○	○	○

Section C: Technology-aspects of the Bumper Pack service:

In this section, you are asked to evaluate two aspects of the Bumper Pack Service: 'how easy to use' and 'how useful' you expect this service to be. Then, you will evaluate what important people to you (family, friends, colleagues, etc) will think about you if you accept the Bumper Pack Service from your service provider.

On a scale from 1 to 5 where 1 is STRONGLY DISAGREE, 5 is STRONGLY AGREE and 3 is NEUTRAL, how would you describe your level of agreement with each of the following statements:

How easy-to-use do you expect the Bumper Pack Service to be					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I think that learning to use the service will be easy to me.	○	○	○	○	○
I think that I can easily make the service do what I want it to do.	○	○	○	○	○
I think that using the service will be clear and understandable.	○	○	○	○	○
I think the service will be flexible to interact with.	○	○	○	○	○
I think it will be easy for me to become skilful in using the service.	○	○	○	○	○
I think I will find the service easy to use.	○	○	○	○	○

How useful the Bumper Pack is to you					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I think that using the service will help me accomplish tasks faster.	○	○	○	○	○
I think that using the service will improve my performance in general.	○	○	○	○	○
I think that using the services will make me more productive.	○	○	○	○	○
I think that I will become more	○	○	○	○	○

effective by using the service.					
I think that using the service will make it easier to do things.	○	○	○	○	○
I think that using the service is useful to me in general.	○	○	○	○	○

Opinion of people important to you					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
People important to me will support my use of this service.	○	○	○	○	○
It is expected that people like me use this service.	○	○	○	○	○
People I respect expect me to use this service.	○	○	○	○	○

Section D: Attitudes and Intention towards adopting the service

In this section you, first, evaluate what you think about accepting and using the Bumper Pack Service, and then, express the extent to which you intend to accept and use this mobile service.

I think that accepting and using the Bumper Pack Service would be:				
○ 1 **Wise**	○ 2	○ 3	○ 4	○ 5 **Foolish**
○ 1 **Good**	○ 2	○ 3	○ 4	○ 5 **Bad**
○ 1 **Positive**	○ 2	○ 3	○ 4	○ 5 **Negative**
○ 1 **Beneficial**	○ 2	○ 3	○ 4	○ 5 **Unbeneficial**

Your intention to use the service					
	1 (Strongly **Disagree**)	2	3 (Neutral)	4	5 (Strongly **Agree**)
I would use the service in the future.	○	○	○	○	○
If I buy a new mobile handset, I will pay attention to the service capability of the handset.	○	○	○	○	○
If I change my current service provider, I will ensure that they offer the service.	○	○	○	○	○

Section E: Information on Mobile Phone Usage and Demographics

In this section, you provide some general information on your mobile phone usage and some demographics information. This information will only be used for analysis purposes and will be kept confidential at all stages of this research.

Mobile Phone Usage Characteristics:

Who is your service provider? (If you are a customer of more than one service provider, please consider the one that you interact or deal with most. In other words, the one that you considered when answering previous questions in this survey)

- ○ THREE
- ○ Telstra
- ○ Optus
- ○ Vodafone
- ○ Other, please specify ... [ ]

Are you a:

- ○ Prepaid customer
- ○ Contract or account customer (paying bills)

Who pays your mobile usage expenses?

- ○ I pay by myself from my own money
- ○ My Parents or partner or someone I know pays for me
- ○ My employer or boss pays for me
- ○ Other, please specify ... [ ]

How long have you been a customer of your service provider (the service provider you selected in Q1 above)?

- ○ Less than 3 months
- ○ 3 to 6 months
- ○ 6 months to 1 year
- ○ 1 to 2 years
- ○ 2 to 3 years
- ○ 3 to 5 years
- ○ More than 5 years

Are you currently (or have you ever been) a user of the services included in the Bumper Pack Service?

- ○ Yes
- ○ No
- ○ No, but I am/have been a user of a similar service (please specify the name of the mobile service and the company that provides it) [ ]

Demographic Information:

What is your age?	
○ Less than 15 years	○ 35-44 years
○ 15-19 years	○ 45-54 years
○ 20-24 years	○ 55-64 years
○ 25-34 years	○ 65 years and over

What is your gender?	
○ Male	○ Female

What is the highest level of education you have achieved so far?	
○ Pre-primary	○ Bachelor Degree
○ Primary	○ Graduate Diploma and/or graduate certificate level
○ Secondary School	○ Postgraduate Degree Level
○ Certificate Level	○ Other, please specify ... [ ]
○ Advanced Diploma	

What is your annual income?	
○ Under $24,000	○ $101,000 to $149,000
○ $25,000 to $50,000	○ $150,000 or higher
○ $51,000 to $100,000	

Please enter your email address to qualify for a draw to win an 8GB Apple iPodTouch worth $299. ** email address must be correct as winners will be contacted by email.*

I am happy to receive invitations to participate in further research related to this study (in case any needed). If I am under the age of 15, I understand that consent from my parents will be required.

○ Yes

○ No

Appendix C: Date Analysis Codebook for Questionnaire

Full variable/scale name	SPSS variable name	Coding procedure
Perceived Relationship Quality Scale:		
Trust in SP honesty	TRUSTH1 to TRUSTH3	1=strongly disagree, 5=strongly agree
Trust in SP benevolence	TRUSTB1 to TRUSTB4	1=strongly disagree, 5=strongly agree
Affective commitment	ACOMIT1 to ACOMIT3	1=strongly disagree, 5=strongly agree
Satisfaction	SAT1 to SAT4	1=strongly disagree, 5=strongly agree
Affective conflict	ACONF1 to ACONF3	1=strongly disagree, 5=strongly agree
Perceived Incentive Value Scale:		
Functional value (Price)	VPRICE1 to VPRICE3	1=strongly disagree, 5=strongly agree
Functional value (Quality)	VPERF1 to VPERF3	1=strongly disagree, 5=strongly agree
Social value	VSOCIAL1 to VSOCIAL6	1=strongly disagree, 5=strongly agree
Emotional value	VEMO1 to VEMO4	1=strongly disagree, 5=strongly agree
Epistemic value	VEPIST1 to VEPIST6	1=strongly disagree, 5=strongly agree
Ease of Use	EASE1 to EASE6	1=strongly disagree, 5=strongly agree
Usefulness	USEFUL1 to USEFUL6	1=strongly disagree, 5=strongly agree
Subjective norm	SNORM1 to SNORM3	1=strongly disagree, 5=strongly agree

Appendix C: Date Analysis Codebook for Questionnaire

Attitude towards the service		
Wise/Foolish?	ATTWISE	1= foolish, 5= wise
Good/Bad?	ATTGOOD	1= bad, 5= good
Positive/Negative?	ATTPOSTV	1= negative, 5= positive
Beneficial/Unbeneficial?	ATTBENEF	1= unbeneficial, 5= beneficial
Intention to adopt and use the service scale:	INT1 to INT3	1=strongly disagree, 5=strongly agree
Usage Information:		
Who is your service provider?	SP	1=THREE, 2=Telstra, 3=Optus, 4=Vodafone, 5=Virgin, 6=other (AAET, Telecom, BOOST, Southern Cross Telco, Dodo, Soul, TadAust, M8 Telecom, SIMPlus, voicetalk, iiNet
Are you a prepaid or contract customer?	ACCT_TYPE	1=prepaid, 2=contract
Who pays your mobile usage expenses?	WHO_PAYS	1=self, 2=someone I know, 3=employer, 4=shared
Relationship age	REL_AGE	1=less than 3 months, 2=3 to 6 months, 3=6 months to 1 year, 4=1 to 2 years, 5=2 to 3 years, 6=3 to 5 years, 7=more than 5 years
Do you currently use (or have ever used) the service/similar service?	USER_NOT	1=yes/yes of similar mobile service (Optus 3G, Telstra Next G, Vodafone Live), 2=no
Demographic Information:		
Age	AGE	1=15-19 years, 2=20-24 years, 3=25-34 years, 4=35-44 years, 5=45-54 years, 6=55-64 years, 7=65 years and over, 8=no answer
Gender	GENDER	1=male, 2=female
Highest level of education	EDU	1=pre-primary, 2=primary, 3=secondary school, 4=certificate level, 5=advanced diploma, 6=bachelor degree, 7=graduate diploma and/or graduate certificate level, 8=postgraduate degree level
Annual income	INCOME	1=Under $24,000, 2=$25,000 to $50,000, 3=$51,000 to $100,000, 4=$101,000 to $149,000, 5=$150,000 or higher

Appendix D:Total Scores Document for Questionnaire

Full variable name	SPSS variable name	Coding procedure
Total Trust in SP Honesty	Honesty	Add all scores TRUSTH1 to TRUSTH3 Total range: 3 to 15
Total Trust in SP Benevolence	Benev	Reverse item TRUSTB4 Add all scores TRUSTB1 to TRUSTB4 Total range: 4 to 20
Total Affective Commitment	AffectCommit	Add all scores ACOMIT1 to ACOMIT3 Total range: 3 to 15
Total Satisfaction	Satisfaction	Add all scores SAT1 to SAT4 Total range: 4 to 20
Total Affective Conflict	AffectConflict	Reverse items ACONF1 to ACONF3 Add all scores ACONF1 to ACONF3 Total range: 3 to 15
Total Perceived Relationship Quality*	PRQ	Add all scores of all 17 items in the Relationship Quality scale
Total Functional value (price)	FunctionalValuePrice	Add all scores VPRICE1 to VPRICE3 Total range: 3 to 15
Total Functional value (quality)	FunctionalValueQual	Add all scores VPERF1 to VPERF3 Total range: 3 to 15
Social value scale	SocialValue	Add all scores VSOCIAL1 to VSOCIAL6 Total range: 6 to 30
Total Emotional value scale	EmotionalValue	Add all scores VEMO1 to VEMO4 Total range: 4 to 20
Total Epistemic value scale	EpistemicValue	Add all scores VEPIST1 to VEPIST6 Total range: 6 to 30
Total Perceived Incentive Value*	PVI	Add all scores of all items in the Perceived Incentive Value scale
Total Perceived Ease of use*	PEOU	Add all scores EASE1 to EASE6 Total range: 6 to 30
Total Usefulness*	PU	Add all scores USEFUL1 to USEFUL6 Total range: 6 to 30
Total Subjective norm*	SN	Add all scores SNORM1 to SNORM3 Total range: 3 to 15

Appendix D: Total Scores Document for Questionnaire

Total Attitude toward service*	ATT	Add all scores ATTWISE, ATTGOOD, ATTPOSTV and ATTBENEF Total range: 4 to 20
Total Intention to adopt and use the service*	INT	Add all scores INT1 to INT3 Total range: 3 to 15
*these items represent constructs in the research model. Other items (not in bold) represent dimensions of these items.		

Appendix E: Plain Language Statement – Interviews

Dear Participant,

Thank for your willingness to participate in this mobile commerce adoption survey. No prior knowledge on the topic being studied is required.

This interview is part of my PhD research project at the Department of Information Systems, the University of Melbourne. The aim of this survey is to understand the influence of your interaction (as a customer) with your mobile service provider on your attitudes and intentions to accept advanced mobile services. All you have to do is to report your own views about various aspects of the study. This interview consists of four main objectives as follows:

1. To evaluate your relationship with your service provider across several aspects such as Trust, Commitment, Satisfaction and Conflict.
2. To consider an example of an incentive provided by mobile service providers to encourage customers' acceptance of new mobile services, you are asked to evaluate or assess the value of this incentive across several aspects such as Price, Performance, Social value, Emotional value, and new experience (epistemic) value.
3. To learn from what you think about how *easy-to-use* and how *useful* you expect the usage of the service to be to you. You will also express what important people to you will think.
4. To learn from your attitudes towards the service and intentions to accept/reject the service.

The interview will take approximately one and a half hours of your time. At any stage of the interview you can stop and ask or clarify any questions or doubts you might have. The information collected will be treated as confidential and used for research purposes connected with this research project only. Access to the information will be restricted to the

principal investigators only. As required by the University, data will be held in locked cabinets in the Department of Information Systems, and destroyed using confidential waste disposal techniques after five years. Subject to the limitations of the law, no information that could lead to the identification of any individual will be disclosed in reports on the project, or to any other party.

This research project is under the supervision of Dr. Sherah Kurnia and Dr. Stephen Smith. The research has received clearance from the Human Research Ethics Committee (HREC). If you have any concerns about the conduct of this research project you can contact the Executive Officer, Human Research Ethics, The University of Melbourne, on ph: (03) 9344-7507, or fax: (03) 9347-6739. **HREC application number: 0714693.2**

Thank you for your valuable contribution to this important research effort.

Yousuf S. AlHinai
PhD Candidate
Information Systems Department, the University of Melbourne.

Appendix F: Consent Form – Interviews

PROJECT TITLE:	The Impact of Consumer-Service Provider Interaction on the Adoption of Mobile Commerce Services by Individuals
INVESTIGATORS:	Mr. Yousuf Salim AlHinai
	Dr. Kurnia, Sherah
	Dr. Stephen Smith
PARTICIPANT NAME:	_____

I agree to take part in the above research project. I have had the project explained to me, and I have read the Plain Language Statement, which I retain for my records.

I understand that any information I provide is confidential, and that, subject to the limitations of the law, no information that could lead to the identification of any individual will be disclosed in reports on the project, or to any other party.

I agree to this interview being audio-taped for later analysis. To preserve anonymity, I understand that all written work will use pseudonyms unless written permission is later obtained.

I also understand that my participation is voluntary, that I can choose not to participate, and that I can withdraw my participation and any unprocessed data previously supplied at any stage of the project.

Signature:

_____

(Participant)

Date:

_____

Appendix G: Interview Questions (Guideline)

Introduction:

- Introduce myself, the research idea, objectives, and the research model
- Stress confidentiality policy and ask for permission to record the interview and take notes.

Participant Profile:

- Demographics:
    - Gender: Male / Female, Age: _____
- Mobile Usage Characteristics:
    - Mobile Service Provider:_____,
    - Relationship Age: _____,
    - Account Type: Prepaid / Contract
    - Prior Experience with MC: Yes / No
- General Question: Mobile services content are usually provided by third parties through the mobile service providers such as Three, Telstra, Optus or Vodafone. If you come across a new advanced mobile service offer, who do you consider as the provider of this service to you: the content provider or the mobile service provider? Why? Any example? (For this question, I can use some printed examples of service offers ads, if needed)

Perceived Relationship Quality (I define PRQ to the participant):

- General Questions:
    - What are the sources of the information that help you evaluate your relationship quality with your own service provider?
    - How do you form a perception (expectation) of how your relationship with a certain mobile service provider would be before you join them?

Appendix G: Interview Questions (Guideline)

- Trust in service provider honesty:
    - Do you trust your mobile service provider? (e.g. is the company honest?)
    - Can you give an example of why you do/don't trust your service provider?
    - How does this affect the long-term relationship with your service provider?

- Trust in Benevolence: goodwill and kindness towards customers
    - Do you think your service provider is concerned about your welfare as a customer?
    - How does this affect the long-term relationship with your service provider?

- Commitment
    - Have you considered switching to another service provider? Why / why not?
    - Do you like being associated with them? Why?
    - How does your commitment relate/add to your overall perception of the relationship?

- Satisfaction
    - Are you satisfied with your service provider? (e.g. would you recommend them to others, are you happy with their performance, do they usually live up or exceed your expectations?)
    - How does this affect the long-term relationship with your mobile service provider?
- Conflict
    - Have you ever felt angry, frustrated, and or annoyed with your service provider?
    - How does this affect your long term relationship?

Appendix G: Interview Questions (Guideline)

Effect of PRQ on ATT and INT (I define ATT and INT to the participant):

- ATT:
    - Do you currently use any advanced (other than voice, SMS and MMS) mobile services?
    - Generally, what is your attitude towards advanced mobile services? Why?
    - Do you think it is (wise, good, positive, beneficial) idea to use such services? Why / why not? Can you illustrate?
    - How do you from your attitude (what information sources do u usually depend on)?

- PRQ>ATT:
    - When you from your attitude towards a new service, do you consider the provider of the service? How does this affect your attitude? Please give examples
    - If your mobile service provider offers a new service, how does your relationship quality with your mobile service provider affect your Attitude towards this new service? How and why? Please give examples.

- INT:
    - If you are currently a user of mobile services, will you use these services in future?
    - If you are not a current use of mobile services, do you intend to use advanced mobile services in the future? Why / why not?
    - How do you from your Intention (what information sources do u usually depend on)?

- PRQ>INT:
    - When you from your Intention towards using a new service, do you consider the provider of the service? How does this affect your attitude? Please give examples

- If your MSP offers a new service, how does your relationship quality with your MSP affect your Intention to accept and use this new service? Please give examples.

Perceived Value of the Incentive (I define PVI and the four types of values to the participant, and use the Bumper Pack Service as an example)

- General Questions:
  - What are the sources of the information (for example media) that help you evaluate a certain adoption incentive?

- Functional value (price)
  - How would accepting such an incentive give you economic value? Give examples?
  - How does (how important is) price value (relate/add) to your overall value perception of the incentive?

- Functional value (quality)
  - How would accepting such an incentive give you quality? Give examples?
  - How does (how important is) quality of the incentive (relate/add) to your overall value perception of the incentive?

- Social value
  - What social benefits might you get from signing up to a service provider or a new mobile service? For example, Do you think accepting such an incentive can enhance your social life, how you are perceived by others, or your social image?
  - How does (how important is) social value (relate) to your overall value perception of the incentive?

- Emotional value
  - Is there any emotional benefit to signing up to a new service (e.g. feel satisfied or proud)?
  - How does (how important is) emotional value (relate) to your overall value perception of the incentive?

- Epistemic value
    - Would signing up to a new service allow you to try something new, or provide a novel experience?
    - How does (how important is) epistemic value (relate) to your overall value perception of the incentive?

Effect of PVI on ATT and INT and effect of PRQ on PVI:

- PVI>ATT:
    - Do you think that your evaluation of the incentive can affect your attitude toward the service? How? Give examples

- PVI>INT:
    - Do you think that your evaluation of the incentive can affect your Intention to adopt the service? How? Give examples

- PRQ-PVI:
    - If your MSP offers an incentive to encourage you to accept a new service, how does your relationship quality with your MSP affect your value perception of the incentive? Please give examples.
    - How does your relationship quality with the service provider affect your evaluation of each aspect of the incentive value (price, quality, emotional, social, and epistemic)? Give examples.

Effects of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU):

- PEOU and PU > ATT and INT:
    - If there are new mobile services offered, how does usefulness and ease of use affect your attitudes towards the service? Give Example?
    - If there are new mobile services offered, how does usefulness and ease of use affect your intention towards the service? Give Example?

Appendix G: Interview Questions (Guideline)

Effect of Subjective Norm (SN)

- General questions:
    - If people you respect expect you to use mc service, will you use it?
    - If you see that people like you (same age, same gender, same job etc), use a certain service, how is that going to affect your attitude and intention to use the services?

- SN>ATT
    - How does the opinion of important people to you (family, friends, colleagues etc) affect you attitude towards new mobile services? Give example?

- SN>INT
    - How does the opinion of important people to you (family, friends, colleagues etc) affect you Intention to accept new mobile services? Give example?

Appendix H: List of Publications

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