

MEASURING SERVICE QUALITY IN M-COMMERCE CON-  
TEXT: THE CASE OF ARAB OPEN UNIVERSITY, JORDAN

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ARAB OPEN UNIVERSITY, JORDAN

BY

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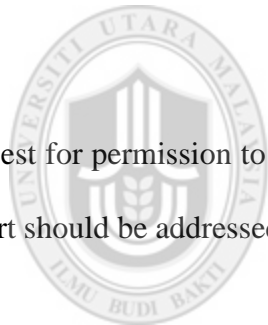
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## ABSTRACT

This study explores the impact of service quality dimensions (website design, reliability, responsiveness, trust, personalization, perceived risk and perceived cognitive control), information quality dimensions (content usefulness and content adequacy) and system - quality dimensions (ease of use, accessibility, interactivity and perceived website innovativeness) on overall perceived service quality, customer satisfaction and behavioral intention. Based on existing literature, a conceptual model was developed. The SERVQUAL model and the Information system theories were used to explicate the relationship among the variables in the conceptual model. Using a survey research design, a sample of 618 university students and staff was drawn through simple random sampling. Combinations of inferential and descriptive statistics were performed assisted by the Statistical Package for Social Science (SPSS) and Partial Least Square (PLS). The outcomes of this study show that responsiveness, content usefulness, content adequacy, ease of use, interactivity, and perceived website innovativeness have significant positive relationships with overall service quality. However, website design, reliability, trust, personalization and perceived risk do not have significant relationships with overall service quality. Similarly, and as expected, overall service quality significantly influences satisfaction while satisfaction positively influences the behavioral intention of mobile commerce customers in Jordan. As for policy and managerial recommendations, it is important that managers lay more emphasis on those factors that can make customers perceive the website of m-commerce to be of high quality as this will eventually affect their satisfaction and future behavioral intentions. Similarly, m-commerce service policy- makers should come up with policies that will enhance the nature of services being rendered, and that will bring greater benefits to the customers. Additionally, the policy-makers should endeavour to position m-commerce in the minds of customers in such a way that it will bring about the intention to repeat patronage in the future. Finally, directions for future research are discussed.

**Keywords:** m-commerce, mobile service quality, SERVQUAL, Information Success Model.

## ABSTRAK

Kajian ini meneliti impak dimensi kualiti perkhidmatan (reka bentuk laman sesawang, kebolehpercayaan, tindak balas, kepercayaan, personalisasi, risiko yang dilihat, dan persepsi kawalan kognitif), dimensi kualiti maklumat (kebergunaan kandungan dan kecukupan kandungan), dan dimensi kualiti sistem (kemudahan penggunaan, kebolehan mengakses, keinteraktifan, dan daya pembaharuan laman sesawang yang dilihat) terhadap kualiti perkhidmatan yang dilihat secara keseluruhan, kepuasan pelanggan dan niat tingkah laku. Satu model konsep telah dibina berlandaskan kosa ilmu sedia ada. Model SERVQUAL dan teori sistem maklumat telah digunakan untuk menghuraikan perkaitan yang wujud antara pemboleh ubah dalam model konsep tersebut. Dengan menggunakan kaedah kajian tinjauan, sampel kajian seramai 618 orang pelajar dan kakitangan universiti telah diperolehi menerusi persampelan rawak mudah. Gabungan statistik inferens dan deskriptif telah dikendalikan berbantuan perisian Statistical Package for the Social Sciences (SPSS) dan Smart Partial Least Square (PLS). Hasil analisis menunjukkan bahawa tindak balas, kebergunaan kandungan, kecukupan kandungan, kemudahan penggunaan, keinteraktifan, serta daya pembaharuan laman sesawang yang dilihat mempunyai hubungan positif yang signifikan dengan kualiti perkhidmatan secara keseluruhan. Walau bagaimanapun, reka bentuk laman sesawang, kebolehpercayaan, kepercayaan, personalisasi, dan risiko yang dilihat tidak memperlihatkan hubungan yang signifikan terhadap kualiti perkhidmatan secara keseluruhan. Seperti yang dijangka, kualiti perkhidmatan secara keseluruhan mempengaruhi kepuasan pelanggan secara signifikan, dan seterusnya mempengaruhi secara positif niat tingkah laku pelanggan perdagangan bergerak (m-dagang) di negara Jordan. Sebagai cadangan kajian dari segi dasar dan kepenggunaan, penting untuk pengurus memberi tumpuan terhadap faktor-faktor yang boleh menyebabkan pelanggan melihat laman sesawang m-dagang sebagai laman yang berkualiti tinggi. Hal ini penting kerana ia memberi kesan kepada kepuasan dan niat tingkah laku pelanggan. Di samping itu, penggubal dasar polisi perkhidmatan m-dagang perlu merangka dasar yang boleh menambah tingkat kualiti perkhidmatan sedia ada agar pelanggan dapat menikmati lebih banyak faedah. Selain itu, penggubal dasar juga harus merancang strategi untuk mengukuhkan kedudukan m-dagang dalam minda pelanggan supaya pelanggan terus mengekalkan niat penggunaan pada masa hadapan. Unjuran untuk kajian masa hadapan turut dikemukakan dalam kajian ini.

**Kata kunci:** m-dagang, kualiti perkhidmatan bergerak, SERVQUAL, Model Kejayaan Maklumat.

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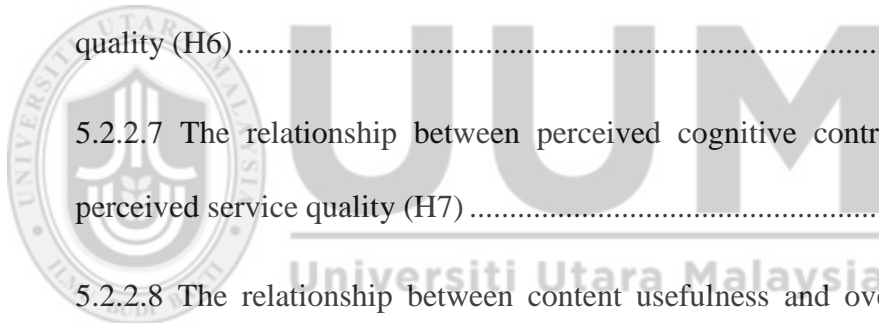
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## LIST OF ABBREVIATIONS

ACC	Accessibility
AOU	Arab Open University
AVE	Average Variance Extracted
BI	Behavioral Intention
B2B	Business to Business
B2C	Business to Consumer
B2G	Business to Government
B2G	Business to Government
CA	Content Adequacy
C2B	Consumer to Business
C2C	Consumer to Consumer
CR	Composite Reliability
CS	Customer Satisfaction
CUF	Content Usefulness
DSL	Digital Subscriber Line
E-Commerce	Electronic Commerce
EOU	Ease of Use
E-SQ	Electronic Service Quality
GoF	Goodness of Fit
ICT	Information and Communications Technology
INTA	Interactivity
IS	Information System
ISO	International Organization for Standardization
ISS	Information Systems Success Model
IT	Information Technology
M-Commerce	Mobile Commerce
N	Population Size
NS	Number of Sample
NSP	Number of Students and Employees
OVSQ	Overall Perceived Service Quality
PCC	Perceived Cognitive Control



REL	Reliability
PERS	Personalization
RESP	Responsiveness
PLS	Partial Least Squares
PR	Perceived Risk
PWIN	Perceived Website Innovativeness
S	Sample Size
SAE	Search Aggregation Engine
SD	Standard Deviation
SE	Standard Error
SEM	Structural Equation Modeling
SERVQUAL	SERVQUALmodel
SPSS	Statistical Package for Social Science
SQ	Service Quality
T	Total of the Students and Employees in All Faculties
T-Commerce	Traditional Commerce
TRST	Trust
WAP	Wireless Application Protocol
WEB	Website Design
WI-FI	Wireless Fidelity



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# CHAPTER ONE

## INTRODUCTION

### 1.0 Background of the Study

Information Technology (IT) has brought about many changes in the world today; including in industrial and service sectors. Most businesses nowadays depend on IT to manage their operations. IT is used for the development of products, improving machinery, as well as automation and other processes involved in production (Ombati, Magutu, Nyamwange, & Nyaoga, 2010). With IT, it is easier and quicker to access the consumer and deliver what the consumer has ordered for or meet their needs (Alfawaer, Awni, & Al-Zoubi, 2011). The advantage of IT is that it allows us to conduct our work in novel, more efficient and effective ways, not possible in the past (Klopfer, Osterweil, Groff, & Haas, 2009).

Closely related to IT, is the role of the Internet, which is evolving very rapidly. Many commercial activities, like sale of goods and services, are now conducted via the internet. This is called Electronic commerce (e-commerce). This act of online business is becoming increasingly possible with the evolution of mobile devices. Some of these devices support e-commerce specifically, although such devices are now becoming more and more intelligent. The integration of these devices in daily activities can enhance and promote a company's goods and services, and increase its revenue, through the exchange of information, services or goods with those who need it, i.e., the customers.

Development of time and location-bound commerce can be divided into three stages. The first stage is a traditional formal commerce, in which customers and vendors have to go to the shop themselves, where a one-on-one interaction takes place among the customers and the vendors. In the second stage, that is e-commerce, various media, like text, audio, video, and hypertext are used. The third stage is known as Mobile commerce (m-commerce), where business is conducted, using modern devices, such as Palm Pocket, Personal Computer (PC), Personal Digital Assistant (PDA), two-way pagers and Cellular Phones.

Of late, both vendors and consumers are now able to enjoy the benefits that accrue with using wired technology. However, the limitation of wired technology is the lack of mobility, meaning that customers cannot enjoy the luxury of access at anytime and from anywhere; wireless technologies however, has this advantage. Mobile technologies are not necessary to increase mobility; however they could reduce the consumers' need of travelling about (Mallat, Rossi, Tuunainen, & Oorni, 2009).

M-commerce studies can be categorized into two: technology and services. Studies on technology cover issues like: (i) small screens and multifunctional keypads; (ii) reduced power of computation, capacity of the memory and disk; (iii) battery life of a shorter period; (iv) complicated mechanisms for text input; (v) data storage and transaction errors are of higher risk; (vi) the display resolution is lower; (vii) less surfability; (viii) interfaces that are users' unfriendly; (ix) unreliable network connections; and (x) graphical limi-

tations (Lu & Su, 2009; Siau, Lim, & Shen, 2001). Meanwhile studies in m-commerce services mostly focus on providing customers and users access to purchases on websites, including electronic tickets for flights, and other modes of transportation, bank services, peer-to-peer payments, and parking fees payment, which are among the potential applications (Anckar & D'Incau, 2002; Herzberg, 2003; Kim, Mirusmonov & Lee, 2010; Mallat, Rossi, Tuunainen, & Öörni, 2009; Masterson, & Wei, 2005; Stafford & Gillenson, 2003). It is expected that customers' satisfaction about m-commerce services can be achieved through providing a high quality service. Since there seems to be a lack of studies in the m-commerce area, the researcher is motivated to find out what are the factors that enable a high quality m-commerce service in the commercial environment.

### **1.1 Problem Statement**

Most devices, for example, phones and computers, can now be carried around by people in their pockets. This facilitates communication from wherever they are. It would be interesting to study the features offered by mobile devices for commercial purposes. As mentioned earlier, m-commerce is one of the features of mobile devices (Dholakia & Dholakia, 2004), since mobile networks allow real-time transactions, from anywhere and at anytime (Olla, Patel, & Atkinson, 2003). Consumers can quickly find out about a company's resources and services, from anywhere and whenever they want (Suki, 2011). In e-commerce, the minimum hardware required is a PC, which cannot exist everywhere and everytime; there is no independence from location. This independence is still not fulfilled with the use of a notebook, because a real independency in terms of

time and location, means doing commercial transactions, wherever and whenever a customer wants to have access and to buy some products. Based on the above argument, m-commerce offers a real independence, in terms of time and location. Thus, it is becoming more and more evident that e-commerce has failed to achieve mass adoption; for many businesses, m-commerce is becoming the norm (Prabhaker, 2000). The buzzword now is m-commerce (Sadi & Noordin, 2011). With this fast evolving trend, users of mobile devices are being looked upon as a large group of potential customers (Aungst & Wilson, 2005).

The use of mobile phones in everyday life has increased exponentially. According to the International Telecommunications Union (ITU, 2013), mobile subscriptions in the United States of America (USA) totals 1084 million, in the European Union (EU) 790 million, and in Africa 545 million, at the end of 2013. In other words, the average mobile penetration rate for the USA is 109.4%, EU 126.5% and Africa 63.5%. The number of mobile subscriptions in the Middle East was more than 250-million users in 2012; this figure exceeded 271.27 million by 2012 year end, and is expected to rise to 352 million by the end of 2016 (ITU, 2013). Therefore, the average mobile penetration rate for the Middle East will exceed the 100% mark in 2013: By the end of 2013, is expected to rise from 97.7% in 2011 to 107.09% (ITU, 2013). In Jordan, mobile subscribers make up 112% of the country's population of six million. It can be emphasized that over half the planet's population have mobiles at hand most of the time. In Jordan, mobile phones play a more important role than the internet (Alfawaer *et al.*, 2011). In spite of increasing

mobile subscriptions, the users of mobile phones for m-commerce is, however, still very low. For example, in the USA and Europe, it is 7% percent (Abdelkarim & Nasereddin, 2010; de Meijer & Bye, 2011). Despite its low usage, the popularity of mobile phones has potential to accelerate m-commerce. Many organizations are now investing enormous amounts of money on these technologies (Kim, Mirusmonov, & Lee, 2010; Wang & Liao, 2007). Moreover, there are a lot of advantages provided by m-commerce, for example, color-display screens, video streaming, Internet browsers and compatibility with desktop applications, which make m-commerce possible and practical. According to Sadi and Noordin (2011), m-commerce is definitely taking over the technological era. Mobile device prices are declining and its functions are constantly being improved – these will definitely assist in m-commerce development.

M-commerce transactions can be categorized into five types (Veijalainen, Terziyan & Tirri, 2006) as follows:

- a) Internet e-commerce;
- b) location-based services;
- c) ticketing applications;
- d) retail shopping; and
- e) banking.

Mobile technologies, like GPRS, WAP and 3G, have enabled the use of the above applications (Karim, Darus & Hussin, 2006; Goi, & Ng, 2011). In addition, the growing

number of mobile device users, is resulting in increased usage of m-commerce. In addition to these features: reachability, identification, accessibility, and localization are available on e-commerce (Junglas & Watson, 2003), m-commerce offers portability also (Ktoridou, Epaminonda, & Kaufmann, 2008; Junglas & Watson, 2003) and ubiquity (Ktoridou, et al. 2008; Lyytinen & Yoo, 2002). The main difference between e-commerce and m-commerce is the interface (small versus large screen) of the mobile device. Tiwari and Buse (2007) emphasized that: m-commerce is actually a sub-set of m-business. This is because m-businesses includes the commercial and the non-commercial areas.

As evidenced by several studies, m-commerce is still in its infancy. It is a relatively new phenomenon in many markets around the world, such as the USA, Europe, Japan; also the Asia Pacific countries, like Singapore, India, Bangladesh, Malaysia, Africa, and the Middle East (Euromonitor, 2011; Johnson & Wannemacher, 2011; Yap, 2011; Islam, Ahmad, Khan, & Ali, 2010; Goi, & Ng, 2011; Sadi, & Nordin, 2011; Wei, Marthandan, Chong, Ooi & Arumugam, 2009). This is probably due to several barriers for m-commerce (E-paymentsMerchantInitiative (2011); Euromonitor (2011); Jahanshahi, Mirzaie, & Asadollahi (2011); Goi & Ng (2011), as follows:

- a) consumers are concerned with privacy in using the mobile device for transactions;

- b) consumers are still not confident in using mobile devices to make payment. Since some personal data must be provided to enable the goods and services to be delivered, consumers feel reluctant to engage in on-line transactions;
- c) consumers do not trust the web merchant; and
- d) security is also a concern for consumers.

In the Jordanian context, m-commerce, as elsewhere, is still in its early stages (Abdelkarim & Nasereddin, 2010; Alfawaer *et al.*, 2011). As mentioned above, Abdelkarim & Nasereddin, (2010); and Alfawaer *et al.*, (2011), also agreed that people may fear using mobile devices, to make purchases, as they think any mistake or error could result in their losing their money. Literature also shows that in Jordan, there is a problem of mobile devices usage, due to lack of experience on how to conduct commerce using mobile phones among organizations and individuals. Besides users with lack of skills and experience that are necessary, policies of the government, regulations and laws on wireless device usage that are protecting the users are still inadequate.

Another important aspect in m-commerce, just like in all other service sectors, is service quality (Lu, Zhang & Wang, 2009; Turel & Serenko 2006). This is because quality services can fulfill customers' needs and wants (Dedeke, 2003). Service quality can impact a customer's behavioral intention and eventually, intention to purchase, making it vital for successful business competition, both for the provider of the service or manufactur-



ers (Zeithaml *et al.*, 1996; Bolton & Drew, 1991; Parasurman *et al.*, 1988, 1991; Parasurman *et al.*, 1994).

For the Information and Communications Technology (ICT) service-quality field, researchers have suggested five dimensions for measuring quality as follows:

- a) tangibles, encompassing facilities, equipment and personnel appearance;
- b) reliability – the service must be able to deliver what it promises, accurately;
- c) responsiveness, measured by the willingness to help end-users promptly;
- d) assurance, referring to the employees' knowledge and politeness and also their ability in gaining the confidence and trust of customers; and
- e) empathy -individual attention and care given to end-users by the service provider (Jiang *et al.*, 2000; Pitt *et al.*, 1995; Berry *et al.*, 1994; Kettinger & Lee, 2007).

Previous research on ICT service quality can help in the understanding of m-commerce service quality. The mobile device is not merely a communication tool but has increasingly become a tool for online commerce. Hence, it is crucial that the service providers understand the consumers' perception of m-commerce quality and undertake measures to ensure continued provision of service quality for m-commerce users (Lu, Zhang & Wang, 2009). There is scant research in the area of m-commerce service quality; there is therefore, an increasing need to focus on the factors that can ensure service quality of m-commerce (Lu, Zhang & Wang, 2009; Turel & Serenko 2006; Özer, Argan & Argan, 2013). In addition, the researchers said that there is also a cause to explore service quali-

ty, customer satisfaction, and customer behavioral intentions and their inter-relationship in using m-commerce services in future (Lu, Zhang & Wang, 2009; Turel & Serenko 2006; Özer, Argan & Argan, 2013). Such a study would benefit vendors, providers, and researchers in services technology in their attempts to measure customers' satisfaction and to understand its underlying dimensions. It will also enable service providers to benchmark their performance and identify areas that require improvement to ensure continuous usage of the available m-commerce services.

## **1.2 Research Questions**

This research attempts to address the following research questions:

- 1) What are the current customers' perceptions toward m-commerce services?
- 2) What are the factors contributing positively towards service quality of m-commerce?
- 3) What are the most important factors that determine customers' perception toward m-commerce services?
- 4) Is there a relationship between customers' perception of service quality, their satisfaction, and behavioral intention on the use of m-commerce services in the future.

### **1.3 Research Objectives**

By answering the research questions above, this research hopes to achieve the objective of developing and proposing a service quality model for m-commerce. Therefore, the sub-objectives of this research are to:

- 1) To identify the current customers' perceptions toward m-commerce services;
- 2) To identify the factors which positively affect m-commerce service quality;
- 3) To identify the most important factors that determine customers' perception toward m-commerce service quality; and
- 4) To explore the relationship between service quality, customers' satisfaction, and customers' behavioral intention on the use of m-commerce services in the future.

### **1.4 Significance of Study**

In the contemporary, people's daily activities are majorly influenced by the high level of speed and proliferation of information technology. Importantly, mobile technology in particular has the capacity to extend commercial based activities beyond the traditional markets to a limitless and anywhere anytime interaction with business organizations. Therefore, this study sheds light on the strengths and benefits which companies, organizations and other stakeholders can derive from m-commerce service quality.

In addition, this research helps in creating new knowledge, awareness and benefits that can be derived from using mobile transaction especially among customers and vendors. Creating such awareness will help to foster a better understanding and practices of m-

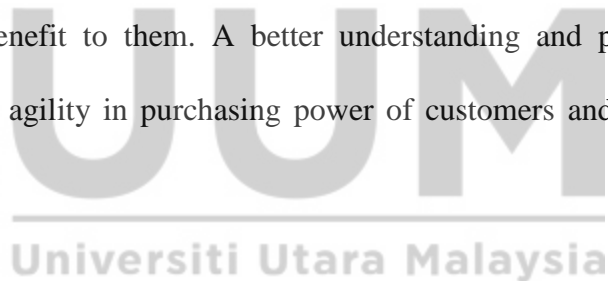
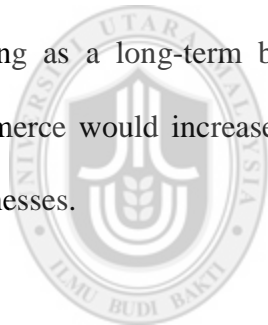
commerce and would help in increasing the agility in power of purchasing of the customers and organizations business efficiency.

Furthermore, as part of the significance of this study, it tends to incorporate the importance of m-commerce into the sales activities of organization especially in this highly competitive and challenging marketing environment. For instance, a large number of organizations in this technological driven era still depend on traditional methods of selling goods and services to their customers. This traditional pattern of selling requires creative solution in order to overcome the problems and challenges that are inherent in it. Therefore, this study seeks better ways and means through which all customers can have access to mobile, wireless and interactive technology at a cheaper cost. Such efforts will bring tremendous improvement to business performance as well as helping them to meet the needs of customers effectively so as to reach out to a larger number of people across border.

The m-commerce service quality is capable of bridging the gap between the customers and their service providers. Since the advent of m-commerce, it has helped business organizations to provide time and boundary less access, it therefore becoming effective and easier for both parties to interact with each other. Additionally, the realm of m-commerce is allowing a greater level of flexibility in service delivery and fair pricing. Such flexibility is also reflected in the form of lesser queue at shopping malls and other markets through ease of transactions handling and which spans through e ticket, schools

fees payment and so forth from the comfort of their offices or homes. Mobile commerce has also reduced the need to carry cash or travel cards about. Nowadays, speed of information all over the world has become the basis of people's daily life. To reiterate, mobile technology can extend commercial transactions beyond the walls of markets, to an 'anytime anywhere' interaction with businesses. Hence, this research is expected to provide understanding of the strengths and benefits, specifically to the organizations, companies and their respective clients, about m-commerce service quality.

This study also helps to create awareness, and new knowledge regarding the importance of using mobile phones for commercial purposes among customers and vendors, hence serving as a long-term benefit to them. A better understanding and practice of m-commerce would increase agility in purchasing power of customers and efficiency of businesses.



In addition, this study aims to inculcate the importance of sales using m-commerce to organizations, in an ever increasing competitive and challenging environment. In today's commercial environment, for instance, a vast majority of companies depends on traditional ways to sell products and services to customers. Such effort needs creative solutions to overcome existing issues and problems. This study, therefore, hopes to elicit ways and avenues on how to make wireless, mobile, and interactive technology more accessible to all customers, and perhaps at a cheaper cost. The improvement is crucial to

assist businesses to perform better as profit companies, and be able to meet customers' needs effectively, as well as to reach out to a larger number of people across borders.

The service quality of m-commerce can bridge the communication gap between customers and businesses. As m-commerce provides customers with 'anytime, anywhere' access, it would be possible for them to interact with each other more effectively. In addition, m-commerce allows flexibility in delivering critical services to businesses. Furthermore, it allows possibilities for more flexible fares. For customers who are in a hurry, they do not need to queue at markets and shops. In other words, m-commerce can provide the comfort of handling transactions, such as purchase of airline tickets, payment of fees for universities, etc., from the comfort of their homes or offices. Mobile commerce has also reduced the need to carry cash or electronic cards all about.

In the clime of the above therefore, this study has increased the comprehension of those factors that determine service quality of commerce from the perspective of customers and vendors alike in order to ensure that behavioral intention benefits the m commerce vendors. In addition, users of m-commerce would also benefit from this research as the study has helped to shed light on how to select appropriate vendors who can provide mobile service quality that they desire. The measure will also help the management on how to develop and provide relevant strategies that can be used to support m-commerce. Consequently, the importance of this study cannot be overrated as its benefits cut across many stakeholders since it can be regarded as among the initial studies that delve into

the factors that helps to capture the interest of customers towards using of mobile phone technology for the purpose of commercial transactions.

Theoretically, this study will be adding to the existing body of knowledge with regards to Information System Model. Through new version of IS Model that is being developed, the study is also contributing a comprehensive model that can be used to investigate any set of variables and dimensions that can influence overall perceived service quality of mobile commerce.

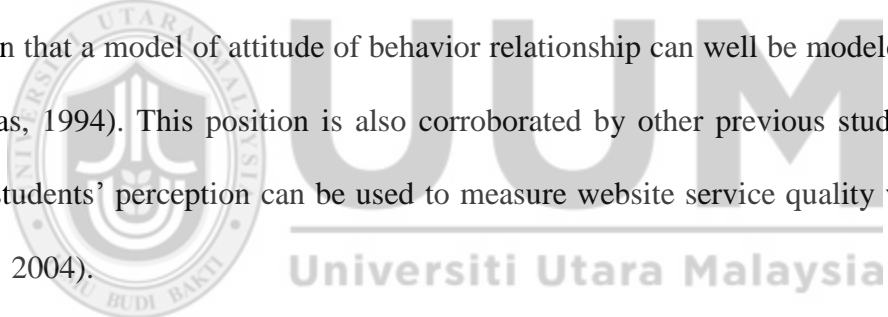
In addition to the theoretical contribution, this research is also important since it extends the SERVQUAL model which has many similarities with IS model being used to benchmark and compare several studies that have initially combined the two models.

As part of the significance of the study, this research is the first attempt that applies IS Model to mobile commerce in the Middle Eastern countries; especially in Jordan. This is applicable as studies that apply IS and SERVQUAL model to discuss mobile service quality in commercial environment like Jordan are very scarce (Lu, Zhang & Wang, 2009). Therefore, this model brings about improvement in the understanding of service quality of m-commerce especially in the context of Jordan. In this view, this research is contributing to a wide understanding of variables that can be used to predict the perception of customers concerning service quality of m-commerce.

### **1.5 Scope of Study**

The focus of this study is based on the causality relationship that exists among service quality, customer behavioral intention and customer satisfaction in using m-commerce services in future. This focus is being achieved as the study provides a theoretical framework which helps in identifying those factors that will bring about service quality in m-commerce environment.

As part of the scope of the study, the employees and students of Arab Open University (AOU) in Jordan are taken as the population of the study. Even though some criticisms have been leveled against the usage of students as respondents, some scholars have shown that a model of attitude of behavior relationship can well be modeled by students (Yavas, 1994). This position is also corroborated by other previous studies that assert that students' perception can be used to measure website service quality van (Iwaarden *et al.*, 2004).



In addition, the researcher equally selected University employees as the population of the study since they are required to operate bank accounts through which their salaries are paid. Besides, they are also make use of their mobile phones to make purchases since they have access to internet within the University premises (Al-majali & Mat, 2011).

Furthermore, employees and students have previous experience since they have been exposed to information technology and internet usage and this may have impact on the



way they perceive m-commerce service quality. As a result, this population sample was used for the data collection of the study.

## **1.6 Thesis Organization**

This study has four chapters, with the following structure:

**Chapter one** gives the study's background, problem statement, research questions, research objectives, and significance of the study. Also included are: scope of the study, and organization of the thesis.

**Chapter two** presents the review of related literature to the domain of knowledge, with explanation about of the definitions of t-commerce, e-commerce, and m-commerce services. Also included here are explanations distinguishing m-commerce from e-commerce, the merits of m-commerce services. In addition, the implication of m-commerce in many sectors, and service quality research issues (conceptualization, dimensions, and measurement) are also reviewed.

**Chapter three** presents the dimensions used in measuring the quality of e-service and states the significances of SERVQUAL model. Then, a model that fits the chosen variables as a basis of conducting empirical studies for the conceptual framework of this study is presented. A set of factors responsible for determining customer perception about m-commerce service quality followed by proposed hypotheses are also outlined.

**Chapter four** presents research design (purpose of research, study approach, unit of analysis, identifying population and sample, measurement of variables/instrumentation, and questionnaire instrument).

**Chapter five** presents the preparation of the data for analysis, preliminary analysis, descriptive statistics, research's underlying statistical assumptions, goodness of the measurement instrument, and hypothesis testing using the Partial Least Squares-Structural Equation Model (PLS-SEM).

**Chapter six** presents a summary of research findings (main indicators of findings and a discussion of hypotheses testing), completion of the research questions and objectives, research contributions (theoretical, methodological, and practical perspectives), assumptions and limitations, and recommendations for managers and future research.



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## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

There is no doubt that commerce is an important factor that can effectively boost the economy of any nation. The traditional form of commerce (t-commerce) is the shops setting, where the providers and customers interact with each other, and this is the most common form of commerce. The role of technology in this type of commerce is looked upon as a supplementary and not a primary aid to the provider of the service or vendor. In spite of the fact that the traditional shop offers an opportunity for providers and customers to interact, it is evident that not everyone has the opportunity to obtain the traditional form of commerce. Some individuals may find it difficult to go to the shop because it is too far for them; some of them may be physically handicapped and some of them may work during the day with no chance to leave their jobs to go to the shops.

These limitations urge providers to think of other alternative forms of commerce that can reach out to a larger audience. There are two forms that have been adopted, i.e., mobile commerce (m-commerce) and electronic commerce (e-commerce). These forms can offer alternative channels for obtaining regular and effective services and products. Accordingly, this chapter focuses on the relevant work that have been previously done on t-commerce and e-commerce in general, and m-commerce and service quality, in particular.

Moreover, this chapter through a broader view of empirical literatures in the area of marketing, service quality (SQ), information quality, and service quality brings the proposed conceptual model of this study to the fore. The various past measurement models of electronic service quality (e-SQ) are presented. Furthermore, this research presents a broad outline of the underlying theoretical concepts. The theoretical context of the study thus elaborate in the following sections in the chapter: the significance of SERVQUAL, current challenging issues in the e-SQ researches, foundational concept of e-SQ and the core measuring techniques for e-SQ. Also included is the explanation of a set of variables on customer perception about m-commerce SQ. Furthermore, review justifying the research questions and research hypotheses formulated is presented.

## **2.1 Traditional Commerce (T-Commerce)**

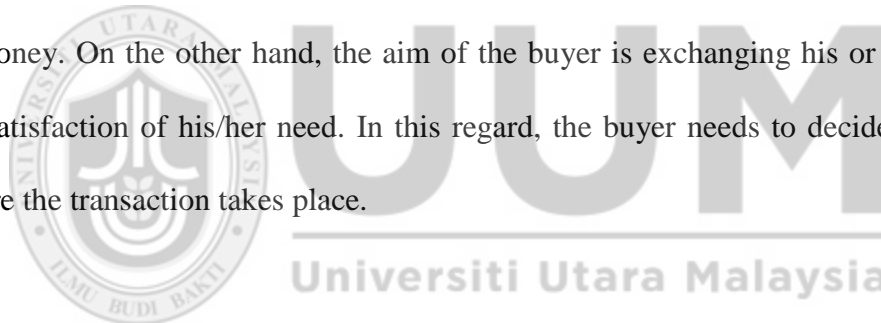
In the work of Kotler and Keller (2006), commerce is the act of exchanging something valuable between two or more entities. This can be: information, money, goods, services, etc. According to Investordictionary.com, these two entities are considered to be of distinguishable value. For an exchange to occur, one party must have received its desired product with an offer of something of relatively equal value as return.

Kotler and Keller (2006) asserted the following to be conditions for exchange:

- a) there must be a minimum of two parties;
- b) each of the parties must possess the capacity and exercise communication and delivery;

- c) each of the parties can freely accept or reject the offered exchange; and
- d) Each of the parties involved must be of mutual desire to deal with each other.

Essentially, parties involved in exchange have the function of agreeing on its terms and conditions for a successful exchange to be achieved. When these parties agree, then transaction takes place, with mutual benefits adding to the values of the parties involved: this is more beneficial than the preceding transaction (Kotler & Keller, 2006). By tradition, transactions can happen in environments of physical contact through a negotiation based on one-on-one level, with the goods or services to be evaluated. In its real sense, those who engage in the act of exchange are the buyer and seller. This is usually in terms of money. On the other hand, the aim of the buyer is exchanging his or her money for the satisfaction of his/her need. In this regard, the buyer needs to decide appropriately before the transaction takes place.



## **2.2 Electronic Commerce (E-Commerce)**

There is no consensus in defining e-commerce, however, it is defined as a process through which products and services can be bought or sold electronically. E-commerce is majorly done through the Internet, websites, email, fax, and telephone orders, being the common means of information transfer.

According to Ho (2007), e-commerce is doing business on the internet. E-commerce uses the power of digital information in understanding each of the customers' needs and

preferences. In cases whereby the products and services need to be customized for the customers, e-commerce is also of use, with the prompt delivery of products and services.

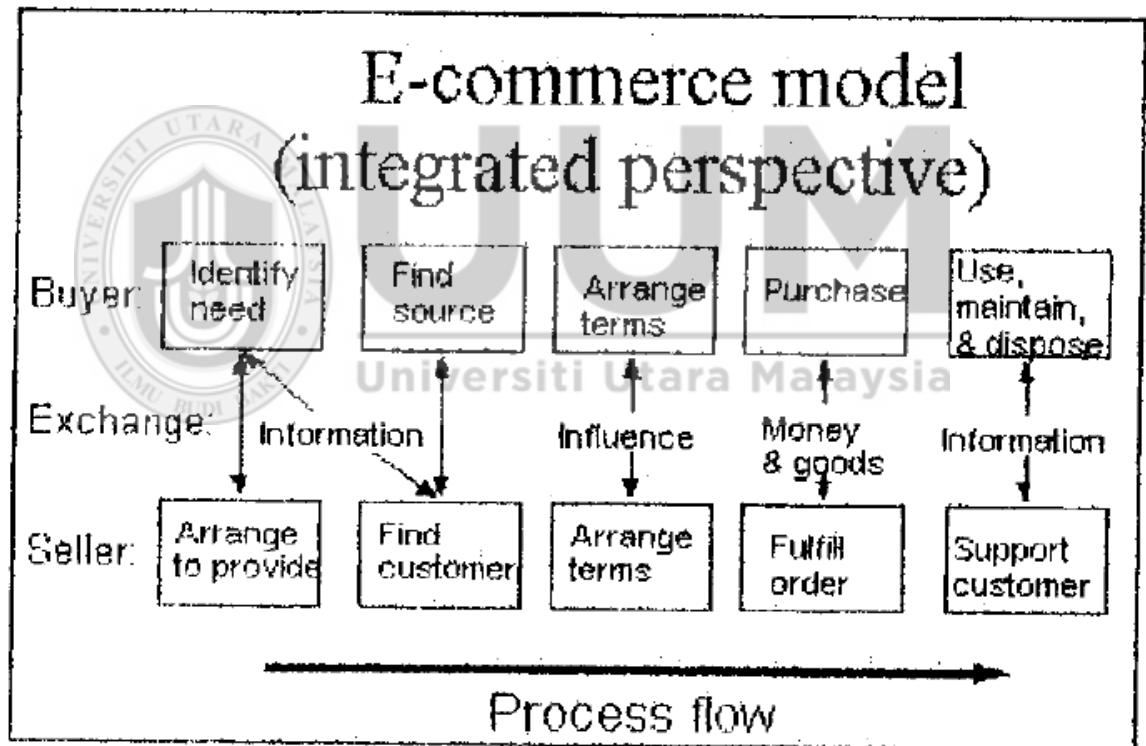
Kalakota and Whinston (1997, p.3), posited that: e-commerce can be explained through many angles. These angles are given as follows:

- a) “From a communications perspective, e-commerce is the delivery of information, products/services, or payments via telephone lines, computer networks, or any other means.
- b) From a business process perspective, e-commerce is the application of technology towards the automation of business transactions and workflows.
- c) From a service perspective, e-commerce is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service and delivery.
- d) From an online perspective, e-commerce provides the capability of buying and selling products and information on the Internet and other online services.” (Kalakota & Whinston, 1997, p.3).

For Lindberg (2000), any transaction what so ever initiated and completed through a computer-mediated network is e-commerce. He further asserts that e-commerce entails the transferring the ownership and the rights to utilize goods and services. The occur-

rence of transactions the e-business processes selected like the process of selling and the inter-party agreement are concluded between the buyer and seller. The conclusion is often a consent that transferring the ownership or rights to use the goods or services is effective.

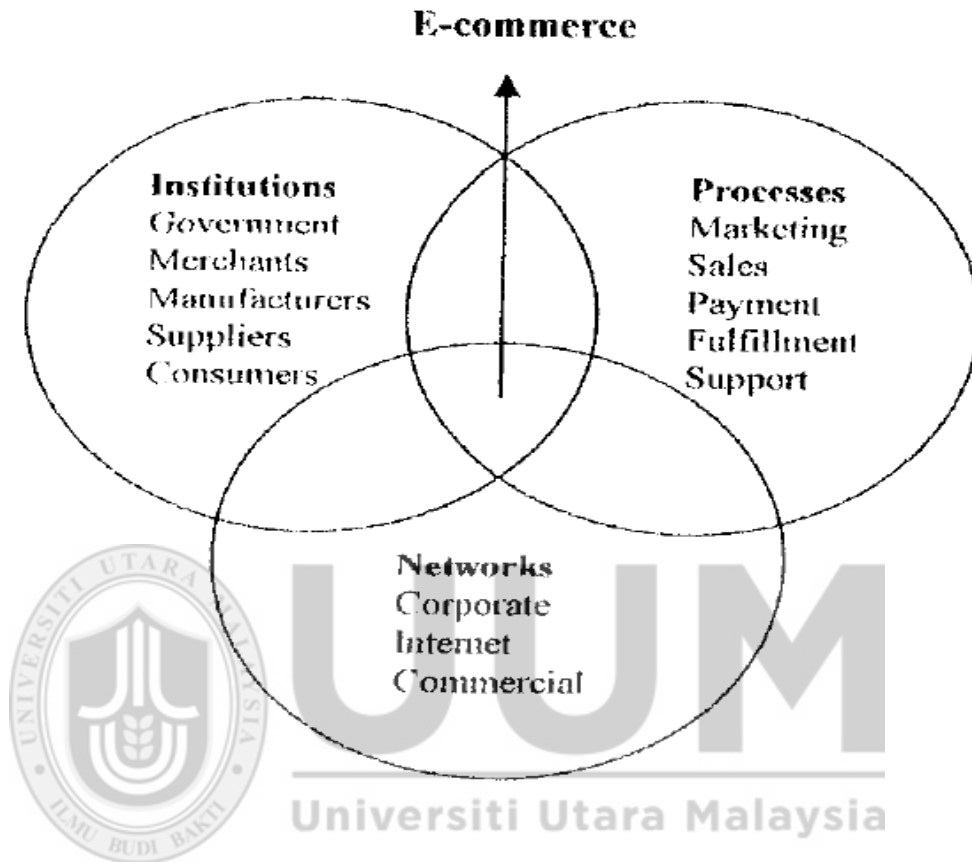
Seen from a buyer-seller perspective, and using a life-cycle model (refer to figure 2.1), e-commerce can be used in all the phases of a business transaction (Bloch, Pigneur & Segev, 1996):



**Figure 2.1:** *E-commerce Model*  
**Source:** Bloch, Pigneur and Segev (1996)

The components that constitute e-commerce are illustrated in Figure 2.2 as shown below from the illustration; e-commerce is actually built on the supporting framework of t-

commerce and benefits as a result of combining t-commerce with the increased flexibilities offered by electronic networks (Kosiur, 1997).



**Figure 2.2:** *The components of E-Commerce*

**Source:** Kosiur, 1997

In addition to carrying out actual transactions, E-commerce utilizes the internet for marketing. Due to evolving and advanced technologies, producers and consumers can carry out business transactions more and more conveniently via the internet nowadays. In this regard, commercial activities through the internet are growing rapidly, with the experience of increase in customers' demands.



Zwass (1996) explained that electronic commerce is designed towards the actualization of a successful Information-driven Economy. Kauffman and Walden (2001) stated that e-commerce is executing online-based businesses, with web-based e-portals as typical examples. In the work of Choi *et al.*, (1997), e-commerce characterizes using digital means and tools in conducting commerce. This includes business-to-business (B2B), within-business, and business-to-consumer (B2C) interactions.

Hoffman and Novak (1996) in their e-commerce's description submitted that it is an effective medium to advertise, market and distribute goods and information services by allowing people to buy goods and exchange business transaction information on-line (Benetti *et al.*, 2001).

Giancarlo (2000) and Sbdc (2002) stated that the division of e-commerce can be divided into five main categories, namely business to business (B2B), business to consumer (B2C), consumer to business (C2B), consumer-to-consumer (C2C), and business-to-government (B2G). These are described below:

**Business-to-Business (B2B):** This is a situation whereby there is an exchange of products, services, or information between two businesses through their institutions, and not between businesses and consumers. B2B e-commerce had been existing since few years ago but more mostly called EDI (Electronic Data Interchange). Previously, EDI used to

be conducted directly linked to the two businesses. However, internet is a popular trend in the present world.

**Business-to-Consumer (B2C):** This is a type of business whereby exchanging information, products or services are done from a business institution to a consumer in contrary to the experience in B2B. Amazon.com, an online bookstore that started its website in 1995 is one of the best examples of B2C e-commerce.

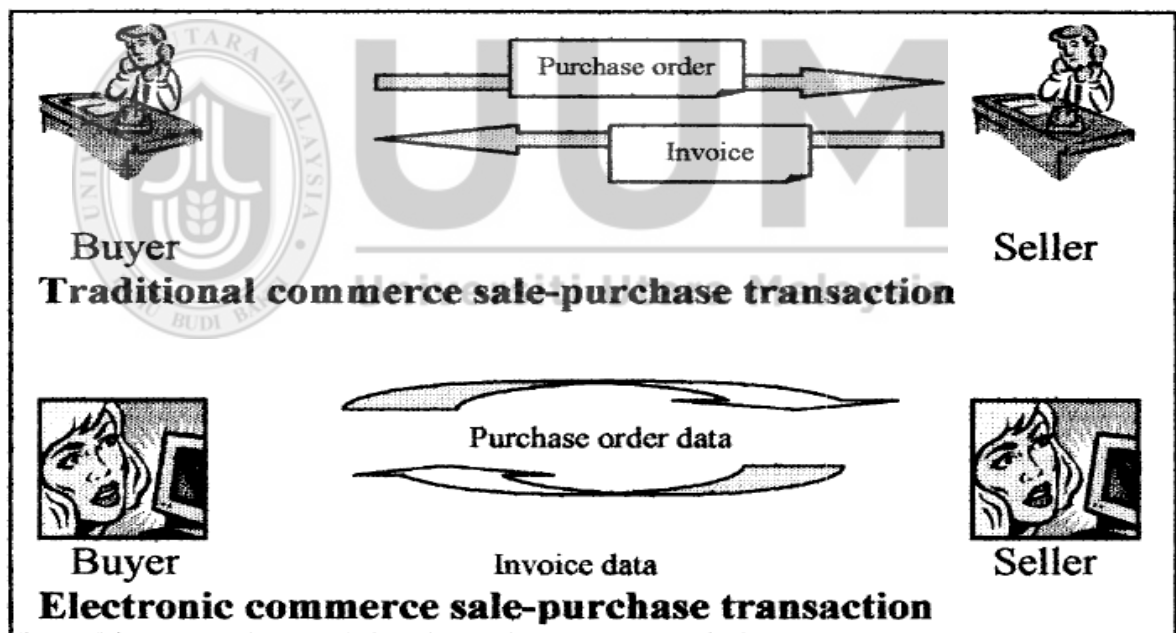
**Consumer-to-Business (C2B):** In C2B, there is an emerging platform that allows consumers to make specific service requests from the business. This type of model gives an outright opposite experience of what is obtainable with the traditional business models, where goods and services by the companies to consumers.

**Consumer-to-Consumer (C2C):** This is said to be the earliest method of doing business online (Giancarlo, 2000). C2C is explained in terms of persons engaging in business activities through web-based environments with the use of internet in one way or another (Sami, 2006).

**Business-to-Government (B2G):** This is explained as any mode of the e-commerce exchanges done between business and government. An example is Government Electronic Marketplace (GEM). GEM is considered as one of the enabling systems for businesses to electronically sell to governments. In addition, registration of the commercial services

and goods are done online, giving the business institutions ore access to the enormous market of the governmental buyers. Also, registered suppliers can also access lodge tenders and get more information about tender online.

The e-commerce business activity is different from the t-commerce, depending on the process and the degree of IT used in the organization. The differences between t-commerce (or known as "brick and mortar" commerce) and electronic commerce or ("click and mortar" e-commerce) are represented in Figure 2.3 below.



**Figure 2.3:** Comparing traditional commerce and e-commerce

**Source:** Schneider (2002). *Electronic commerce. Third Annual Edition*. Canada: Thomson Course Technology, pp.11.

Looking at the above model, it is evident that previously, the customer makes purchases using traditional ways, i.e., going to the shop or by using a telephone. In e-commerce, customers can communicate with the seller via e-mail, or a chat session. Record shows that the sellers and customers in the commercial setting have been enjoying many advantages of wired technology for some years back. However, wired technology is also offering limited access because of restriction placed by mobility. E-commerce does not allow 'anywhere anytime' access to buying products online. This means that wired-technologies are not reliable in the provision of 'anytime, anywhere' service. This functionality is the new edge and the advantage offered by mobile wireless technologies.

### **2.3 Mobile Commerce (M-Commerce)**

Technologies are impacting strongly on our lives. With the appraisal of the growth of ICT, it is conclusive that market potential has been expanded by the internet. Mobile communication has also been identified as another form of information technology that is playing an increasingly important role in business and society. The impact and significant advances of Telecommunication and wireless mobile networks in providing facilities and equipment, standards and network implementation is significant. Also recorded are: user acceptance which has the potential of creating new businesses opportunities for firms that provide services, and the users (Feng *et al.*, 2006). The assessment reports of companies that are popular are always in the media when they make announcement of their plans to incorporate m-commerce in their business plans (Goodman, 2000; Barnes, 2002).

M-commerce can be essentially defined as the continuity in the wireless connection product that reached a scope beyond the experiences in television (TV) or personal computer (PC), to a hand-held portable device, such as PDA. M-commerce thrives on more interconnected situations enabling the mobile device carriers to get connected all time and all places (O'Dea & Abraham, 2000). M-commerce has been newly defined as the transaction executed through the use of mobile phone (Veijalainen *et al.*, 2003).

M-commerce has been highlighted as another phase of business innovation. It is opined to aid the extension of organizational approach to business performance, and also effect changes in the inter-relationships among the companies, suppliers, customers, and partners (Anckar *et al.*, 2003). M-commerce centers on business transactions that are data-driven and value exchanges by mobile devices' users through wireless telecommunication networks (Cronin, 2003; Feng *et al.*, 2006). According to Paavilainen (2002), m-business is the act of exchanging goods, services and information through the use of mobile technology. It is further said that mobile business on a broader definition includes: communicating and transacting varieties of value-added services with the use of different kinds of mobile terminals' (Feng *et al.*, 2006).

Many researchers and scholars defined m-commerce (Andreou *et al.*, 2002; Chun & Wei, 2004; Wong & Hiew, 2005), as transaction done through wireless device with the aid of data connection resulting in transfer of information, services, and/or goods. Another definition suggested by Sadi and Noordin (2011), is that m-commerce is the act of

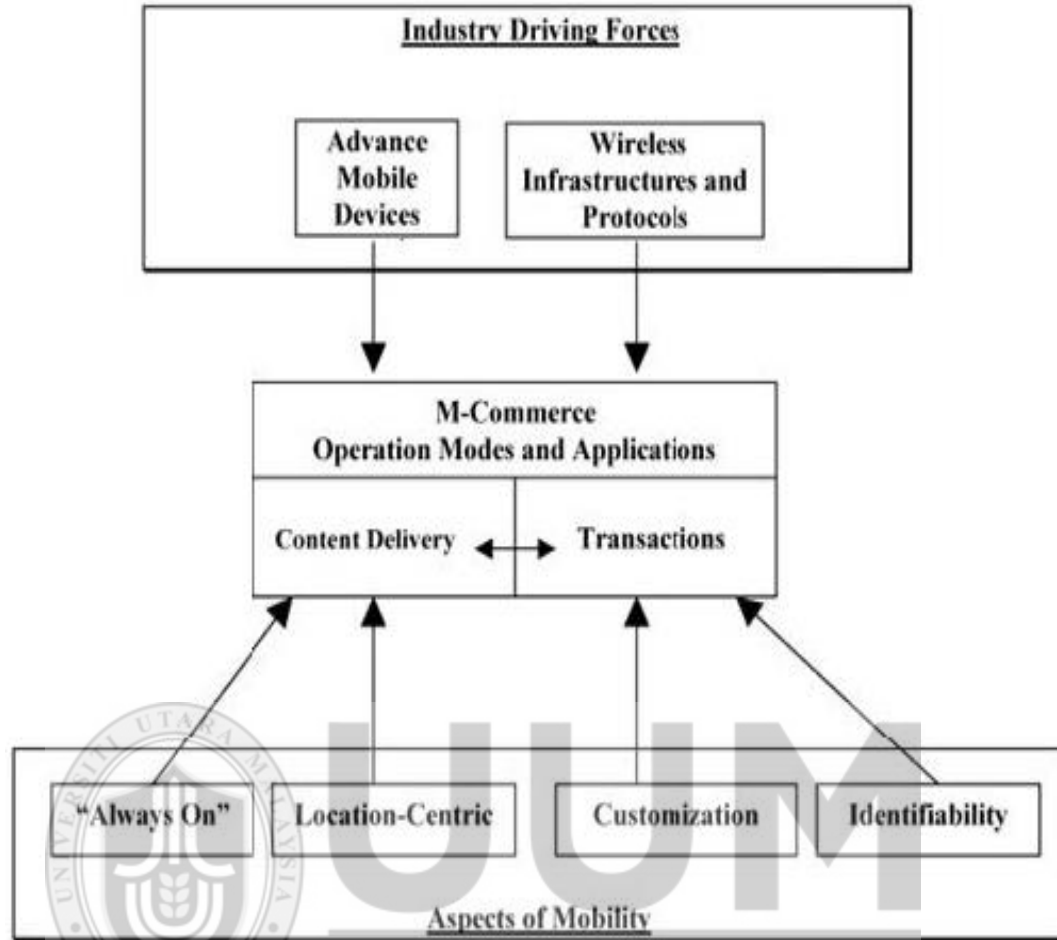
using wireless terminals: cellular telephone, smart phone or PDA, with the aid of internet to access information needed in conducting the transactions. This thus results in value transfer, and exchange for information, services and goods. A natural M-commerce serves as an extension fore-commerce. This then allows users to interact with their businesses and communicate with other users in a wireless mode, at any point in time.

Furthermore, some scholars (Turban, King, Lee, & Viehland, 2004; Wei & Ozok, 2005) explained that m-commerce is a monetary transaction conducted by a mobile device for the purpose of exchanging goods and services. Notably, there is always a specific operating system to the used mobile devices, with a mobile-dedicated network. Based on all these definitions in the m-commerce literature, it can be concluded that: any economic-value transaction executed through a mobile device using wireless telecommunications network as a connection hub to the e-commerce infrastructure is qualified to be called m-commerce.

There are many benefits of wired technology. However, lack of mobility of wired technology offers limited access for users. It infrequently provides flexible functionality as compared to mobile wireless technologies. Mobile technologies reduce the consumers' need to be travelling since the services are readily available through their mobile devices (Mallat, Rossi, Tuunainen, & Oorni, 2009).

More importantly, m-commerce enjoyed core specific features like: ubiquitous, flexibility, personalization, and localization. These stated features are not present in t- and e-commerce. In this light, there is more advantages and added values and benefits for customers using m-commerce (Boadi *et al.*, 2007). M-commerce is also specified to be a subset of e-commerce (Coursaris & Hassanem. 2002; Kwon & Sadeh, 2004). When there is any m-commerce transaction, like e-banking or purchasing products, mobile hand-held device such as mobile phones and PDA can be used for its execution without any need for computers. However, these mobile devices or were earlier considered as luxuries, but the situation now has made it a necessity. In the past few years, this development has resulted in the tremendous growth of mobile technologies (Kippenberger, 2000; Kumar & Stokeland, 2003; Ngai & Gtmsaekaran, 2007). This development is creating new phases of opportunities and infrastructure for m-commerce development.

On this basis, m-commerce can be safely considered as an emerging e-commerce that is benefiting to both customers and vendors. Wireless applications used in banking and financial services, ticketing, shopping and travel are developed to aid easy and effective usage of the mobile devices. And, m-commerce has been continuously creating benefit-driven applications and infrastructures that are improving the companies and customers' ways of conducting business (Joseph & Mahatanankoon, 2004). Figure 2.4 depicts the forces responsible for the modes and applications of m-commerce in the aspect of mobility and driving.



**Figure 2.4:** *Modified model of m-commerce Operation Modes*  
**Source:** Joseph and Mahatanankoon (2004)

Figure 2.4 demonstrates the manner through which m-commerce works by creating modes and applications. However, there have not been any revolutionary applications or mode that can launch m-commerce. A good example is the start off of Amazon.com. Its invention had been a giant launching pad for the thriving of e-commerce. This has birthed a whole set of on-line market places (Joseph & Mahatanankoon, 2004).

M-commerce has been developing due to reduction in the prices of the mobile device, despite the improvement of their functionality. The usage of mobile device has trans-

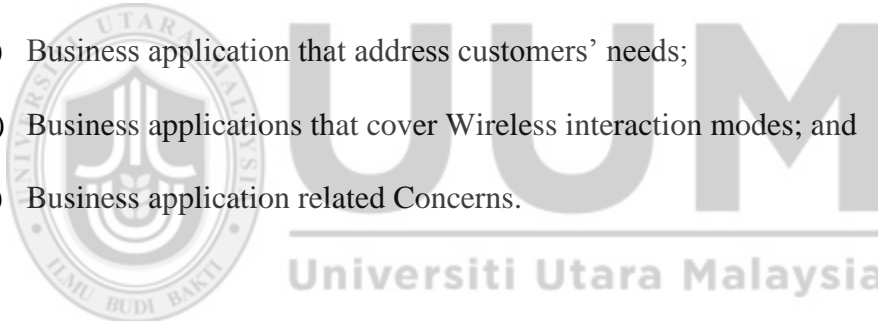


cended being used solely for communication; it is now a comfortable commercial tool. Therefore there is more emphasis now on mobile carriers' strategy. Interest has shifted to value-added m-commerce service from the traditional telecommunications service. M-commerce can be used anytime/ anywhere to buy products and services. Therefore, the use of mobile wireless technologies can give more benefits to the users.

### **2.3.1 M-Commerce Business Applications**

The varieties of business applications that are targeting the mobile consumer are presented below. Generally, these applications are grouped on the basis of the need they predominantly cater (Coursaris & Hassanein, 2002):

- a) Business application that address customers' needs;
- b) Business applications that cover Wireless interaction modes; and
- c) Business application related Concerns.



### **2.3.2 The Features of M-Commerce Services**

According to Siau *et al.*, (2001) and Tiwari, Buse and Herstatt (2008), there are various specific features of m-commerce including WAP. These features are unavailable in the traditional e-commerce. These are as follows:

- a) Ubiquity: This feature explains how mobile technology enables the user to access information virtually from anywhere. The presence of the user within the cellular network area is the assumption that the technology works with.

- b) Personalization: In m-commerce, the information is particularly customized in alignment with the mobile users' needs because the capacity of the mobile hardware and software's memory is very limited.
- c) Flexibility: M-commerce offers flexibility to its users. The mobile users enjoy the flexibility to conduct transaction, send and receive messages even while the user involves in the engagement of other activity. Traveling or working is a good example of this instance.
- d) Dissemination: The local retailers, from whom the information originates, can use the wireless network of m-commerce in the delivery of various promotional offers to the WAP users that are available within their cellular broadcast area.
- e) Immediacy: The possibility of real-time availing service is a close relation with ubiquity. This remains an attractive feature for services of time-critical term and that demands fast reaction. A good example of this is stock market information.
- f) Localisation: Technologies used in location positioning, like the Global Positioning System (GPS), give the companies the offer of goods and services to their user in specificity to his/her present location. Therefore, GPS thus caters for the needs of the consumers and their localized content and interested services.
- g) Instant connectivity: Advent of General Packet Radio Service (GPRS) has been the technological support that allows mobile devices in their connectivity to the internet. GPRS joins mobile phones to the network allowing users to make dial-up conveniently, and make boot processes unnecessary.

- h) Pro-active functionality: The ability of m-commerce allows it to be open, immediate, local and personal, creating new opportunities for business. Users have the opportunity of choosing the products and services that they are previously aware of. The Short Message Service (SMS) is for sending text messages to customers, with the assurance that information that are relevant are promptly given to the user at a right place and time.
- i) Simple authentication procedure: The functionality of mobile devices is aided by an electronic chip component, known as Subscriber Identity Module (SIM). The network operator registers the SIM, and makes the owner unambiguously identifiable. The user uses the SIM with an individual Personal Identification Number (PIN).

Despite the great features offered by m-commerce, few studies have focused on the service quality in m-commerce. Thus, it is evident by reading previous literature on m-commerce, that there is more need to focus in that field of study and how to measure the factors affecting customers' perception of the service quality offered by m-commerce.

### **2.3.3 The Implication of M-commerce and how it can help customers**

Since e-commerce mostly depends on the availability of a wired network connection to the Internet, there is still a limitation to this service among customers and corporate professionals who are constantly on the move. In order to overcome such a limitation, there is an inclination to make use of wireless networking technologies which can provide po-

tential commerce at anytime and anywhere. The move from wired to wireless services is a remarkable sign for the new millennium (Landers, 2002). From the literature, it is evident that evolving m-commerce service has many potential implications. According to Tiwari, Buse and Herstatt (2006), m-commerce, on the basis of the earlier discussed features make provision for additional value-added utility particularly, for the users in the following context:

- a) Context-specific services: With m-commerce, LBS are easily offered to specific given context: time of the day, location and the users' interest. These services enable new chances for personalized push-marketing with close connection with the vendor, and by this, increases the sale probability. Context-specific services aids brand presence by encouraging consumers' loyalty to the set of brands that they previously have their knowledge.
- b) Time-critical situations: M-commerce' ubiquity and immediacy give the users the opportunity of performing urgent tasks efficiently. Examples are: quick reaction to developments of stock market, without any consideration of the current geographic location.

Spontaneous decisions and needs: These are not triggered externally. They involve generally decisions making without any careful consideration. An example is when the decisions involve small amounts of money. In cases like this, users could be given access to entertainment content. Examples are: horoscope, sport, and news are accessible with the users' mobility

- c) Efficiency increase: m-commerce aids the labour force's productivity through the increase of their everyday work routine efficiency. The employees, who are also considered as consumers on time pressure, can use 'dead spots' during the day. This means that: they can move from and to their respective workplaces on a daily basis. This can further be utilized through electronic mails, news that are still current, products and bank-made transactions.

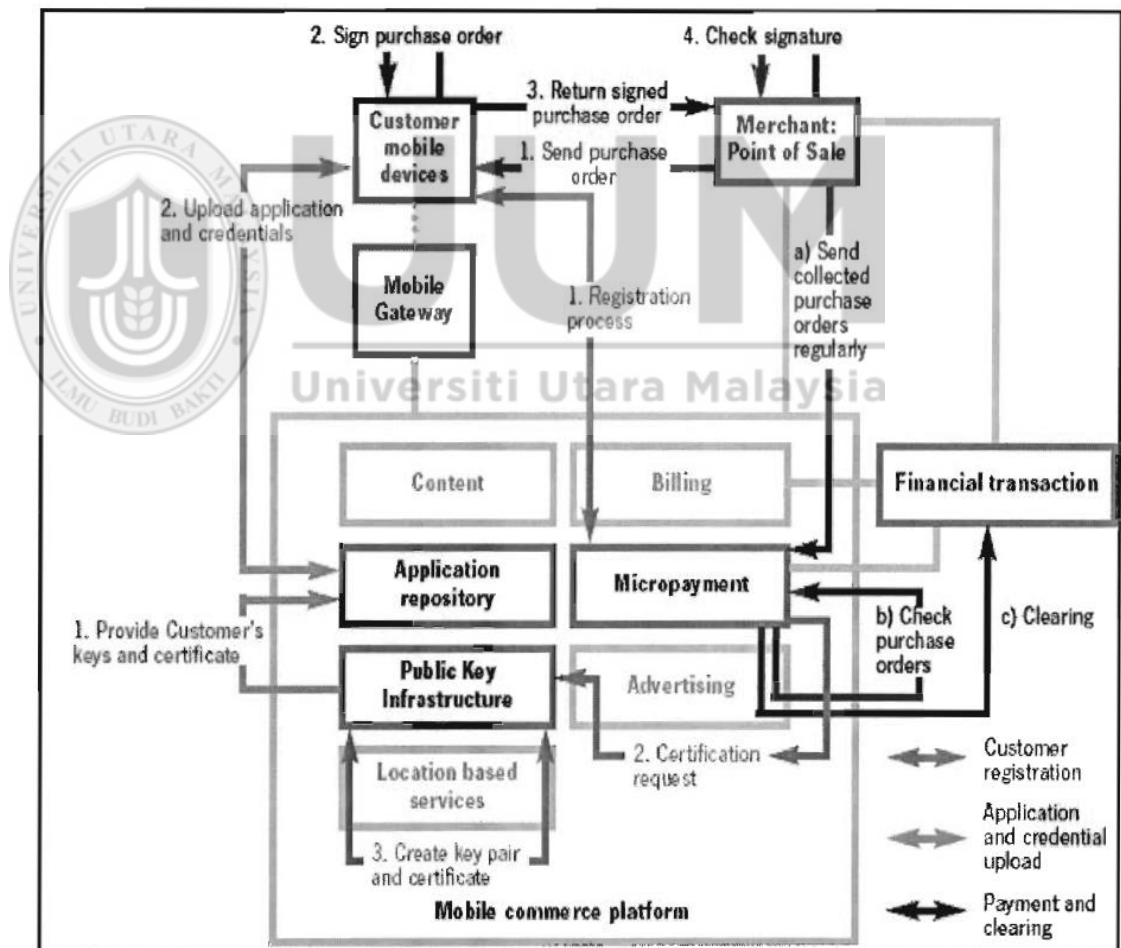
This has evidently argued that m-commerce has the opportunity of offering new; however, services that are yet to be known to the users on the basis of the peculiar features cannot be accommodated within the scope of e-commerce.

#### **2.3.4 M-Commerce Payment Model**

Another significant issue in the act of adopting and accepting services by the customers is the payment option. The micro-payment service depicted below shows that the customer has the ability of turning his/her mobile device to a payment-making tool and uses it in paying for goods and services anonymously. This payment can be made at both the real and virtual point-of-sales. For any payment made for item chosen, the buyer gets a purchase order from the merchant, encrypted with a private key belong to him or her, and sends this back.

Payments can be made safely, easily and quickly. Since payments are not done online, the involvement of the service provider is essentially in the clearing process, while the costs of the transaction are maintained to minimum. Hence, micro payment is a service that is good for many m-commerce services, especially those that involve transferring small amounts of money.

The following Figure 2.5 shows the implementation process for a mobile payment service (Eurescom, 1991).

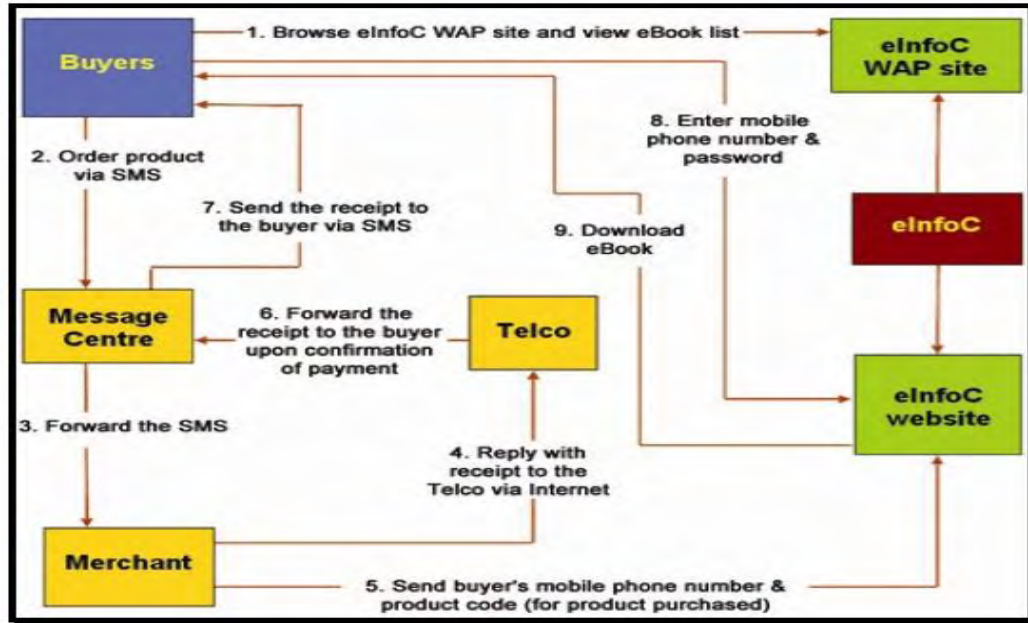


**Figure 2.5:** *M-Commerce Payment Model*  
**Source:** Eurescom (1991)

The above Figure shows the flow of data transmission within the m-commerce platform. The m-commerce platform supports the m-commerce payment system. It starts with providing the customer key information and certification, which is the next step to uploading application and credentials. All the data is used to sign-in the purchase order on the customer's mobile device, and from there, the return signal is generated to purchase the order or to the sender of the purchase order.

Then, the check signature is authorized, where the merchant's point-of-sale is notified. The next step is to send the collected purchase order to the micro-payment section and at the same time, to check the purchase order through a signal which is generated and sent to the micro-payment section. The arrow above shows the process flow of application and credential upload. The other arrow above shows how the data flows from customer's registration and ends up at the third level of payment and clearance of data flow.

Other study was conducted by Shiratuddin, Hassan, Zaibon and Salam (2006) to give a description for a process flow model in the implementation of mobile payment (Payment) as a method of payment while buying eBook. Figure 2.6 below shows the alternative ways to mobile payment service's implementation.



**Figure 2.6:** Entities in mPSMS system.

**Source:** Shiratuddin, Hassan, Zaibon and Salam (2006)

M-commerce operators play a significant role by giving company that have mobile assets called WAP site the working environment to install a search box within its interface so as to fetch revenue. Any company that has a WAP site can also make available the basic terms to its Search Aggregation Engine (SAE). This act will attract the advertisers' listings, and in return, revenue generation can be actualized anytime the end user made a click on the listing of the advertiser. In m-commerce, that monetized mobile search facility has easy implementation, and also makes provision for a user experience enhanced fully by the report of the service that makes revenue for the website owner (Highbeam, 2007).

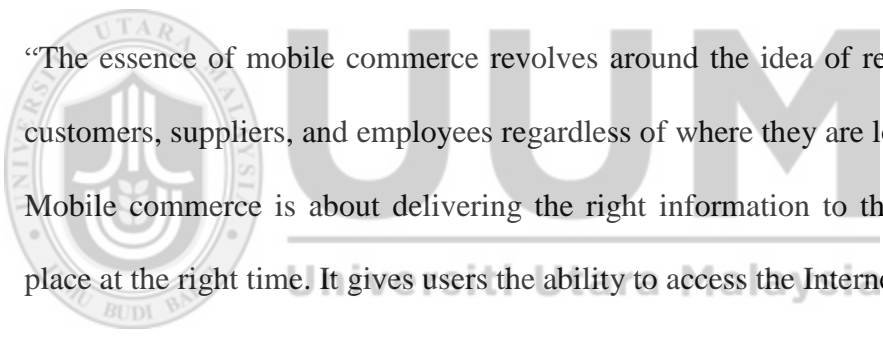
M-commerce provides many facilities to its clients, in terms of wireless payment made through hand-held devices: Palm and Beam Palm. Also is the usage of credit card termi-



nal via infra-red and Bluetooth. This is very user friendly, with certain limitations. An infrared device attached with point-of-sale credit card terminal, which facilitate users to retrieve and transfer it on the same day and at the same time. One of the advantages is therefore, cashless payment, without using conventional credit cards or any other paper or metal money.

### **2.3.5 Differences between M-Commerce and E-Commerce**

M-commerce as the next phase of e-commerce allows the conduct of online transactions through mobile devices with the aid of un-wired e-commerce technologies and other wireless telecommunications network.



“The essence of mobile commerce revolves around the idea of reaching customers, suppliers, and employees regardless of where they are located. Mobile commerce is about delivering the right information to the right place at the right time. It gives users the ability to access the Internet from any location at any time, the capability to pinpoint an individual mobile terminal user's location, the functionality to access information at the point of need, and a need-based data/information update capability.”

(Lim, 2003, p.2).

In many areas, the concepts of both m-commerce and e-commerce are not distinguishably distant from each other. Both types of commerce (electronic and mobile) have the aim to making business-related opportunities through electronic technologies. However,

the e-commerce connects to the internet for its access, thus enables the transmission of data and information through the wired technologies. The m-commerce's functionality can also be accomplished by the unwired technology, and other various portable devices. E-commerce has the ability of offering services to stationary clients and while m-commerce customers rely on mobile technology: PDA, a portable PC or a mobile phone. The significant points of intersection between m- and e-commerce have resulted in people naming m-commerce as: mobile e-commerce (Elliott and Phillips, 2004), however, there are still key differences between m- and e-commerce. An example of this is how m-commerce allows products and location-based services.

In the same vein, mobility can be considered as an asset, instead of being called the technological domain's by-product. Also, the Internet mobile is not interested in duplicating the non-wireless internet, and there are number of factors that do limit the functionalities of mobile internet. Examples of these are: style of display, memory capacity and screen size (Elliot and Phillips, 2004, p.20).

Table 2.1 offers a comparison of some of the factors that distinguish the idea of e-commerce from that of m-commerce.

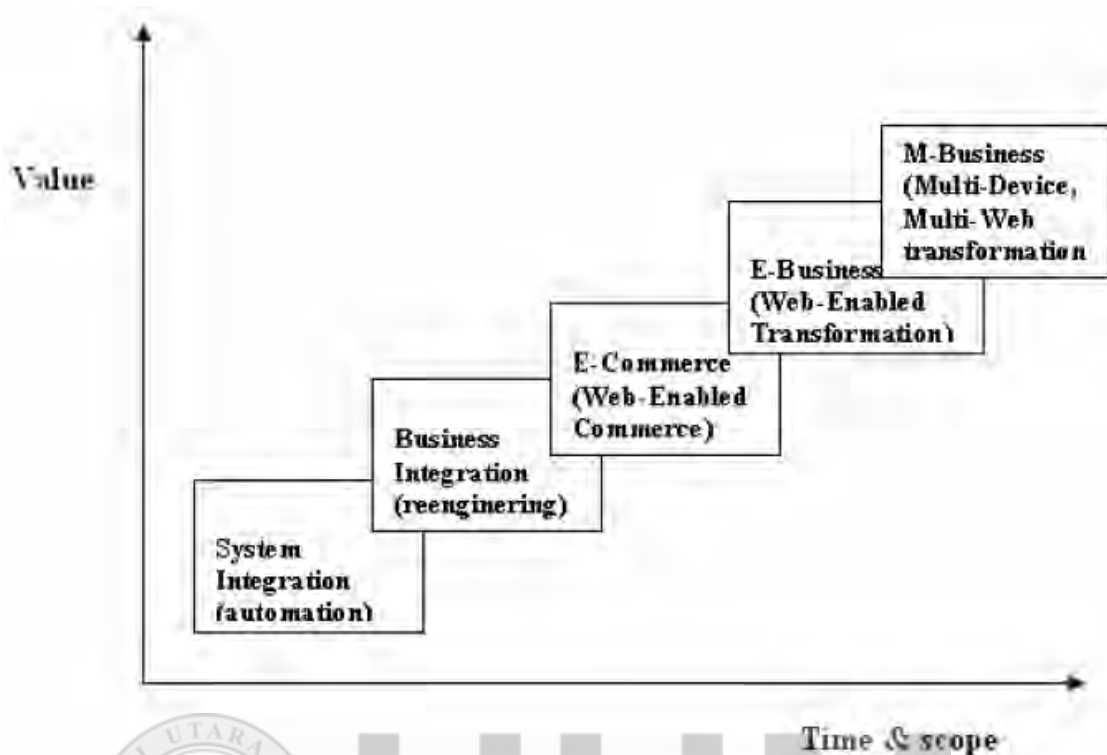
**Table 2.1:** *Comparing e-commerce and m-commerce*

<i>Factor</i>	<i>M-commerce</i>	<i>E-commerce</i>
-Product or service focus	-Service focus	-Product focus
-Product or service provision	-Wireless global access	-Wired global access
-Product or service assets	-Dynamic location-based Data	- Static information and data
-Product or service attraction	-Mobility and portability of access	-Fixed non-time-constrained access

**Source:** Elliott and Phillips (2004)

In the context of the needs for users in either static data products (for e-commerce) or dynamic and mobile data services (for m-commerce), it is an interesting fact that the use of Internet-based m-commerce varies between global regions and national economies. For example, in Japan the wireless industry concentrates primarily on providing Internet-based services to mobile phone customers, and generates a significant amount of income from the provision of mobile Internet products and services. In contrast, the provision of mobile internet services in Europe and the USA is of less economic significance to these areas. According to Elliott and Phillips (2004), it is not necessarily that a fashionable e-commerce business translate well to the wireless Web, because a cell phone can be suited for some types of purchases and it not necessarily can be suited with other types of purchases. The immediacy makes it useful for time-critical transactions, but the small display makes people reluctant to browse extensively (Dornan, 2002).

As shown in Figure 2.7 below some of structural changes that occurred in the last two decades in e-commerce context. In this decade the pace and scope of change are unique. Thus, the organizations need some of internal changes especially in the business reengineering and system integration.



**Figure 2.7:** Market Evolution

**Source:** Kalakota and Robinson (2001)

Three major structural shifts have occurred in a rapid pace since 1995: e-commerce, e-business and the m-business. *"E-commerce has had tremendous impact on how companies interact with their customers. E-business has had similar impact from the supplier and employee side. Since it is too early to definitely say, one can only speculate that m-business will have even more impact since its tentacles spread everywhere."* (Kalakota & Robinson, 2001:21).

Mobile commerce features (ubiquity, reachability, localization, personalization and dissemination) are different compared to traditional e-commerce (Lim, 2003). Using mobile commerce is significant as it can easily reach customers, suppliers, and employees

with the appropriate information should send this to the appropriate places at the right time.

### **2.3.6 Key Success Factors for m-commerce**

According to Obe and Balogun (2007), m-commerce operators will determine the success of the m-commerce market development based on the following capabilities:

- a) Customer ownership: The billing address, mobile phone number, e-mail address as information of the Subscriber data, calling patterns and choice of mobile device are now with more value in the m-commerce context. Collection of user behavior and data together in its passive form with companies will benefit when users are active in the provision and specification of their portal providers' preferences.
- b) Personalization: Personalization deals with the creation of services that personalize the end-user's experience for the individual subscriber. Since it is based on one-to-one relationship management, it provides an ideal tool for one-to-one marketing. An intelligent personalization platform must be able to learn from both user preferences and past behavior of the user.

The application have to be well-personalized so as to increase the optimization of the interaction path, enabling the users to reach the services they want with as few clicks as possible, and presenting information in a compact form, optimized for the smart phone or communicator. Companies must also be proactive with respect to service behavior,

i.e., anticipating future requirements of the user and suggesting a likely choice. It is believed that personalization is the difference between a usable application and an unusable application.

- c) Localization: There are many leading and competitive technologies that aid mobile location or positioning services. Location-sensitive information is now an important factor in mobile commerce. This is because: having the knowledge of the users' location serves as catalyst to the growth of service and application. It positions the services to a significant point. Users are always in need local information about their environment, because location specific information is always valuable in new environments, when travelling.
- d) Ubiquity: Applications that are time-critical like: stock and options trading, and betting need to be ubiquitous. Ubiquity is the ability to access and receive information to be used in performing transactions from any location virtually. This ability is important so as to provide mobile users that have similar level of access to information an available fixed line opportunity in order to engender success.
- e) Timeliness: The mobile devices have the ability of transmitting and using time-sensitive information with values inherent in its immediate delivery. This is because any late transmission of information has the possibility of causing significant opportunity costs. This is the situation that birth mobile information services.
- f) Convenience: Technology must have the sole aim easing peoples' life and lessening any possible pain from unpleasant tasks and activities. A question that

should be often asked is that: how can a technological solution provides added convenience to the user? Though technology is exciting, but increasing the quality of life makes it more valuable.

Moreover, according to APM Group (2012) ISO 20000 can be one of the key success factors for m-commerce, it's very important for many reasons:

- a) Companies that have demonstrated they have implemented all of the service management processes within a quality management system framework can become certified.
- b) achieving certification provides clear competitive advantage for companies across many sectors including, Internal IT service provider organizations in any sector, Outsourcers, Application service providers (hosted/cloud solutions), and Government contractors.



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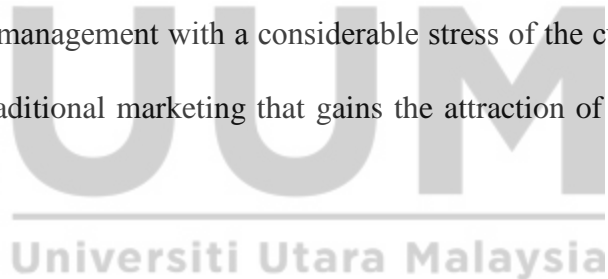
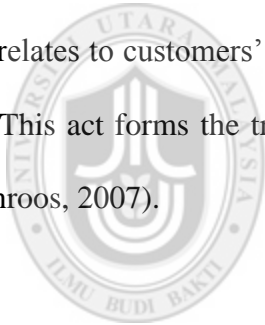
### **2.3.7 The Implication of M-Commerce Services Literature Analysis on Research**

From the literature, there is evidence that e-commerce depends a lot on the availability of a wired network connection to the Internet and there is still a limitation to this service among customers and corporate professionals who are constantly on the move. However, there is also strong evidence that m-commerce can overcome such a limitation by offering potential benefits in the field of business. These benefits include the ease of accessibility and availability of the m-commerce service from anywhere and at anytime. The outcome of the literature review has encouraged the researcher to think of practical

implications of the m-commerce service since the new millennium has witnessed a remarkable move from wired to wireless services (Lu, Zhang & Wang, 2009). Sections 2.5 addresses the trends of m-commerce services in many sectors.

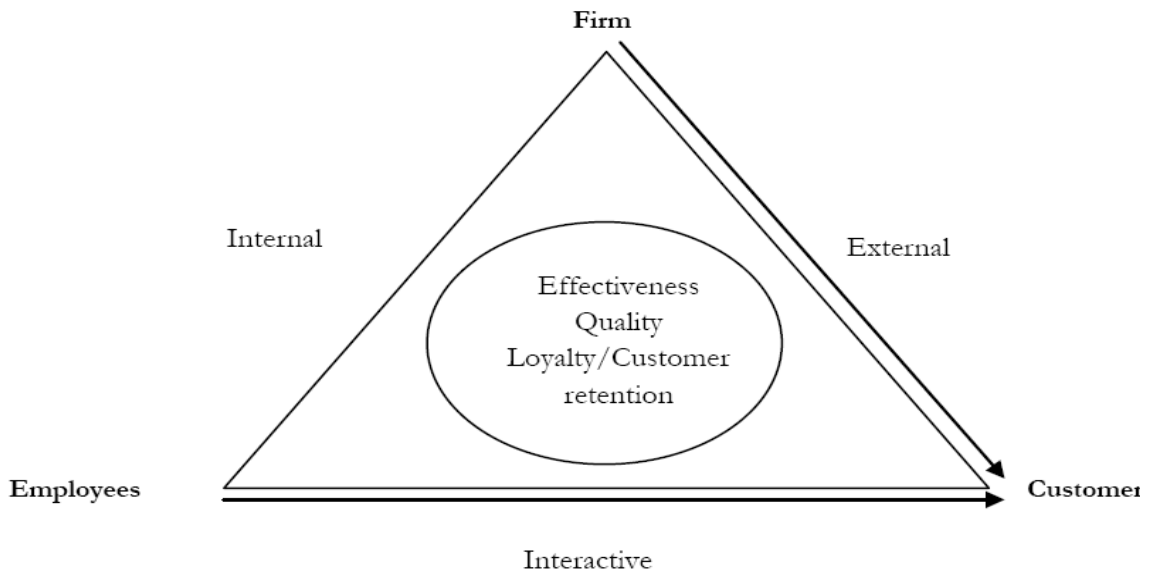
#### **2.4 The Service Perspective**

Examining the present day market in respect to the idea of service perspective, a firm cannot solely rely on its physical product if it aims achieving effectiveness (Gronroos, 2007). Notably, the customers only consume service provided to them by the product, and not physical products. The core product must be integrated with support services to form a combined service offering; capable of competing with the competitors' offerings. This relates to customers' management with a considerable stress of the customer retention. This act forms the traditional marketing that gains the attraction of the customers (Gronroos, 2007).



The marketing activities that are involved in their respective capacities are illustrated in Figure 2.8.





**Figure 2.8:** *The service marketing triangle*

**Source:** Adapted from Gronroos (2007).

By focusing on the customers, two marketing approaches are involved. Firstly is the external marketing. This type of marketing exists between the firm and the customer, with involvement of activities that characterize the traditional marketing. Examples are: advertising and promotional campaigns using various channels (Gronroos, 2007). This is part of the processes to attract customer offerings (Kotler & Keller, 2006). Gronroos (2007 p.61) explained this as: 'making promises'. Interactive marketing happens between the front-line employees and the customer, thus affecting the experiences of the customers. Consequently, customer relationship is built with the aim of ensuring the business and customer loyalty/retention return (Gronroos, 2007).

## 2.5 The Implication of M-Commerce in Many Sectors

The commercial business transactions, before this present time are provided only through electronic media. Now, they are being offered on the fast emerging mobile platform. This development is because of the exponential rise in mobile devices usage globally. Reports show that one-third of the world population has access to mobile phones. This development is significantly boosting m-commerce (Tiwari & Buse, 2007; Sadi, Azad & Noorudin, 2010). Some of the mobile applications were presented by Tiwari and Buse (2007), as modified and compiled in Table 2.2 as follows:

**Table 2.2:** *M-Commerce Applications and Services*

<b>S.L</b>	<b>M-Commerce Applications</b>	<b>M-Commerce Services</b>
1.	Mobile Banking (m-Banking)	Mobile Accounting, Mobile Brokerage, Mobile Financial Information
2.	Mobile Entertainment (m-Entertainment)	Mobile Gaming, Downloads (music and ring tones) Downloads (video and digital images) Locations-based Entertainment Service
3.	Mobile Information Services	Current Affairs, Travel Information & Tracking Services, Mobile Search Engines and Directories of Mobile Offices
4.	Mobile Marketing (m-Marketing)	Mobile Couponing, Direct Marketing, Mobile Newsletters, Organization of Mobile Events
5.	Mobile Shopping (m-Shopping)	Mobile Purchasing of goods
6.	Mobile Ticketing (m- Ticketing)	Public Transport, Cinema Booking
7.	Mobile Health (m-Health)	m-Diagnosis, m-Prescription, M-Referencing, m-Appointment
8.	Mobile Payment (M- Payment)	m-Purse, m-wallet, Micro payment & Macro payment

**Table 2.2:** (Continued)

9.	Telematics Services	Remote Diagnosis and maintenance of Vehicles, Navigation Services, Vehicle Tracking and Theft protection, Emergency Services
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**Source:** Sadi, Azad and Noorudin (2010)

## 2.6 Service and Service Quality

### 2.6.1 Introduction

Commonly, service is defined as work done or duties performed for a government, company, or other entities (Oxford Advanced Learner's Dictionary, 1995). Jiao, Ma and Tseng (2003) defined services as the economic activities with a production place, time, psychological utilities, and form. Additionally, service is defined in comparison with goods. While a good is a tangible object because it can be created, sold or used later. On the contrary, service is intangible because it is created and simultaneously consumed.

Koch (1994) defined service as a business that does not provide product, but as something that changes a product that is valued. Such services have the following characteristics: frequent production, non-exchange of tangible good after the service is produced, and then comparative consumption by the consumers because of the consumers' importance in the scheme of good delivery (Woodside, Frey, & Daly, 1989). Good customer service is a result of the combination of product and service quality, the environment in which the goods and services are provided, and as well as the service quality (Oliver, 1980).

### 2.6.2 Conceptualization of Service Quality

Service Quality (SQ) is a critical factor and noted lately as the measure of effectiveness and efficiency in the organizational performance. It has also become an important discourse in the web of academics and practitioners, especially those in the service marketing areas (Jensen & Markland, 1996). Many service organizations seek profitable ways to differentiate themselves from other organizations and gain a lasting competitive advantage by improving relative SQ. Therefore, an organization providing higher quality of service can have higher market share and higher returns on investment and, finally, can gain long term-profitability (Buzzell & Gale, 1987; Ghobadian, Speller, & Jones, 1994; Margolies, 1988).

Accordingly, it is pertinent for practitioners and academics to be informed of what SQ is, in terms of its definition, and its measurement (Asubonteng *et al.*, 1996). Clear conception and measurement of SQ are of great value for its improvement to achieve a competitive advantage (Palmer & Cole, 1995). There have been many different definitions and conceptual models of quality and SQ. Gohobadian et al. (1994) classified the definitions of quality into five categories, as follows:

- a) Quality as innate excellence;
- b) Quality as the units of goodness packed into a product or service;
- c) Quality as conformance to requirements;
- d) Quality as satisfying consumer's requirements; and

- e) Quality as meeting the customer's requirements in terms of quality, price, and availability" (Gohobadian *et al.*, 1994).

Similarly, Reeves and Bednar (1994) summarized quality with four different definitions:

- a) As excellence;
- b) As value;
- c) As conformance to specification; and
- d) As meeting or exceeding consumer's expectations.

In the modern marketing literature, most definitions of quality have focused on the consumer's perception of service, the product excellence, and the satisfaction of consumer requirements (Ghobadian *et al.*, 1994; Gronroos, 1982; Parasuraman *et al.*, 1985, 1988). From this perspective, perceived SQ has been defined as a global judgment, or attitude, relating to the superiority of the service (Parasuraman *et al.*, 1988), and as the consumer's overall impression of the inferiority/superiority of the organization and its service (Bitner & Hubbert, 1994). Generally, perceived SQ is seen as a resulting direction and degree from comparing actual perceptions of service performance with the consumer expectations (Parasuraman, *et al.*, 1988; Zeithaml, Parasuraman, & Berry, 1990). Parasuraman *et al.*, (1988) defined consumer expectation using the SQ perspective as desires or wants of consumers, what they feel a service provider should offer rather than would offer. Most research associated with SQ has been based on product satisfaction, especially on the disconfirmation paradigm. This paradigm has been used to evaluate the level of consumer satisfaction about the chosen product or service, and is operationalized in terms of the comparison between consumer's expectation and perceived perfor-

mance of the product or service. This function of comparison universally creates three outcomes of SQ evaluation. Confirmation occurs when perceived performance matches expectation, leading to a neutral feeling. If perceived performance exceeds expectation, positive disconfirmation leading to consumer satisfaction is produced. When expectation exceeds perceived performance, then negative disconfirmation or customer dissatisfaction is indicated (Anderson, 1973; Cadotte, Woodruff, & Jenkins, 1987; Oliver, 1980, 1981, 1993; Parasuraman *et al.*, 1985, 1988, 1991).

On the basis of disconfirmation paradigm, Parasuraman *et al.*, (1988) developed SERVQUAL as an instrument used for the measurement of consumer's perception of overall SQ. Five dimensions of SQ were keenly identified as:

- a) tangibles;
- b) reliability;
- c) responsiveness;
- d) assurance; and
- e) Empathy.

Also examined are the validity and reliability of SERVQUAL instrument. Parasuraman *et al.*, (1988) concluded that the SERVQUAL scale does not only consider a principal instrument for accurate assessment of the consumer perceptions and their expectations, it also has a variety of potential applications across multi-industries. Also, SERVQUAL instrument is widely used in many studies to assess the SQ of various service organizations; however, recent research suggests that the SERVQUAL measurement scale, based

on the disconfirmation paradigm, is problematic because SQ and satisfaction are distinct constructs, and so the disconfirmation paradigm is more appropriate in measuring satisfaction and less appropriate in measuring SQ (Bitner, 1990; Bolton & Drew, 1991; Carman, 1990; Cronin & Taylor, 1992; 1994).

Consequently, Cronin and Taylor (1992) presented an alternative measurement for SQ, excluding the measure for expectations, which they designated as SERVPERF. They compared the measurement effectiveness in two scales of SERVQUAL and SERVPERF, and they opined using the SERVPERF scale, without any dependence on a disconfirmation paradigm.

The SERVPERF's performance is better than the SERVQUAL scale. New findings recently recommend adjustment and additions of items that exist in the SERVQUAL scale. The dimensions and items are created through reliance on the nature of the service sector that is being investigated (Carman, 1990; Finn & Lamb, 1991). The most comprehensive study conducted by Parasuraman *et al.*, (1985) identifies key SQ attributes used by consumers and this is used in developing the gap model as a model to conceptually explain the overall evaluation of SQ. This model shows the service organizations' core activities that have effect on the consumer perception of SQ, and also of significant obstacle of achieving a satisfactory level of SQ. It is opined that this model has the tendency of helping management in the identification of SQ shortfalls and provision of a framework that can improve SQ from the consumers' perspective (Ghobadian *et al.*, 1994).

The model comprises five gaps which could arise in the service delivery processes. It includes organization-based and consumer-based four and one gap respectively. The organization-based gaps elucidate how the core activities of the service organization affect consumer perception of SQ. These gaps are:

- a) there is no consumer expectations translating into performance specifications,
- b) adhering to specifications when there is actual delivery of the service,
- c) information about the consumer expectation,
- d) communications that describe the firm's service to consumers, and
- e) Representation of the distinguishing factor between consumer expectations and actual performance perception of the service delivery. This fifth gap is the SQ overall perception of the consumers.

As such, Parasuraman *et al.*, (1985) defined SQ due to the comparison done in the Gap 5. This definition is constant with the meaning given by Gronroos (1982). Parasuraman *et al.*, (1985) also identified ten determinants of SQ on the basis of a focus group interview. Participants involved are service providers, consumers, and several executive officers. The determinants enlisted are: reliability, tangibles, communication, responsibility, security, credibility, courtesy, competence, access, and understanding consumer. These determinants are significant in providing the foundation of SQ measurement and; therefore it is empirically recommended to examine the dimensions and operational definitions of SQ. Considering the ten (10) determinants of SQ, Berry et al. (1985) stated



that there is correlations among competence, courtesy, credibility, communication, access, security and understanding the consumer. These factors, determinants of responsiveness; combined to give: dimensions of assurance and empathy and reliability are correlated.

From Parasuraman *et al.*, (1988) study, the SERVQUAL, a data collecting instrument to measure consumer perception of overall SQ was developed. And through factor analysis, just ten dimensions of 22 items were realized from the original 97 items. This covers five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The tangibles dimensions are: physical evidence, appearance of facilities, equipment, and personnel used to provide the service (Parasuraman *et al.*, 1998). The dimensions used in testing the reliability are: dependability, consistency and accuracy. The service performance and responsiveness explain how readily and willing are the employees in the provision of timely services and instituting attention to the consumer complaints. The assurance level is explained as the knowledge and courtesy of the employees (Parasuraman *et al.*, 1998).

The reliability and validity test done for the SERVQUAL showed that the reliability of the instrument (Cronbach's Alpha: .87 - .90) recorded for the four (4) studied service industries. It can be concluded that the SERVQUAL scale is a primary instrument that measure consumer expectations and perceptions of SQ accurately. Also importantly is the varieties of potential applications across many industries.

Without mincing words, SERVQUAL instrument has been vastly utilized and applied as a global scale in measuring the perceived SQ for a variety of service industries, with both managers and academics (Babakus & Boller, 1992; Crompton & MacKay, 1989; Cronin & Taylor, 1992; Johnson, Dotson, & Dunlap, 1988; Webster, 1989; Woodside *et al.*, 1989). Nevertheless, later researches in some service settings suggested that the SERVQUAL instrument is inappropriate for the measurement of SQ across industries (Asubonteng *et al.*, 1996; Babakus & Boller, 1992; Bolton & Drew, 1991; Bowers, Swan, & Koehler, 1994; Brown, Churchill, & Peter, 1993; Buttle, 1996; Carman, 1990; Cronin & Taylor, 1992; Finn & Lamb, 1991; McAlexander *et al.*, 1994; McDougall & Levesque, 1995; Rowley, 1998).

### **2.6.3 Criticism of SERVQUAL**

Carman (1990) challenged Parasuraman *et al.*, (1988) in their confirmation about the generalizability and applicability of the SERVQUAL scale through the different service industries. They reanalyzed SERVQUAL scale in the four various service settings (an acute care hospital, a tyre store, a business school's placement center, and a dental school's patient clinic). The results of study that conducted by Parasuraman *et al.*, (1988) shown that some of the SERVQUAL scale items when compared across different service settings do not load on the same component. The SERVQUAL scale's factor structure that is not general for all the service settings is otherwise suggested. Also, it is noted that modification and addition of items to the SERVQUAL scale is important. This is achievable by relying on various service sectors being investigated (Carman,

1990; Finn & Lamb, 1991). Carman (1990) further suggested that administering consumer expectation items for measuring SQ is inappropriate. It appears confusing for the respondents when asked to complete two different types of questionnaires measuring perceptions of service performance and consumer expectations. This further serves as the main reasons for the exclusion of expectations from the SERVQUAL scale (Bouman & van der Wiele, 1992). Also, the factor analysis of expectations and perceptions it would produce different results. The performance items and expectation items did not load the same way on the same factor.

Cronin and Taylor (1992) they are standing with the conclusion had found by Carman (1990) thus argued that SERVQUAL is not suitable for measuring SQ because the nature of disconfirmation paradigm. It is said to be designed for measuring the customers' satisfaction. Cronin and Taylor (1992) suggested that the perceived SQ is the best conceptual description of the attitude (Parasuraman *et al.*, 1988). It is the performance evaluation of the dimensions of services or products specific for an individual (Cohen, Fishbein, & Ahtola, 1972) in measuring the SQ. This is opined to be better used for the SERVQUAL performance items alone.

Based on the previous perspectives the SERVPERF instrument introduced by Cronin and Taylor (1992), with exclude the expectations measure, and had compared the effectiveness of measurement of SERVPERF and SERVQUAL in four main industries: dry cleaning, fast food industries, banking, and pest control. In addition, the ability of scales

is assessed based on the variation in SQ can be explained through the comparison of effectiveness measurement for the both scales and the degree of the model fit. The SERVPERF scale out performs the appearance in SERVQUAL scale in comparison with other scale as shown from the result. Impliedly, SERVPERF scale explains the variations in an overall measure of SQ. In addition, SERVPERF scale shows a higher degree of model fit, and the results also showed that SQ is an antecedent with a strong effect on consumer satisfaction. In same trend, consumer satisfaction strongly influences intention to purchase in future.

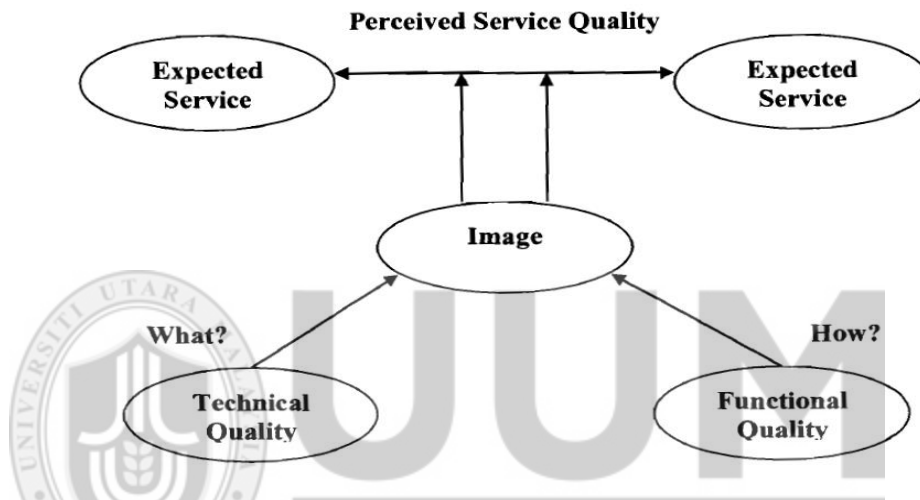
Cronin and Taylor (1992), Carman (1990), and Babakus and Boiler (1992) examined the conceptual and methodological issues in how measuring the overall perception of SQ using the SERVQUAL scale using empirical method. These issues include:

- a) dimensionality as well as the stability of underlying dimensions,
- b) the viability of operationally defining SQ in terms of expectation/perception gaps,
- c) the effects of item wording, and
- d) Problems with the reliability and validity of SERVQUAL (Babakus & Boller, 1992).

#### **2.6.4 Other Theories and Dimensions of Service Quality**

Although many of the preceding studies of SQ have used the concept and measure of SERVQUAL, based on the disconfirmation paradigm, other research conceptualized and

measured SQ in different ways. The historical theories of SQ (Gronroos, 1984; Lehtinen & Lehtinen, 1982), have been the foundations for the study of consumer SQ perceptions. Gronroos (1984) identified two dimensions of consumer performance in service encounters and reported that consumer perceptions of SQ are conceptualized by comparing the expected level of service and service performance in two dimensions see Figure 2.9.

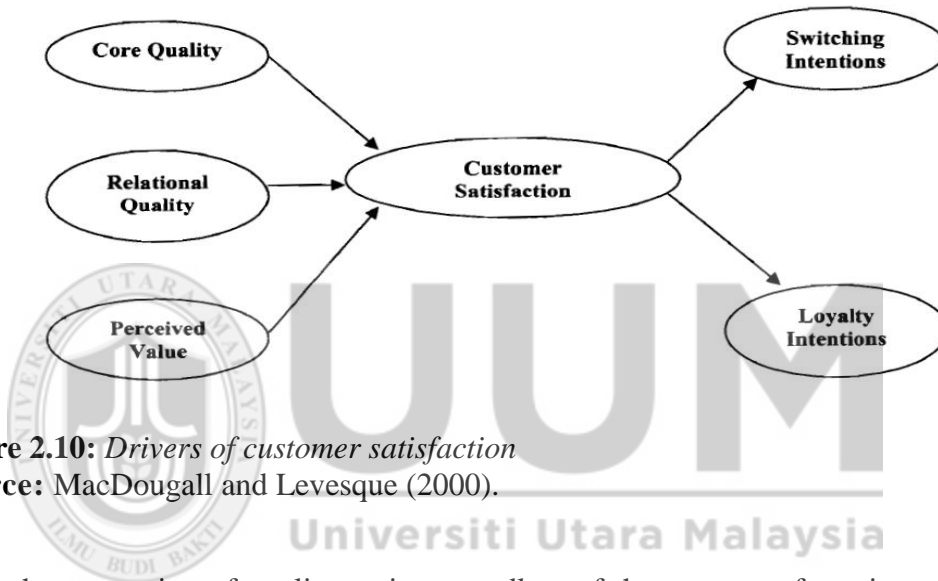


**Figure 2.9:** Gronroos (1984)'s Service Quality Model

**Source:** MacDougall and Levesque (2000).

The two dimensions presented by Gronroos (1984), these are: the technical quality of the service outcome and functional quality of the service process. The actual outcome of SQ has the reflection of technical quality and thus measured by the use of objective behavior of consumers. Technical quality also represents the service delivery and it is evaluated after performance. Functional quality focuses on the service provider and consumer interaction session, especially when the service encounter experienced. It will then be measured using the subjective perception of consumers. This also explains the manner through which service delivery can be evaluated by the consumers. He suggested that

the functional quality as a dimension strongly impact the consumer SQ perception than the technical quality dimension. The convergence point of these two factors has the assessment summation of the service provider as its composition, and also contributes to the likelihood of the customer returning to the service provider as earlier stated (MacDougall & Levesque, 2000). The following Figure 2.10 shows the relational context among perception of quality, and resultant satisfaction.



**Figure 2.10:** Drivers of customer satisfaction  
**Source:** MacDougall and Levesque (2000).

Since the perception of quality varies regardless of the core set of services performed, for services firms, it is important to know the critical factors that might be determining the customer satisfaction and loyalty (MacDougall & Levesque, 2000).

Similar to Gronroos (1984), Lehtinen and Lehtinen (1982) proposed an alternative model of SQ. This model consists of three dimensions of service performance in the service encounters, which are: physical quality, corporate quality, and interactive quality. The major concept of this model is that consumer perception of SQ results from the interaction of these three dimensions. Physical quality involves items like: the conditions of

building and equipment as well as the physical surrounding of the service delivery. This dimension corresponds to the technical quality. Corporate quality is referred to as the service rendering the organization's image and profile. And this directly affects the consumer's SQ perception (Lehtinen & Lehtinen, 1982). The last dimension is the corporate quality, derived as a result of the interaction between the personnel and the consumer of the service organization, and also from the interaction between consumers. It has been observed that the significant contribution of these two historical studies, by Gronroos (1984) and Lehtinen and Lehtinen (1982), is to divide SQ into processes and quality outcomes (Ghobadian *et al.*, 1994). Rust and Oliver (1994) developed a SQ conceptual model that includes three distinct elements: these are: service delivery, service environment, and service product. The model has parallels with the tri-dimensional model of service, containing service outcome, service process, and physical environment elements, provided by McDougall and Levesque (1995), and McAlexander *et al.*, (1994). In the model proposed by Rust and Oliver (1994), the service product, matched with the service outcome element, it indicates the cumulative perception of consumers about the service, the additional characteristics, and also any features that accompany the service. The service delivery in conjunction with the service process element is referred to as the process of the service delivered on a specific occasion.

Finally, the service or physical environment includes both external and internal environments. The internal environment shows the indication that organizational philosophy and culture introduce the service delivery by its management, while the external envi-

ronment provided the accommodating environment for the service setting. Notably, the three factors mentioned above contribute to how the formulation of service evaluation depends on the standard subjective of consumers as it influences the purchasing intentions.

### **2.6.5 The implication of Service Quality Literature Analysis on Research**

The literature reviewed gives the evidence that the SERVQUAL model has been applied and widely used. The model also provides a universal scale to measure to the SQ perception as being different for service industries around the world by the academics and the managers. Based on that justification, this model will be adopted for the development of a SQ model for m-commerce services.

## **2.7 Conceptual Foundations of Electronic Service Quality (E-SQ)**

### **2.7.1 Theories of web service quality**

From marketing and information systems as fields of study, the theories used to explain web SQ can be drawn. These field are grounded about theories related to attitude, examples are Attribution Theory (Heider, 1958), Expectancy-Value Theories, and Learning Theories (Fishbein, 1963), and The Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975). TRA states that when behavior is viewed as positive (attitude), and there is preference in others' belief in the performance of the behavior (subjective norm), the intention (motivation) will be greater in instilling a behavior in a way there is more possibility to act.



The TRA was further contributed to by Ajzen (1985). The contribution led to the development of the theory of planned behavior (TPB), having a major predictor which is an addition to the model as perceived behavioral control. This development is because of people's account on the basis of their intention to carry out their behavior. However, the actual behaviour could not be achieved due to lack of control over behavior (Miller, 2005, p. 127). Studies on Information systems conceptually refer to 'self-efficacy' as the ability of individuals in judging him/herself as regards computer technology's usage (Compeau, Higgins & Huff, 1999). The perceived outcome of the usage of the computer technology, and the experience with computer technology are positively related factors (Agarwal & Prasad, 1999).

Previous studies had shown that computer self-efficacy strongly influences the responses of users to information technology. Also included are experiences in online shopping (e.g. Agarwal & Prasad, 1999; Venkatesh & Davis, 2000). From other related theories of information systems perception, Unified Theory of Acceptance and Use of Technology (UTAUT) is a good example (Venkatesh, Morris, Davis, & Davis, 2003). Also are the DeLone and McLean I.S Success Model (DeLone & McLean, 1992), and the Technology Acceptance Theory (TAM) (Davis, 1989).

Davis (1989) explains TAM as the degree of users' intention of system usage. It is further expatiated through users' acceptance of a IS. This adoption can be better determined by the degree of users' beliefs about the system. In close examination, TRA is con-

sistent with TAM, as it assumed that attitude toward a system is best operationalized as ‘perceived ease of use’ and ‘perceived usefulness’. This will further have impact on the motivation (intention) to use the system, and as a result to actual usage. Several studies have worked on TAM and gave it be fitting modification meeting the context of the studies. TAM has proved to be reliable in predicting usage acceptance of IT (Gefen, Karahanna, & Straub, 2003; King & He, 2006; Wang, 2003). On internet usage, Chen, Gillenson, and Sherrell (2002) established its equal usefulness to consumers’ perceptions, with the submission that using the Internet will ensure there is improvement in their information seeking and shopping experience. On the other hand, ease of use can be explained by the amount of effort involved in online shopping. Examples are: The web pages must be clear and easily to be navigated.

The UTAUT (Venkatesh *et al.*, 2003) is in consistency with TAM, because of the assumption that user intentions in using an information system have the potential to result in usage behavior. But, due to the authors’ observation considering the model’s weakness, TAM is extended through a suggestion off our distinct constructs: performance expectancy, effort expectancy and social influence. These provisions made way for facilitation of these primary determinants as usage intention and subsequent behavior. Performance Expectancy is the level at which an individual’s belief about the system usage helped in maintaining the job performance. This has similarity with ‘perceived usefulness’ reported in TAM. Effort Expectancy is the level of ease experienced during the system usage (This is in similarity with the TAM’s perceived ease of use). Social Influ-

ence, by its operational definition is the rate of individual perception on the importance of how others believe he/she should the new system should be used. This is essentially similar to TPB's subjective norms. The facilitating condition is the degree to which an individual believes in the existence of the organizational and technical infrastructure to the support of system use. This is also essentially similar to TPB's and TAM's perceived behavioral control.

Additionally, UTAUT assesses these variables age, experience, gender, and use voluntariness as individual mediators affecting the four constructs. This is motivated by cogent reasons that positioned that the adoption of a system initially by a user is different to continuous usage of the system, when considering the successfulness of the system.

Bhattacharjee (2001) developed the Information Systems (IS) Continuous Model based on the consumer's behavior theory of Expectation-Confirmation and TAM. However, as an extension, it made an attempt to explain users' intention to continue the usage of an information system after the initial acceptance. This is also known as post-adoption model because of its extension is more than the acceptance stage on its initial fold. There are five sequential stages in the acceptance and users' continuous usage of an information system. These stages are:

- a) the pre-usage expectation;
- b) system acceptance and usage;
- c) post usage perception development;

- d) assessing the original expectation, then the system satisfaction or dissatisfaction;  
and
- e) Continuous usage of the system if satisfied with it.

An impressive number of researchers have modified and used the IS Continuance Model with a show of predicting the user's intention to continually be using a new information system (Ifinedo, 2006; Limayem & Cheung, 2008). Limayem and Cheung (2008) further worked on the IS Continuance Model. They did this through an addition of a moderating effect known as IS habit. The IS Continuance Model is basically similar to the SERV-QUAL model.

Additionally, the apart from the observed reliance on constructs that are deduced above theories above, this study's model includes constructs from the DeLone and McLean's (2003) IS Success Model. The IS success model was developed so as to explain the causal interrelationships among the six success dimensions. They suggested that three of the success dimensions have causality with user satisfaction and intention to use. This can result in accumulated benefits.

Their model considered the risk on the users' behavioral intentions and perceived quality of the website as constructs. The users' fear of identity theft and the transaction fraud over the internet are well documented. Sinclaire, Wilkes, and Simon (2006) in their survey conducted to examine users' internet perceptions and the degree of individuals' dis-

crimination while considering: online and traditional companies. It is reported that there is tendency of feeling more risk when giving information to online firms than the traditional face-to-face firms. It further realised that 65% of the respondents believe that using the internet can result in personal privacy problems.

### **2.7.2 Definition and Dimensions of e-SQ**

From the literature, the researcher found out that the terms website SQ and online SQ have been used interchangeably by researchers (Piccoli *et al.*, 2004; Zeithaml, 2002; Lee & Lin, 2005; Aladwania & Palvia, 2002; Riel *et al.*, 2001). Being one of the pioneers who introduced the concept of e-SQ, and who examined the SQ of websites as well as their role in SQ delivery to customers, Zeithaml defined e-SQ and website SQ as "the extent to which a website facilitates efficient and effective shopping, purchasing and delivery of products and services" (2002). Based on the above definition, it is evident that it suggests that the quality of a website is to provide sufficient service to customers to comfortably and confidently do shopping, expecting fast delivery and reliable service. In order to achieve that, companies should understand customers' perceptions about SQ and also this is evaluated by the customers (Zeithaml *et al.*, 2002).

Ziethaml *et al.*, (2002), Parasuraman *et al.*, (1985), and Zeithaml (2002) have argued that the criteria that the customers use to evaluate SQ in traditional environment are much similar to the criteria used to evaluate e-SQ and website SQ. The traditional SQ and e-SQ is distinguished as follows:

- a) Several dimensions of both SQ and e-SQ are the same, but the underlying criteria specific to them are different;
- b) The expectation about e-SQ formed by many customers are not in good faith;
- c) E-SQ includes new dimensions with attributes that are specifically for websites.
- d) The "empathetic" dimension of SQ could be less significant than the cognitive dimension in the sense that consumers perceive the online environment as impersonal, except that there is a problem while experiencing this system.
- e) E-SQ includes core dimensions (fulfillment, efficiency, reliability, and privacy) and recovery dimensions (compensation, real-time access to help, and responsiveness) (Zeithaml *et al.*, 2002; Parasuraman & Zinkhan, 2002). On the other side, the SQ includes only responsiveness, tangibility, assurance, reliability, and empathy (Zeithaml *et al.*, 2002; Parasuraman & Zinkhan, 2002).

The dimensions of E-SQ determined by previous researchers including Gounaris and Dimitriad (2003), Novak *et al.*, (2000), and Loiacono *et al.*, (2002), have their origin in the TAM developed by Davis (1989). Davis defined perceived technology ease of use as "the degree to which the prospective user expects the target system to be free of effort". He further perceived technology usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance". These dimensions can help companies to predict consumers' behavior when they decide to use a specific technology. It is said that the ease of use and usefulness of using a particular system

affect the customers' adoption of this system (Davis, 1989; Davis *et al.*, 1989; Legris *et al.*, 2003).

Ziethaml *et al.*, (2002) described eight dimensions used by customers when they evaluate e- Q and the quality of websites. These criteria are:

- a) Information availability: This criteria relates to the availability of information that can help consumers search any relevant information on any products they are interested to fully enquire about.
- b) Ease of use/usability: It implies the easiness of using the web site .This easiness can include downloading speed, design and organization.
- c) Privacy/security: This is the degree of protecting personal information of customers such as hiding their personal information with other websites, shielding anonymity, and offering informed consent. As far as security is concerned, it refers to protecting users from the risk of fraud and financial loss when they use their credit card or any other financial information. Security also refers to providing data confidentiality, security auditing, encryption, and anti-virus protection.
- d) Graphic style: It refers to the attributes of a website in terms of choice of colors, size and type of the print, layout, graphics, photographs, 3D-effects animation, and multimedia.
- e) Fulfillment/reliability: This implies the company's actual performance, and not the website performance. It is defined as the ability of the provider to serve the product or service in its agreed term.

- f) Access: ability to quickly reach the company website.
- g) Responsiveness: the degree of the quickness of company to respond to their customers.
- h) Personalization: This is ability of the website to address customers' preferences by providing personalized and customized services.

Zeithaml *et al.*, (2002), in another exploratory study, categorized dimensions into four core and three recovery dimensions that are used in measuring the customers' perceptions of e-SQ. The core dimensions include:

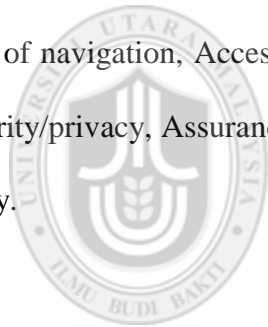
- a) Efficiency- This measures the ability of the customer's in accessing the website and check any relevant information effectively with minimal effort.
- b) Fulfillment–This is the company's actual performance in terms of the service promises' accuracy, the in-stock product availability, and delivery time.
- c) Reliability – It refers to the accurate technical functioning and the service promises of the website.
- d) Privacy- it defines the degree of the ability and will of company to sustain the integrity of customer data.

The main concern of the three recovery dimensions are mainly with the situation problem that needs solution and requires a "personal service" is required. These recovery dimensions include:



- e) Responsiveness—This is ability of the company in the provision of processes that can easily solve problems.
- f) Compensation –This is: money-back guarantee, handling costs and return of shipping.
- g) Contact points—This is the ability of the company in offering live contact and real-time support for the customer support in either through any communication means (online or otherwise).

In the same vein, Parasuraman (2004) suggested that eleven criteria of e-SQ influence the perception of the customers about website quality and e-SQ. These criteria include: Ease of navigation, Access, Customization/personalization, Efficiency, Responsiveness, Security/privacy, Assurance/trust, Site aesthetics, Reliability Price knowledge, and Flexibility.



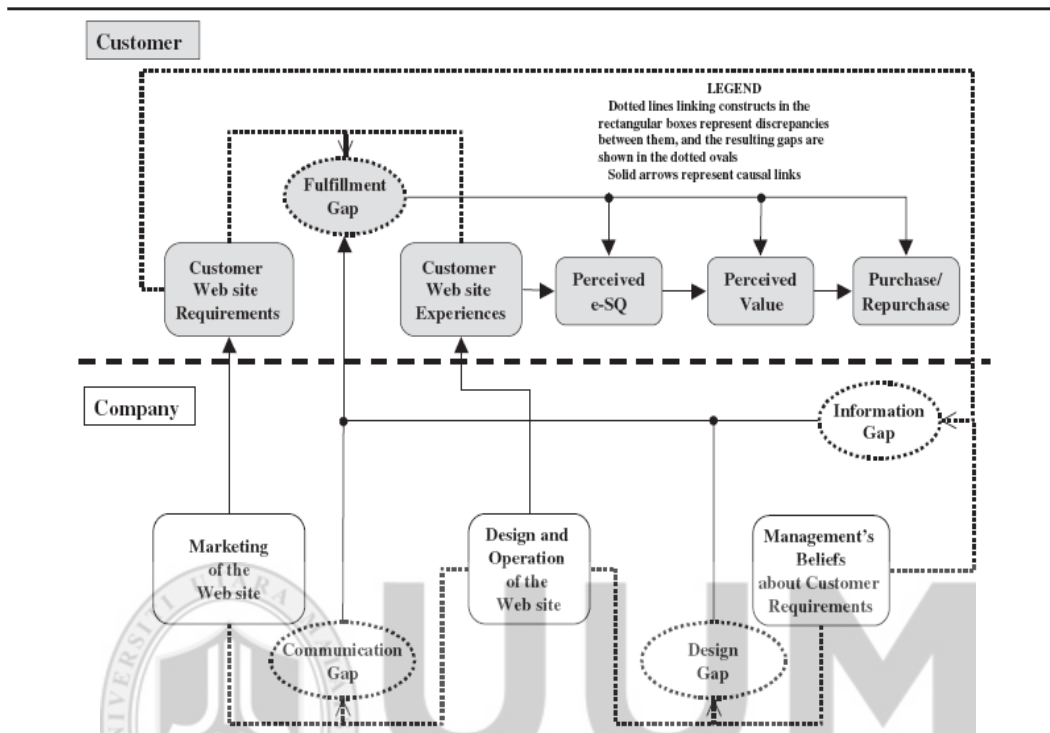
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### **2.7.3 Conceptual Model of E-SQ**

Parasuraman *et al.*, (1985) conceptual model of SQ suggests SQ, by the customers' perception can be measuring using the discrepancy degree experienced by service expectations and perceptions. Service expectation refers to customers' expectations from all the service providers in the same field, which indicates that service expectation is more general. However, customer perceptions refer to the customers' points of view about a specific service provider, indicating that perceptions are more specific.

This model has five in the service delivery processes: organization-based gaps and consumer-based gap are of four (4) and one (1) respectively. The organizational gaps give the explanation of the main business process of the service organization or marketing firm that influence the SQ perception of the consumer. These are deficiencies in the understanding of consumer expectations from the performance specifications (Gap 1); compliance to the specifications when the service is to be actually delivered (Gap 2); information about the consumers' expectation (Gap 3); and communications describing the firm's service to consumers (Gap 4). On the other hand, the fifth gap is the major gap of the model with its relationship to consumer-based SQ assessment. The fifth gap is what distinguishes the expectations of the customers from the actual performance perception the service delivery that forms the consumer's overall perception of SQ. A set of four organizational gaps caused the consumers-based gap. The five gaps mentioned above constitute the GAPS Model that hypothesized that the deficiency experienced in customer SQ is because of several shortfalls that happen within the service provider's organization.

Zeithaml *et al.*, (2002) suggested that the deficiencies in the organizations and those found on their website in terms of the information, design, and communication, has the potential of affecting both the e-SQ and traditional SQ. In other words, these four shortfalls are very common in both e-SQ and traditional SQ. The following Figure 2.11 presents the four shortfalls in relation to the company's performance and the customer's perception.



**Figure 2.11:** *Conceptual model for understanding and improving e-SQ*

**Source:** Zeithaml *et al.*, (2002)

The above model is divided into two parts. The model's upper part ("Customer") shows the customer assessment of e-SQ and the results. The lower part ("Company") shows the organizational deficiencies (GAPs) that can add to the experience of customers' poor assessment of e-SQ by customers.

Considering this from the company's perspective, three potential gaps that are related to information, design and communication are observed. These gaps have the potential of

occurring in the process of designing, operating, and marketing websites. These gaps can also contribute to the "fulfillment gap" experienced on the customer's part of the model.

*Information gap:* This is the discrepancy between the requirement gathered from the customers concerning the website and the beliefs of the management about these requirements. Zeithaml *et al.*, (2002) pointed out that management can overestimate the significance of including sophisticated 3D graphics that could affect transaction's efficiency. Such belief can be perceived by customers in a very negative way: the design may not appeal to them. Zeithaml *et al.*, (2002) argued that customers can desire a better satisfactory level of performance on some of website attributes. This will neither be too high nor too low. The discrepancy is not only found between customers and companies. But it seems that customers are expected to perceive things differently. This difference in perception is up to different attributes related to customers, such as being experienced or not. Sometimes this difference happens because of the nature of the context itself: customers who are browsing are not the same in disposition as the customers willing and ready to buy. So, the attributes of customers and the nature of the context, can also contribute to differences in perceptions and estimations. To solve that problem, Zeithaml *et al.*, (2002) suggested that there should be regular monitoring of the marketplace to be updating the company's knowledge about Website attributes as desired by customers, otherwise "the information gap will persist".

*Design gap:* This is the inability of the company to fully add the knowledge about customer's requirements into the websites' structure and functionalities. Zeithaml *et al.*, (2002) illustrated this point and argued that management might be informed of the fact that their customers are expected to receive prompt personal support when there is a problem with their e-transaction. But due to some reasons, they might be unable to react based on their awareness and thus initiate appropriate Website modifications.

*Communication gap:* It refers to inaccuracy of the websites' understanding in terms of its features, capabilities, and limitations as supposed by the company's marketing personnel. To clarify this point, Zeithaml *et al.*, (2002) pointed out that it is possible that the marketing personnel sometimes give promises to consumers either in relation to the designing or operating system. However, the company does not have the system or infrastructure that are needed for fulfilling these promises in some cases, or it is the ignorance of the personnel that is responsible for the design and operation of the system who do not bring these promises into practice.

*Fulfillment gap:* It refers to the overall inconsistency between the customer's requirements and the experience as a result of gaps from the company's side. The fulfillment gaps are in two forms: one from the marketing promises that do not reflect the core value of the website's design and operation. A good example of this is when a money-back guarantee proclaimed by the company cannot be fulfilled because of lack of back-end infrastructure in dealing with customer complaints. Secondly, a gap as a result of general

deficiencies of the website in fulfilling customers' desires. Example of this is when a website is unable to provide any function for transaction.

The model proposed by Zeithaml *et al.*, (2002), signifies that the customer experience in some websites' attributes, especially those that involve a pleasant surprise-effect is directly affecting the perceived e-SQ by a customer. The authors then suggested a direct link should exist between perceived e-SQ, perceived customer value and purchase/re-purchase intentions. The perceived value will be a result of a trade-off between the benefits received and the customers-endured sacrifices. Similarly, Wolfinbarger and Gilly (2003) argued that SQ is significantly related to customer satisfaction, retention and loyalty. Therefore, it is expected to be a determinant of success both in a traditional environment, and in an online market space.

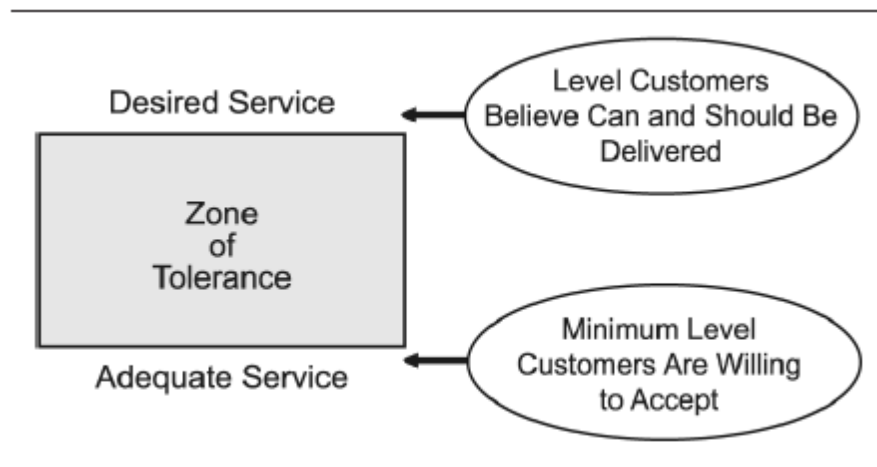
## **2.8 Notion of E-SQ Useful Concepts**

### **2.8.1 Customer Expectations of Service Delivery: Nature and Determinants**

Among the most important elements that contribute to the understanding of customers' expectations are customers' perceptions of SQ. Many researchers, including Gronroos, (1982), Parasuraman *et al.*, (1985, 1991), Devlin *et al.* (2002), Parasuraman (2004), and Udo, Bagchi and Kirs (2010), suggested that SQ, from the customers' perception, is on the basis of the ability of the service to conform to customers' expectations. Gronroos (1998) suggested that "quality perception is a function of what the customer expects of the process as well as of what in fact is experienced". There is a relationship between

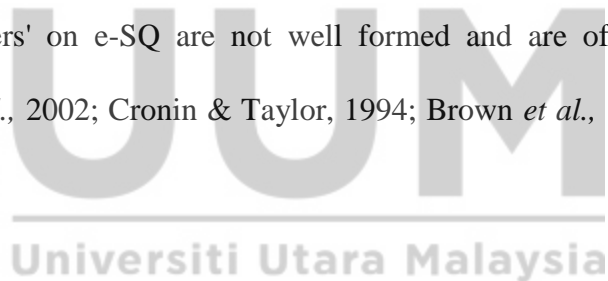
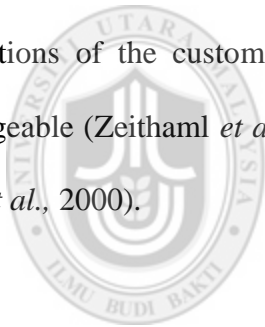
customer quality perceptions and the promises given by a firm and the degree to which these promises have been fulfilled.

Parasuraman (2004) revealed that word-of-mouth, past experience, personal needs and external communication to customers formed customers' expectations of SQ. Gronroos (1998), Boulding *et al.*, (1993), and Gardial *et al.*, (1994) stated this in their elaboration of the complex nature of customers' expectations and on the ability of changing over time. Parasuraman (2004) asserted that a customer has no "ideal" level of expectations. However, a customer's service expectations are best highlighted rather by an interval - a "zone of tolerance" (see figure 2.12). The customer's zone of tolerance is out of the boundary of the top level by the "desired service" situation. This boundary is believed by the customers to be deliverable. For the bottom line, "adequate service" is the lowest acceptable level for customer service.



**Figure 2.12:** *Nature and Determinants of Service Expectations by Customers*  
**Source:** Parasuraman (2004)

Parasuraman (2004) pointed out that zone of tolerance may vary according to the context and occasions: it depends a lot on demographics, background and previous service experience of the customer. Also of interest are the manner through which the service is communicated and marketed by an organization. Parasuraman (2004) further illustrated and argued that over-promising services can be impossible because they can be difficult to meet. Thus, the customers' high expectations can contradict the reality of the situation and result in a negative perception of the service received. Having said that, it is evident that the customers' expectations are not confirmed since the expectations of the Internet users are identified as most important factors that will mould the future of the Internet and Web-based marketing (Rayman-Bacchus & Molina, 2001). It is shown that the expectations of the customers' on e-SQ are not well formed and are often weak and changeable (Zeithaml *et al.*, 2002; Cronin & Taylor, 1994; Brown *et al.*, 1993; Dabholkar *et al.*, 2000).



### **2.8.2 Online Customer Satisfaction as a Measure of E-SQ**

In comparison with the numerous researches that have worked on the quality of face-to-face services, investigations of online SQ remain in their infancy (Akinci *et al.*, 2010; Ding *et al.*, 2011), Gronroos (1998) suggested that the perception of SQ is concerned with the present moment. In other words, SQ is a short time-concept. However, customers' satisfaction is concerned with their perception of the value received in a transaction or relationship in the long run. This definition indicates that customers' satisfaction is a long term concept (Hallowell, 1996). Bleuel (2004) suggested a realization of the cus-



tomers' satisfaction when the performance of the service is in line with the expectations. Customer satisfaction is recognized to be an essential factor that affects long-term relationships between firms and consumers, both the t- and e-commerce business environments (Storbacka *et al.*, 1994; Shim *et al.*, 2001).

Based on websites, companies can appeal in most cases to pre-adoption customer satisfaction. This appeal is the first step to be taken before any actual service. The pre-adoption satisfaction relates to customer attraction, but the post-adoption satisfaction aims at customer retention (Khalifa & Liu, 2003; Khalifa *et al.*, 2002; Khalifa & Shen 2005). Morrison *et al.*, (2001), illustrated the term relating Internet travelers as "lookers" and "bookers". They also illustrated how the work can be of company's benefits in respect to the website "lookers" who can be attracted and converted into "bookers", while bookers can be retained by a company.

Parasuraman *et al.*, (1985) suggestion is that: there is influence of SQ on customer's satisfaction. Therefore, the customer satisfaction is seen as a mediator of SQ effects on the formation of behavioral shopping intentions (Taylor & Baker, 1994; Dabholkar *et al.*, 2000; Brady and Robertson, 2001). Similarly, several studies such as by Khalifa *et al.*, (2002), Khalifa & Liu (2003), Khalifa & Shen (2005) submitted that some website e-services have positive effect on customers' satisfaction, together with the website and online purchasing in the long run.

Shneiderman (1998) argued that the subjective satisfaction of a user through the use of IT is influenced by perceived quality characteristics of technology like: ease of use and usefulness. According to Spreng and Mackoy (1996), perceived SQ precedes satisfaction with quality, and the value of this given quality. Impliedly, it can be concluded that perceived SQ is a concept used to understand how services are developed. However, customer satisfaction is a concept used to evaluate the successfulness these services in terms of their fulfillment of the customers' needs and desires. Gronroos (2001b) similarly stated that: "Quality, as such, should not be measured", but "how well perceived SQ dimensions serve customers, could and should be measured with customers satisfaction with the service".

### **2.8.3 The Relationships between Service Quality, Customer Satisfaction, and Behavioral Intention**

Cronin and Taylor (1992) examined the causal relationships among SQ, customer satisfaction, and behavioral intention, measuring each variable with one item. A total of 660 usable questionnaires were collected randomly for the examination of the causal relationship among three variables mentioned above. The questionnaires were from customers of four types of businesses in the southeastern USA: banking, dry cleaning, pest control, and fast food. The correlation analysis' result suggested that:

- a) SQ is an antecedent of consumer satisfaction;
- b) SQ has less effect on purchase intentions than do consumer satisfaction; and
- c) consumer satisfaction has a significant effect on purchase intentions.

Dabholkar *et al.*, (2000) revealed that customer satisfaction is a strong mediating factor for the effect of SQ on behavioral intentions. The data used in their own study were systematically and randomly collected from 397 churches. A test of discriminant validity showed that the SQ's construct is not the same as the construct of customer satisfaction. The result of regression analysis done in structural equations modeling support their proposition that: customer satisfaction strongly influence behavioral intentions than SQ (Dabholkar *et al.*, 2000). The SQ literature indicated that perceptions of high SQ and high service satisfaction resulted in a high level of purchase intentions (Boulding *et al.*, 1993; Cronin & Taylor, 1992; Taylor, 1997; Taylor & Baker, 1994; Zeithaml *et al.*, 1996).

Coner and Gungor (2002) claimed that customers' loyalty is affected by product quality, SQ, and retailer image. It also suggested that: quality of product and service are directly related to customer satisfaction, and leads to the loyalty of the customer. The literature centered on customer satisfaction literature shows that the relationship between customer satisfaction and customer behavioral intention is dependent of the type of satisfaction. There is a strong positive impact on customer behavioral intention by satisfaction manifestation. This is also stronger than that of latent satisfaction on customer behavioral intention (Bloemer & Kasper, 1995; Bloemer & De Ruyter, 1995). Based on the results of the empirical studies, the customers' SQ is one of the antecedents of satisfaction, in the sense that if there is SQ, there is a possibility for obtaining the customers' satisfaction (Anderson & Sullivan, 1993; Cronin & Taylor, 1992, 1994; Reidenbach & Sandifer-

Smallwood, 1990; Spreng & Mackoy, 1996; Woodside, Frey, & Daly, 1989). This satisfaction can result in customer's loyalty intention to the service provider (Coner & Gungor, 2002; Cronin & Taylor, 1992, 1994; Dabholkar, Shepherd, & Thorpe, 2000).

## **2.9 Website Quality Factors**

### **2.9.1 The Notion of Website Quality for a Consumer**

Certain services are said to have positively influenced online customer satisfaction, and thus facilitated customers' online operations. This also resulted in the fulfillment of the customers' needs in all the phases of the shopping process. They are commonly known as tools used in addressing online consumers and in strengthening a website's e-SQ profile (Shneiderman, 1998; Khalifa and Liu 2002, 2003; Loiacono *et al.*, 2002; Piccoli *et al.*, 2004).

The perceived quality of a website by a customer is affected by the customer's subjective perception of the website's usefulness. Therefore, a website quality is evaluated by its ability to address and fulfill customers' needs (Piccoli *et al.*, 2004). In order to provide e-service, the researcher assumes that there are three aspects that should be fully considered: user interface and website design, online shopping process, and Internet privacy/security issues.

### **2.9.1.1 Website E-Services Related to the Online Shopping Process**

Pre-purchase, purchase and after purchase are stages of the online shopping process. These stages can be categorized as information and communication e-services. For the information e-services, Liu and Arnett (2000) pointed out that information quality is a contributing important factor to the overall success of a website. They further argued that the usefulness, effectiveness and accuracy of the information given on a website are the most important e-SQ features perceived by website users.

Information-related website e-services in the starting periods of the consumer's buying process are especially important. This is when the customer wants to get information about the products of company and also evaluate different alternatives. Information availability and accuracy are said to be associated with reduction in perceived customer's risks and uncertainty in most findings (Money & Crotts, 2003; Nysveen *et al.*, 2003; Gursoy, 2003). Information-related e-services include website customization, a website internal search engine, mailing lists, alternative channels of contact, a displayed mailing address and company profile, many languages, links to other websites, chat forums, bulletin boards, and other web self-service offerings, such as: frequently asked questions (FAQs) on most frequently searched issues (Rust & Lemon, 2001).

Throughout the customer shopping process, many communication e-services play important roles along all the stages. These communication services may include e-mails, real-time customer support, chat, and web-based customer service centers. By having

tools of effective communication, companies can solve their customer complaints quickly and subsequently provide customers with prompt feedback. This is an essential driver of on-line customers' satisfaction (Bhattachajee, 2001; Buhalis, 1999).

In this respect, Rust & Lemon (2001), Bhattachajee (2001) pointed out that communication website have FAQs, the ability to lodge complaints, tools/interface for resolving customer complaints, a web center for customer service and support, and "click-to-talk"-applications have important services. Khalifa and Shen (2005), and Khalifa *et al.*, (2002), mentioned that: other important e-services are: features of online community like guest books, chat-rooms, talk forums, and message boards.

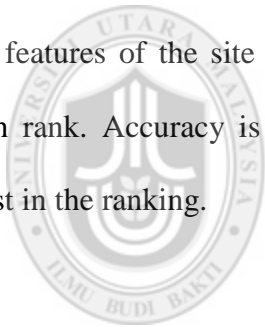
### **2.9.1.2 User Interface and Web Design-related Website E-Services**

In general, website e-services that are related to user interface and web design are classified as user interface e-services and website customization/personalization e- services.

*User interface e-services:* refer to the overall perceived quality of website design (site layout, fonts, and colors) and navigational structure (site infrastructure, navigational tools) (Hassan & Li, 2005; Shneiderman, 1998; Nielsen, 2000; Liu & Arnett, 2000; Yang *et al.*, 2004). Additionally, Wan (2002) pointed out that multimedia: graphics, visual and sound effects, 3D-pictures, are of powerful tools for the enhancement of customers' knowledge about the product or service. These tools are also used for the reduction of associated with consumer uncertainty. Khalifa and Shen (2005) suggested other types

of user interface services like: website maps and menus, decision support features, like: timetables, website customization, price comparison, push-based service, such as weather reports, and mobile interfaces.

Rust and Lemon (2001), Rosen and Purinton (2004) further added and argued that technology-related quality factors of websites are browser friendliness, downloading times and continuous and timely updating. However, previous studies emphasized certain areas and marginalized other areas. For example, Zhang and von Dran (2002) focused on web design's quality factors. The study revealed that navigation comes in the first place, followed by completeness/comprehensiveness of information in the second place. Technical features of the site is in the third rank, and currency/timeliness/update is in the fourth rank. Accuracy is at number five and readability/comprehension/clarity is the lowest in the ranking.



Rosen and Purinton (2004) proposed another preferential scale for assessing website design factors. They suggested that web content is one of the main quality features of a website that call for repeated visits. The web content is: texts, pictures, graphics, layout, and sound, motion and in future, even smell. Rosen and Purinton (2004) recommended the adoption of a minimalistic approach for the building of a successful web design so as to avoid information overload, combined with eye-catching appropriate graphics that can still keep the design simple.

Website customization/personalization e-services—The need of individual-customized service by the customers can be addressed through the customization and personalization of the website. It was found that website customization e-services is one of the leading vital drivers of customer satisfaction before the real sales stage (Khalifa *et al.*, 2002). Similarly, Rust and Lemon (2001) argued that site content customization (changing website appearance, information and service offerings based on the user's preferences) and product personalization tools (changing product offerings in real-time on the basis of the customers' choices and actions) are salient e-services that give the quality of websites due enhancement.

### **2.9.1.3 Website Quality E-Services Related to Internet Privacy/Security**

Liu and Arnett (2000) pointed out that owing to the universal and impersonalized nature of the Internet, cyber-crimes constitute strong impediment to the adoption of internet by the e-commerce customers. The manners at which these crimes are conducted are relatively easier than the obtainable in the physical environment. This is why Zeithaml *et al.*, (2002) argued that privacy is a major dimension that consumers must use in the evaluation of website's quality. Security is considered as the major concern for online customers in this present age (Liu & Arnett, 2000). In a similar argument, Ma *et al.*, (2005) pointed out that offering internet security-related services and security/safety information on the company's website, and also company's physical address contribute to the reduction of the uncertainty and risks that customers associated with e-commerce and online purchasing. The company's information about security and safety measures is



therefore to protect important customer information that is registered on the website. This information should be promoted clearly on the website and be open to customers' scrutiny (Buhalis, 1999).

#### **2.9.1.4 Website E-Services Related to innovativeness**

Product innovation within manufacturing context is often seen within the radical incremental domain, where the process through which new product features or new combination of existing product features are introduced to provide the basis for articulating innovativeness. According to Berry *et al.*, (2006), ideas usable in the enhancement of performance enhancement to be perceived by customers as offering of new benefit of sufficient appeal that it influences their behavior in its strongest term are market-creating service innovations (p. 56). Broadly, this view encompasses the notion of an innovation, changing consumer or retailer behaviour. However, Kotler (1983) argued that innovation emerges not only as strategy emanating from the organization, but also stimulated by the organization's customers through their advocacy for the customers' input into the innovation process. While innovation enables firms to continuously create advances in their offerings (Kim & Mauborgne, 1997), the offering must be perceived as innovative by the consumers for the firm to gain from the innovation. In this sense, consumers' subjective evaluation of the newness of a product or service is seen to be a crucial aspect of innovation. However, Anselmsson and Johansson (2009) argued that a product or service is an innovation if a consumer considers it to be innovative. Lee and O'Connor (2003) also stressed the importance of evaluating the consumer's perspective, since a

new product (or service) is innovative if it is judged by the customer as being so. In this context, innovativeness can be based on elements such as perceived uniqueness with regards to the object's (product, service etc.) features, and functionality and usefulness in comparison to current products or services. Importantly in service settings where customers engage with tangible and intangible elements, Price and Brodie (2001) and Raju and Lonial's (2001) suggestion gave preference to outside-in customer view over inside-out firm approach to innovation when needed for the improvement of service delivery and customer satisfaction. Garcia and Calantone (2002) differentiated product innovation from product innovativeness. They explain that product innovation addresses the process that transforms invention to a marketable product. On the other end, product innovativeness is the degree of newness for innovated and marketable products to the firm or market. On this basis, once the invention is birthed through an innovation process, and then transformed into an innovative market offering. A view that the researcher adopt here to characterize innovativeness in the context of website-services, is a retailer's website offering (i.e., a retail service interface offering goods and services) which be perceived as being innovative. Since the major interest in product innovativeness centers on products' novel changes, the firms' manner of integrating service-providers due to lack of offerings tangibility, should find ways of introducing novel changes in the firm's processes thus making up the bulk of their intangible offerings (Zolfagharian & Paswan, 2008). Extending this view into the m-commerce environment, perceived website-service innovativeness can be described as the degree to which the service processes

embedded in the website interface appear (are perceived as) novel to customers when they receive and consume the e-service.

### **2.9.1.5 Consumer perceptions, website-service innovativeness, and service branding**

Consumer perceptions of website-service innovativeness are not only relevant to aspects of uniqueness with its features, functionality and usefulness (i.e., service processes), but are also reflections of the retailer's brand and its meaning to consumers. The meaning of brand is: the dominant perceptions held by the customers of the product. This is the brief of the customer's impression of the brand and its associations (Berry, 2000, p. 129). Keller and Lehmann (2003, p. 28) commented that customers mindset is all that exist in the customers' mind as regards the brand. These are: thoughts, experiences, feelings, perceptions, images, beliefs, and attitudes. From this general view, brand is the meaning attached to any product by the consumers (Kapferer, 1992). It is through this that consumers perceive all benefits about it. For instance, consumers may find the product useful or useless; they may like or dislike the product; and they may approach or avoid buying the product (Bloch, 1995; Mono, 1997). The meaning of brand from the service's perspective is derived from the customer's service consumption experience. This is majorly through their experience while interacting with specific attributes of the service like: core service, employees, services capes and websites as the major determinants of brand attitude (Grace & O'Cass, 2005).

This situation is because service interactions are the brand stimuli given in the service encounter. It is the interaction that makes provision for principle means through which the 'service brand image' can be created (Padgett and Allen, 1997). Brand image is important because it influences consumers' subsequent behavior, including intention and actual purchase (Johnson & Puto, 1987; Fishbein, 1967). In the m-commerce context, favorable service brand image's creation is a important issue affecting e-retailing due to the absence of tangible products, tangible store and fronts service personnel (Davis *et al.*, 2000; Pavlou *et al.*, 2007). In this regard, the interface of the website acts as the focal brand stimuli to be delivered to consumers. In this situation, encounter with the website-service plays an important role in bringing the service experience online. Thus, communicate the service attributes and symbolic meaning in this "moments of truth" (Cho & Menor, 2010; Davis *et al.*, 2000). As a result of this, the researcher argues that the perception about the delivery of an innovative e-service experience provides the opportunity of distinct positioning to the e-retailer. It allows e-retailer to duly differentiate among his competitors, thus posits a viable a competitive edge. The researcher conceptualizes website-service innovativeness in this study as a holistic perceptual assessment made by the consumers. This perceptual assessment is based on their interaction with the processes of the website interface (i.e., the e-service). This then focuses on the degree of innovativeness of the website as being modern, dynamic and unique, and thereby of use to them.

## **2.10 Assessment and Measurement of Website E-SQ**

### **2.10.1 Current Trends and Issues in the Area**

Being dependent on subjective judgments and perceptions, assessing quality is a very elusive and difficult task. Assessing quality of an intangible construct, as in most services is of more complexity to it (Parasuraman *et al.*, 1985; Gronroos, 1998, 2001a; Gummesson, 1990). Though SQ measurement has attracted considerable interest in the research realm (Parasuraman *et al.*, 1988, 1991, 1993, 1994; Cronin & Taylor, 1992; Brown *et al.*, 1993; Caruana *et al.*, 2000; Davidson *et al.*, 2001), the area of assessing SQ delivery through the web has not gained the due concern for a long time. However, academia and practitioners have started to pay considerable attention to the assessment of e-SQ recently since they have realized its necessity for improving companies' online offerings (Zeithaml *et al.*, 2002; Parasuraman, 2004). Measuring e-SQ of a website is in its early stages; therefore few studies have addressed the issue of e-SQ measurement from such conceptual view (Zeithaml *et al.*, 2002; Wolfinger & Gilly, 2003; Parasuraman, 2004). Few works have been done on the assessment of the quality of services delivered through the Web.

The Marketing Science Institute (MSI) in USA, together with other researchers in related fields have been working on conceptualization and assessment of SQ in both physical and computer mediated market space for more than twenty years. This research had been the most comprehensive research on SQ assessment. The outline of their research is presented in Parasuraman's study as in Table 2.3:

**Table 2.3: Outline of the Main Research on SQ and E-SQ**

Years	Research area	Authors
1983-1985	Conceptual model of SQ-GAPS model	Parasuraman, A., Zeithaml, V. A., Berry, L.L.
1985-1988	SERVQUAL instrument	
1988-1990	Extended GAPs model	
1990-1993	Nature and determinants of service expectations	
1993-1994	Refined SERVQUAL instrument	
1995-1996	Multiple-method listening: a service quality (SQ) information system	
1996-2003	Role of technology in service delivery	Parasuraman, A., and Colby, C.
2000-2003	Understanding and measuring e-service quality (e-SQ)	Zeithaml, V. A., Parasuraman, A., and Malhorta, A.
2001-2003	Network-based customer service systems	Parasuraman, A., Watson, R., Brohman, K., and Piccoli, G.
2003-2006	Developing successful technology-based services: the issue of identifying and involving innovative users	Matthing, J., Kristensson, P., Gustafsson, A., and Parasuraman, A.
2006-2009	A Design Theory Approach to Building Strategic Network-Based Customer Service Systems*	Brohman, M. K., Piccoli, G., Martin, P., Zulkernine, F., Parasuraman, A., and Watson, R. T.
2009-2013	Do customer relationships mitigate or amplify failure responses?	Kaltcheva, V. D., Winsor, R. D., and Parasuraman, A.

**Source:** Parasuraman (2013)

The research resulted in various frameworks for understanding and assessing SQ and e-SQ, and the instruments of the measurement to be used in evaluating both SQ and e-SQ. Other researchers' works in the area of assessing e-SQ and website quality are: Loiacono *et al.*, (2002), Hassan and Li (2005), Rice (1997), Liu and Arnett (2000), Yang *et al.*, (2001), Szymanski and Hise (2000), and Yang *et al.*, (2005). All of them have offered different scales for measuring website's e-SQ in different industrial contexts. There is

also a range of e-SQ scales developed for businesses like: BizRate.com, Gomez.com, and CIO.com, (Zeithaml *et al.*, 2002).

The suggestion from major trends in the assessment and measurement of website's e-SQ suggested studies of different customer trade-offs. These trade-offs are between e-SQ and price. Studies of the relationship between traditional SQ and e-SQ in a company, and the perceptions of customer about SQ delivered through electronic channels and websites has effect on customer perceptions of SQ delivered through traditional distribution channels.

#### **2.10.2 Main Website E-SQ Assessment Techniques**

From the literature, it is evident that there are many attempts by academia and industry practitioners to develop scales for measuring website's e-SQ. It is also noticeable that most of the developed and validated scales are based on the TAM featuring: website usability, design, informativity, functionality, technical characteristics and safety of use (Zeithaml, 2002; Loiacono *et al.*, 2002; Rice, 1997; Liu & Arnett, 2000; Szymanski & Hise, 2000; Yang *et al.*, 2001; Wolfinbarger & Gilly, 2003; Yang *et al.*, 2005).

Many of websites used for measuring e-SQ scale are developed in specific industrial service contexts. Many of the existing scales were developed in the e-retailing context (Loiacono *et al.*, 2002; O'Cass & Carlson, 2012; Wolfinbarger & Gilly, 2003; Zeithaml, 2002; Zeithaml *et al.*, 2002). There are also attempts to evaluate websites' e-SQ in the context of online tourism service (Chung & Law, 2003; Ho & Lee, 2007). Other tried to

evaluate e-SQ of websites in e-business (Udo, Bagchi & Kirs, 2010); other researchers evaluated e-SQ in e-Government context (Kaisara & Pather, 2011; Papadomichelaki & Mentzas, 2012). Therefore, there is a need for developing different e-SQ measurement scales for different types of websites and services offered. In the following paragraphs, the researcher reviews seven main studies that developed measurements for measuring website e-SQ. These are the most comprehensive ones amongst those reported in the literature to date.

#### **2.10.2.1 Measuring E-SQ in university context**

Al-Mushasha and Hassan (2009), proposed a SQ model for m-learning usable in a university environment, their model provides a means for measuring the learners' perceived SQ on its overall, the learner satisfaction and behavioral intention to use the service in future. Two methods were conducted to assess instrument scales, divided into two parts: the first was pre-test validation. Here, the researcher assessed the content validity of the measurement scales; in the second part of validation, pilot testing was conducted to harness additional support for content validity and also to obtain initial indicators about construct validity and reliability. A total of 259 people were surveyed comprising undergraduate, masters, and doctoral degree students, and distributed among the three faculties in the university.

The findings revealed interface design, reliability, trust, content usefulness, content adequacy, and ease of use, accessibility, and interactivity as the factors that lead to m-



learning SQ in a university environment. There are two factors that did not lead to SQ, these are responsiveness, and personalization. Their model is of three main dimensions system quality, service quality, and information quality; each one has sub- dimensions.

The first dimension, "Service Quality" includes five sub-dimensions which are interface design, reliability, trust, responsiveness, and personalization. Here, interface design refers to the appearance of mobile portal and is consistent with the tangibility dimension in the SERVQUAL model. Reliability refers to the consistency, dependability, and accuracy of promised service performance; this dimension is considered as one of the important dimensions in the measurement SQ in new service-delivery, due to the fact that the user's consideration of performance risks is based on new technology service. Trust is said to be the center of e-service with much academic discourse on privacy, security, and confidence which is similar to the assurance dimension in the SERVQUAL model. Trust is the users' submission in accepting the vulnerability of an online transaction on the basis of their positive expectations as regards future online provider behaviors. Responsiveness is the willingness of employees to make provision for prompt service in the dealings of the consumer complaints, which can be measured by the ability of the company to support their customers with due information when there is problem. Hence, a quick response to the request of the customer indicates that the company is customer-oriented, leading to overcoming the issue of uncertainty and increases the perceived convenience of customers. The responsiveness dimension here is similar to the one existing in SERVQUAL model. Personalization refers to the caring, individualized atten-

tion for the consumer and subject knowledge of employees, which is defined in the e-service context, as the degree of customization of communication and service provider awareness of consumer needs in the e-service context. It is considered the important characteristics of many of the e-commerce and m-commerce business models because it gives the customers real time value by creating a perception of high-quality service.

The second dimension, "Information Quality" includes two dimensions which are: content usefulness, and content adequacy. Here, content usefulness is the currency, reliability, accuracy, and value of information. In specific, information accuracy gives the system information adequate description on its extent of being freed from error. Information currency is concerned with information timeliness and continuous update. Information reliability refers to its accuracy, dependability, and consistency. Information value is concerned with relevancy and clearness. Content adequacy is the extent of the information completeness that facilitates the learner's understanding of the materials and services offered by service providers.

Finally, "System Quality" includes three sub-dimensions: ease of use, accessibility, and interactivity. Ease of use means the degree of a person's belief that using a particular system would be effort-free or the degree of the users' expectation about the user friendliness of the system. Accessibility refers to the time it takes to actively perform the service. Interactivity is the ability of the website in allowing different flows of communication between the users of the sites, the company's personnel, interactive information

search, and transactions via the website. The researcher suggests that these findings can be used for m-government, m-commerce, m-services, and so on. One of the limitations in this study marks the significance of its scope. This is why this study focuses on the university environment only. Researchers suggest that additional work needs to focus on the government or business enterprises to find the influences of factors that result in m-learning in different types of services. There is therefore a need to continuously refine the scale into the overall SQ, and incorporate new aspects of overall SQ into the proposed scale. This would, verify the measure of overall SQ (Al-Mushasha & Hassan, 2009).

#### **2.10.2.2 Measuring E-SQ in e-business context**

Udo, Bagchi and Kirs (2010), developed constructs of web service quality and further analyzed their relationships with behavioral intentions and customer satisfaction using an e-business environment as case study. Their study examined the dimensions of web SQ, based on e-customers, expectations and perceptions. Furthermore, effect of risk perception on perceived SQ, user satisfaction and the user's intention to continue online shopping was studied. The survey was conducted using 211 senior students of business administration at a large public university in the southwest USA as the respondents. Students chosen to participate in the study are those that have made at least one online purchase within the previous six months. The study revealed that perceived risk does not have an effect in web SQ, in contrast; the relationship between SQ and other factors exist and are significant. These are web site content and service convenience. Their model

consisted of three main dimensions: SQ, system quality, and information quality; each one having sub-dimensions. The dimension of SQ included three dimensions: perceived risk, service convenience and web site content. Perceived risk is the extent at which individuals believe that there is possibility of loss if products or services are purchased through the internet. Web site content is the presentation and layout of both the information and functions through which the overall firm's presence and its public image are well captured. Service convenience refers to the perception of the consumers on the extent that buying or using a service is related to time and effort. Although this study dealt with just a few factors, the R2 value 0.619, different from other studies that dealt with several factors that generally yielded a lower R2 value (Lee & Lin, 2005; Santos, 2003).

A major finding of this study is the non-expectation of the relationships between perceived risk, behavioral intentions, and satisfaction as being insignificant. The researchers attributed that to the sample used in this research, since the respondents were undergraduate students; there was an assumption that their age and lack of perceived risk could be related. In other words, the impact of web SQ's perceived risk can also be exempted in the present study because of the age of the respondents. Despite this unexpected result, further research needs to further explore the effect of perceived risk, centering on the perception of thee-customers about web SQ. In addition to age and security mechanisms, culture and individual personality traits are other factors that can also be involved (Udo, Bagchi & Kirs, 2010).

### 2.10.2.3 e-SELFQUAL

Ding *et al.*, (2011) developed a novel scale name, e-SELFQUAL to be used for the measurement and prediction of online self-service quality. The authors' aim is to examine the online self-services' quality in e-retailing. e-SELFQUAL gives the provision for the examination of the relationships between online SQ and customer satisfaction, and also e-retailing loyalty. The scale development consists of: series of pilot and validation studies. The validation studies include generation of a pool of candidate items through focus group discussions, literature reviews and domain experts. This is essentially done in conjunction with content validity assessments of the candidate items. Then, appropriate candidate items are grouped and selected to create a sub-set of items that exhibit desirable reliability and validity. Finally, the authors examined other items thoroughly to ensure desirable psychometric properties are contained. In order to assess the predictive validity of the SQ dimensions, a survey study containing 13 question items and additional items was administered to measure customer satisfaction and loyalty. Among the 500 students from graduate and undergraduate business students in a university located in the Southwestern United States, the final sample consisted of 302 respondents. The results indicated all extracted SQ dimensions are of significant impact on customer satisfaction and loyalty. The dimensions are: service fulfillment, customer service, service convenience and perceived control. In this regard, service fulfillment means the accurate product information presentations and detailed service descriptions that aid the customer reception of his or her order through the right delivery within the promised time limit. Perceived (cognitive) control is the person's belief about a response that influences an

event. Customer service refers to how e-retailers interact with their customers and their needs, seeking to find solutions for them and guide them in the event of problems encountered during and after surfing the site. Lastly, service convenience is the function of consumer's time and effort perceptions that is related to buying or using a service. The researchers argued that online service providers need to duly ask for feedback about the service process so as to improve the customers' perceptions of control and service convenience. This feedback is also expected to ensure that the customers are fully aware of the situation and has the ability of predicting the event sequences. Overall, the results in this study show that online service providers should ensure service fulfillment, and enable customers to control the service process. Also, there should be considerable time and effort savings, and a provision of timely customer service and assistance. Moreover, the sample of this research did not cover all the types of customers.

Other investigations, using samples of diverse consumers with diverse e-retailers across industries or sectors as target reexamine the developed measurement scale. Culture is considered an important field for future research (Kettinger *et al.*, 1995). Therefore, reexamination of e-SELFQUAL needs consumers in different geographic locations or with different cultural backgrounds to be included. Finally, SQ is not the sole determinant of customer satisfaction or loyalty (DeLone and McLean, 2003). Future studies should integrate information, system, and price levels to evaluate their effects, independent or combined, on focal service outcomes (e.g., customer satisfaction, loyalty) (Ding *et al.*, 2011).

#### **2.10.2.4 Measuring E-SQ in e-retailing context**

O’Cass and Carlson (2012), in their study, highlighted the role of consumer perceptions of a website’s innovativeness, as a factor influencing their evaluations of website-service quality, development of trust in the website, loyalty to the website and word-of-mouth behaviors toward the website. A self-administered online questionnaire was used to collect data through an online panel of Australian market research firm. Participants were asked to recall a recent encounter with their preferred e-retailer and focus on that website when responding, (where at least one purchase had been made within the past six months) and refer to that website regarding their answers. From the online survey, 370 responses from consumers were received across a variety of e-retail experiences. The results indicated that when an e-retail website is perceived to deliver an innovative experience, this evaluation influences more positive overall perceptions, higher trust levels, as well as website loyalty and positive word-of-mouth behavior. Here, the perceived website-service innovativeness can be defined as consumers’ perception of the websites’ frequency in its introduction and updates of new features that are of benefits to the consumers. One of the weaknesses of this study is the categories chosen for examination (i.e., sport/leisure goods). Measurement error has high probability of occurring in any survey method. Therefore, elicitation of scale measurement depends on the ability of the consumer to report their perceptions of website-service experiences with the e-retailer accurately. In this vein, the sample of this study is on the Australian consumer evaluations. Thus, caution is warranted in attempting to generalize these findings to other e-service contexts. This study did not examine the performance of various attributes of the

website-service interface which may influence consumer perceptions of website-service innovativeness. So, future studies should explore perceptions of the website attributes and determine the direct effect of these elements into the perceptions of website-service innovativeness made by consumers (O’Cass & Carlson, 2012).

#### **2.10.2.5 Comparison of the Reviewed e-SQ Scales and their Impact on Study**

The four studies mentioned before are the most comprehensive scales that are validated for the measurement of e-SQ website, as described in the academic literature. Deciding on which of the technique is better without a complicated test is difficult. There are several reports on the limitations of the instrument built by Al-Mushasha and Hassan (2009), in comparison to the one that was built by Udo, Bagchi and Kirs (2010). Al-Mushasha and Hassan (2009) measured the perceptions of website visitors who use various website quality attributes. Examples of the attributes measured are functionality, appearance of user interface, and technical characteristics. Parasuraman (2004) suggested a possibility that this approach can be misleading because the results of the ratings can be high on service attributes without revealing the shortcoming of important service. This is because there is no consideration for the complex nature of customer service expectations. It is therefore suggested that a customer who does not have at least, one "ideal" level of expectation, must be with outlined expectation at an interval "zone of tolerance". He or she can also be out-bounded on the top level by the "desired service". (see Figure 2.12).



Notice the similarities between the study conducted by Al-Mushasha and Hassan (2009), and the one that was conducted by Loiacono *et al.*, (2002), that produced WEBQUAL instrument, where both studies focused on the website quality attributes. Parasuraman and Zinkhan (2002) and Zeithaml *et al.*, (2002) expressed the same view on WEBQUAL. It is highlighted that the instrument's focus is mostly on the technical quality of the website itself, and not with the provision of SQ through the website. Zeithaml *et al.*, (2002) suggested that WEBQUAL is the mostly usable scale for web designers, who need to determine how improving a website can positively affect the interactive perceptions of users. It can be said, that the study conducted by Al-Mushasha and Hassan (2009), also focused mainly on the technical quality of the website that could help programmers and web designers to know the factors that can be benchmarked to improve service performance in the companies or organizations.

Udo, Bagchi and Kirs (2010), in their study, measured e-SQ throughout the customer shopping experience by taking both the pre-website and post-website stages of this process into account. A website is considered as a platform for company-customer contact, and its quality was measured by Udo, Bagchi and Kirs (2010), on the basis of the website outlook. The website functions as a medium of delivering SQ to customers. The study conducted by Al-Mushasha and Hassan (2009) was more interested in websites as independent instrument of delivering SQ to university students. The study is centers on the technical SQ of a website, and not its function as a platform of delivering e-SQ to students. It can thus be said that: Al-Mushasha and Hassan (2009) considered a website

itself as a particular e-service of a university which is delivered to students via the Internet. Summarily, it means that the two studies were developed for slightly different purposes and, therefore with different limitations.

As for the other two studies by O’Cass and Carlson (2012) and Ding *et al.*, (2011), it took the reported criticism of studies by Al-Mushasha and Hassan (2009) and Udo, Bagchi and Kirs (2010) into account. The discussion in both previous studies by O’Cass and Carlson (2012) and Ding *et al.*, (2011), suggests the authors' awareness of these issues. O’Cass and Carlson (2012) and Ding *et al.*, (2011) study consumer perceptions of the importance of various attributes of e-retail qualities comprehensively. Ding *et al.*, (2011) reported that the four factors in their study give a means to examine the relationships between online SQ and customer satisfaction, as well as loyalty in e-retailing. In the same vein, O’Cass and Carlson (2012) reported that website is perceived to deliver an innovative experience. This evaluation influences more positive overall e-SQ perceptions, higher trust levels, as well as website loyalty and positive word-of-mouth behavior. These in summation suggest strong predictive validity of the scale. On the contrary, the authors signified that their aim is developing a general model of e-retail quality, but there is still need for additional researches to investigate how different product categories could be affecting the importance of the four factors in their scale. In summary, the reviewed scales are said to display similarities that are particular about the dimensions used in measuring website’s e-SQ as seen in Table 2.4, as well as the assumptions behind the scale design. Also, the data collection tools used by the authors appear to be

similar. Additionally, all the four studies were developed for measuring website e-SQ in the online context.

It is evident that there is much research based on the perception of the customers on e-SQ, and how it is evaluated. However, the models and discussion above strongly indicate that the current web site services' requirements and design should be reengineered and redesigned toward the production of m-commerce services that fulfill the customer requirements. This section is used as a foundation for the proposed conceptual research model, which is presented in section 2.14 of this chapter.

**Table 2.4:** Comparison of the e-SQ Scales in four studies

Authors Dimensions	Almushash,2009	Ding, 2011	Udo, 2010	O'Cass, 2012
Website Design	√			
Reliability	√	√		
Trust	√			
Responsiveness	√			
Personalization	√			
Content Usefulness	√			√
Content Adequacy	√			√
Ease of Use	√	√		√
Accessibility	√			
Interactivity	√	√		
Perceived Risk				√
Perceived (Cognitive) Control		√		
Perceived Website Innovativeness				√

## **2.11 User Satisfaction**

The study of IS satisfaction has been point of interest to both scholars and practitioners for years, because of it is theoretically and practically significant. The fore front IS researchers, (e.g., Ives *et al.*, 1983; and Bailey & Pearson, 1983), worked on the user satisfaction construct by modeling it as a function of system characteristics. User satisfaction was mostly used as a proxy of IS success since it is believed that it is linked to the succeeded constructs in a number of conceptual and empirical aspects (Bailey & Pearson, 1983).

Compared to other common success proxies, such as usage and perceived usefulness, user satisfaction has a higher degree of face and convergent validity (Ein-Dor & Segev, 1978). The IS success model (DeLone & McLean, 1992) has served for a long time as the main framework for studying satisfaction. Subsequent studies tended to look into end-user satisfaction and modeled system quality with information quality, as the main determinants (Doll & Torkzadeh, 1988; Seddon, 1997; McHaney *et al.*, 2002). To get the transformation of IS from a system developer to service provider, more recent research has examined SQ as another important determinant of satisfaction (Pitt *et al.*, 1995; DeLone and McLean, 2003).

### **2.11.1 User satisfaction and IS success**

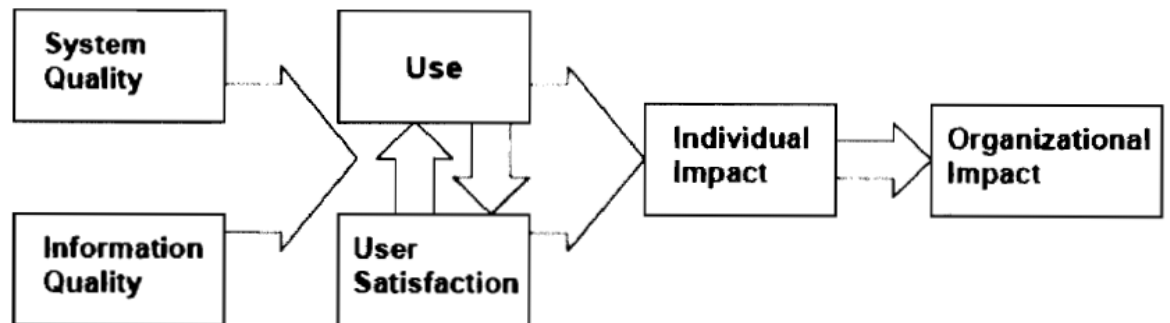
The research interest in user satisfaction emerged from various attempts to measure IS effectiveness or success. The success phenomenon has been an important item on the IS

research agenda for over 20 years (Haga & Zviran, 1994). Scholars had earlier made diverted endeavors to identify, define, operationalize and validate a dependent variable (i.e., more precisely a proxy for effectiveness/success), for the IS success model (DeLone & McLean, 1992). User satisfaction was initially studied in such a context. The original IS success model consists of six dimensions, namely, system quality, information quality, system use, user satisfaction, individual impact and organizational impact (DeLone & McLean, 1992). System quality includes various system characteristics, such as system reliability, on-line response time (Swanson, 1974), system accuracy, content of database (Emery, 1971), completeness, system flexibility, and ease of use (Hamilton & Chervany, 1981). Information quality, on the other hand, focuses on the quality of the information system output. Early researchers evaluated the value of information based on information characteristics, such as accuracy, timeliness, relevance, formatting (Ahituv, 1980), informativeness, usefulness (Gallagher, 1974), sufficiency, understandability, reliability, comparability, quantitiveness and freedom from bias (King & Epstein, 1983). Usage represents the utilization level of the information system output (DeLone & McLean, 1992).

User satisfaction focuses on the interaction between information outputs and the related users and has been most widely adopted as the proxy for measuring IS success (Swanson, 1974; Olson & Ives, 1981; Doll & Ahmed, 1985; Lehman *et al.*, 1986; Taylor & Wang; 1987; Gelderman, 1998). Other interchangeable terms for the construct include "felt need" (Guthrie, 1974), "system acceptance" (Igersheim, 1976), "perceived useful-

ness" (Larcker & Lessig, 1980), "feelings about the information system" (Ives *et al.*, 1983; Maish, 1979), "attitudes and perceptions" (Lucas, 1975), "MIS appreciation" (Ives *et al.*, 1983; Swanson, 1974) and "information satisfactoriness" (Goodhue & Thompson, 1995).

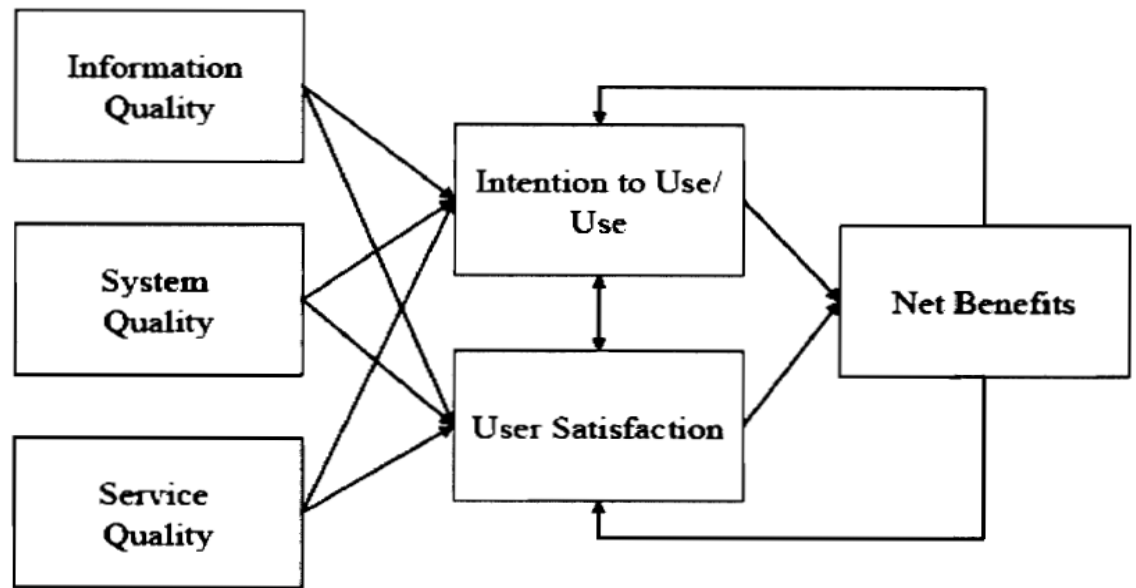
The interrelationships of these six dimensions in the IS success model are depicted in Figure 2.13. DeLone and McLean (1992) proposed a cross-linkage between information/system quality and use/user satisfaction, grounding on the conjecture that use/user satisfaction is directly affected by information/system quality, as widely supported by conceptual and empirical evidence (DeLone & McLean, 1992; Bailey & Pearson, 1983; Raymond, 1985; Sanders & Courtney, 1985). Together with use, user satisfaction gives rise to IS impact on individuals, which are then translated into organizational impact.



**Figure 2.13:** *IS Success Model*  
**Source:** DeLone & McLean (1992)

Subsequently, Seddon (1997) developed an extended IS success model that further facilitated the empirical validation of user satisfaction. He included a partial behavioral model of IS use as a subcomponent of the complete IS success model that consists of three variables: user satisfaction, expectations of anticipated net benefits of IS use and IS use.

User satisfaction was re-conceptualized by DeLone and McLean (2003), in their attempt to refine the original model based on the emergence of the role of IS in organizations and the rapid development of e-commerce. The updated IS success model is presented in Figure 2.14. First, SQ was included as another determinant of user satisfaction in addition to information quality and system quality. ISs assume the dual role of information provider and service provider emerging from the mid-1980s. As a result, user satisfaction with the system cannot be accurately and fully measured without taking into account the SQ of the IS function (Wilkin and Hewitt, 1999; Li, 1997; Kettinger and Lee, 1995; Pitt *et al.*, 1995). A more detailed discussion on IS service quality is provided in section 2.12.



**Figure 2.14:** *Updated DeLone and McLean IS Success Model*  
**Source:** DeLone & McLean (2003)

User satisfaction was also re-conceptualized in view of the growing importance of electronic commerce and its impacts on organizations to enhance its applicability to the ecommerce context (Molla & Licker, 2001). A number of differences exist between this context and the IS computing environment. For example, the primary system users become the external customers or suppliers instead of the internal staff. The six dimensions in the IS success model therefore need to be redefined to adapt to the e-commerce context (DeLone & McLean, 2003). For example, system quality represents usability, availability, reliability, adaptability and page loading speed in an Internet environment. Information quality, on the other hand, refers to the web content quality, personalization, relevance, understandability and security. The definition of user satisfaction is also broadened to capture the entire customer experience cycle from pre-purchase to the after-sales stage, encompassing the initial product search through order, payment, receipt



and customer service phases. User satisfaction can therefore be measured using indicators developed in the domain of online customers, such as repeat visits and repeat purchases.

## **2.12 IS Service Quality**

The SQ concept has attracted an increased interest in the IS field together with the introduction of the IS unit role in an organization, most especially the experiences of advances in personal computing since years ago. At the onset, IS services were not well-defined. IS departments were mainly regarded as system developers and operators, and minimal services were rendered to users, for e.g., maintenance tasks like: analysis of the statistical usage in the final phase of the traditional systems development cycle and handling bug-fixing requests (see Alter, 1992; Laudon & Laudon, 1991). Their role as service providers became more broadly recognized with the introduction of personal computers, which could enable greater interaction with users (Pitt *et al.*, 1995). Varieties of services ranging from installation assistance and technical help counters were given to attend to the increasing trend of the users' demands. User satisfaction could hardly be achieved by merely providing IS products (e.g., system output reports) without other related high quality support services (e.g., user hotlines for reporting and fixing processing errors).

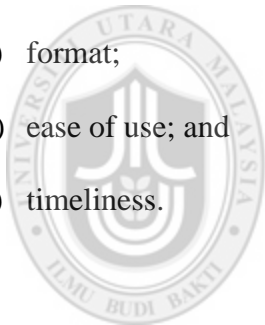
Overall, IS researchers generally agree that the SERVQUAL instrument is a reliable predictor of SQ in the context of IS (Jiang *et al.*, 2000; Kettinger & Lee, 1997; Pitt *et al.*,

1995; Fisk *et al.*, 1993). A more thorough summary of the ongoing debate about the validity and reliability of the instrument are presented by Kohlmeyer and Blanton (2000). The prevailing measurement instruments for IS effectiveness/user satisfaction, however, does not account for the service component of an IS. Such omission might lead to invalid assessment of these constructs. To address this void, Pitt *et al.*, (1995) developed and validated a multiple-item instrument specifically for measuring IS SQ, grounded on the SERVQUAL (Parasuraman *et al.*, 1988) offered by marketing researchers. SERVQUAL was originally designed with the intention to be applicable across different industries and therefore, it is composed of items that measure the core criteria of SQ only (Parasuraman *et al.*, 1991). The final instrument consisting of 22 items was then modified by rephrasing some of the items to enhance its relevance in the specific context of IS. For example, the item for "up-to-date equipment" was reworded to be "up-to-date hardware/software" since the former could be interpreted as hardware only. "Customers" would also all be replaced by "users". All items were rated with a seven-point Likert scale ranging from "1 - strongly disagree" to "7 - strongly agree". A more recent empirical validation of the SERVQUAL instrument was conducted with 168 users and 168 IS managers, further confirming that the instrument represented a useful analytical tool for IS professionals (Jiang *et al.*, 2002). The study reported high convergent validity for all service dimensions of the instrument except the tangible dimension.

Doll and Torkzadeh (1988) examined IS quality in an end-user computing environment. They defined an end-user as "a user that interacts directly with the application software to enter information or prepare output reports".

When a consumer accesses a website, the site can be regarded as an IS and the customer can be considered an end-user. They present the instrument for measuring end-user computing satisfaction, including five quality dimensions that influence end-user satisfaction:

- a) content;
- b) accuracy;
- c) format;
- d) ease of use; and
- e) timeliness.



The adequate reliability and validity of the instrument were assessed and proven in their study. The evidence for this instrument's reliability and validity were also proven in other studies across a variety of applications (Fisk *et al.*, 1993; Doll & Torkzadeh, 1991).

Doll and Torkzadeh (1988) concluded that end-user satisfaction and each of its dimensions are significantly correlated to the end-user's involvement in the design of the application. They also suggested that the five quality dimensions identified for measuring end-user computing satisfaction can be an integral part of the construct of online systems quality. This conclusion concurs with the argument, in DeLone and McLean (1992), that

IS satisfaction is composed of satisfaction with IS output, IS service, and involvement in IS development.

### **2.13 Service quality in m-commerce**

Review of extant literature has shown that few articles that measure the impact of SQ in m-service is scarce. Many of the few that are however available only studied m-commerce SQ by examining the behavior of customers (Gerpott *et al.*, 2001; Kim *et al.*, 2004; Lim, 2006, Seth *et al.*, 2005; Turel and Serenko 2006; Lu, Zhang & Wang, 2009; Özer, Argan & Argan, 2013). For instance, Turel and Serenko (2006) while studying customer satisfaction in to m-services in Canada adapted the American Customer Satisfaction Model (ACSM) (Fornell *et al.*, 1996). In their study, the authors defined perceived quality, which is also perceived SQ, as the served market's evaluation of service usage experience in the recent time after which personalization and service reliability were used for measurement (Turel and Serenko 2006). Studies by Kim *et al.*, (2004) recognized six service quality measures (Gerpott *et al.*, 2001, Lee *et al.*, 2001) such as pricing structure, call quality, mobile devices, convenient procedures, value added services and customer support. However, factors, such as convenient procedures, customer support and mobile devices were later removed because of items with low factor loadings using exploratory factor analysis. Consequently, SQ was measured by the remaining three factors (Kim *et al.*, 2004). In the same vein, Lim (2006) equally identified pricing plans, data services, customer service, network quality and billing systems as the five dimensions of consumers' perceived quality of m-services. These factors were con-

firmed through exploratory factor analysis (Lim, 2006). Furthermore, there are other studies that examined how SQ relates to various m-service applications (Kar *et al.*, 2006, Rao and Minakakis 2003, Yun *et al.*, 2005). For instance, Chae *et al.*, (2002) in the course of examining m-service information quality, extended a prior framework of information quality of Dey (2001) and Wang (1998) by incorporating the features of m-commerce such as mobile context and devices. While measuring m-commerce information quality they came up with four dimensions which include connection quality that eventually influenced by responsiveness and stability, content quality as influenced by, believability, objectivity, interaction quality, amount and contextual quality which were determined by navigation, structure, presentation, promptness and timeliness. Furthermore, the study maintained that the relationship between the four major dimensions of information quality and user satisfaction was moderated by a customer's intended goal (Chae *et al.*, 2002). In another study, Kar *et al.*, (2006) considered the unstable environment in which m-services were provided and adapted as the quality dimensions of e-services. The models of Kaynama and Black (2000) and Liljander *et al.*, (2002) were developed using SERVQUAL for the purpose of aligning with the features of m-services. In these studies, user interface, responsiveness, reliability, customization and trust were identified as the five dimensions of SQ. Yun *et al.*, (2005), in addition examined ring back tone, SMS, melody ring, background image service, gaming context based services, video on demand and multimedia message services as dimension of SQ in the context of mobile data services. The core quality attributes identified are: sound quality, play time, and image quality.

## **2.14 Proposed Conceptual Research Model**

According to Sekaran (2000), a theoretical framework is a conceptual model of how one theorizes or makes logical sense of the relationship among the several factors that have been identified as important to the problem. From the theoretical framework, testable hypotheses can be developed to examine whether the theory formulated is valid or not. The hypothesized relationship can thereafter be tested through appropriate statistical analysis, so as to be sure of the firmness of this research. Since the theoretical framework identifies the network of relationships among the variables considered important to the study, it is essential to understand what variables are involved in the study of a conceptual model.

### **2.14.1 Proposed Conceptual Research Model Dimensions**

A broad review of relevant literature in marketing, SQ, ISs service quality, e-SQ and the previous studies provide a foundation for developing the theoretical framework. As determined by previous research findings, both identify the variables that might be important. Both outcomes in relation to this study's problem statement prove that m-commerce service quality is based upon multiple conceptual model dimensions.

From the prior SQ studies, SQ was determined to actually be composed of at least two dimensions: core (outcome) and relational (process). These dimensions are briefly described below.

- a) Core (Outcome) quality - is the basic service contracted for or promised; and centers around "What is delivered".
- b) Relational (Process) quality - lies in the way in which the service is delivered; and centers around "How it is delivered".

The majority of the dimensions were extracted from the initial study analysis. This study found that m-commerce is a new area of research; most of the dimensions are new in the sense of this area of study, as it is very difficult to find related studies, supported by evidence, that focus on SQ, customer satisfaction, and their influences on customer behavior intentions in the m-commerce environment; but similarities between mobile and e-services can be expected since both are Internet-based. In this research, much attention is paid to the measurement model of SQ in m-commerce based on the well-known SERVQUAL model. Many previous studies related to SQ suggested that it is necessary to add and modify items of the SERVQUAL scale, developed by Parasuraman *et al.*, (1985, 1988), and to create a unique and comprehensive conceptual model of SQ, depending on the nature of the service sector under investigation (Carman, 1990; Cronin & Taylor, 1992, 1994; Finn & Lamb, 1991; Parasuraman & Grewal, 2000). Based upon this suggestion, this study proposes a multi-dimensional model of SQ for m-commerce and will examine the relationships between SQ and other significant constructs.

To understand and organize the m-commerce SQ, for theoretical purposes, it will be organized by dimensions and sub-dimensions taking into account that mobile services can

be considered a sub-group of e-services. The sub-dimensions that will be adopted by this study are website design, reliability, responsiveness, trust, personalization, perceived risk, perceived cognitive control, content usefulness, content adequacy, ease of use, accessibility, perceived website innovativeness, and interactivity. The adoption of these dimensions is because they seem to have influenced the customer's overall perception about m-commerce SQ and customer's satisfaction, which affect the formation of his/her behavioral intention; while the overall SQ will be determined by three dimensions SQ; information quality; and system quality, as described next.

- a) Service quality - customers' attitude formed by a long-term, overall evaluation of an m-commerce system performance. The dimension of SQ will be measured using seven sub-dimensions: website design; reliability; responsiveness; trust, personalization, perceived risk, and perceived cognitive control.
- b) Information quality - customers' perception of the quality of information presented on a mobile portal. The dimension of information quality will be measured by two sub-dimensions: content usefulness, content adequacy.
- c) System quality - This refers to customers' perception of a mobile portal's performance in information retrieval and delivery. The dimension of system quality will be measured by four sub-dimensions, including; ease of use, accessibility, interactivity and perceived website innovativeness.

The next Figure 2.15 demonstrates the dimensions and sub-dimensions of the research model and interrelationship between overall perceived SQ, satisfaction and behavioral



intention. The dependent variable will be how customers perceive overall SQ and customer satisfaction, which is the variable of primary interest, and this research will attempt to explain the variance of the ten independent variables. Behavioral intention to use the service is predicted by customer satisfaction.



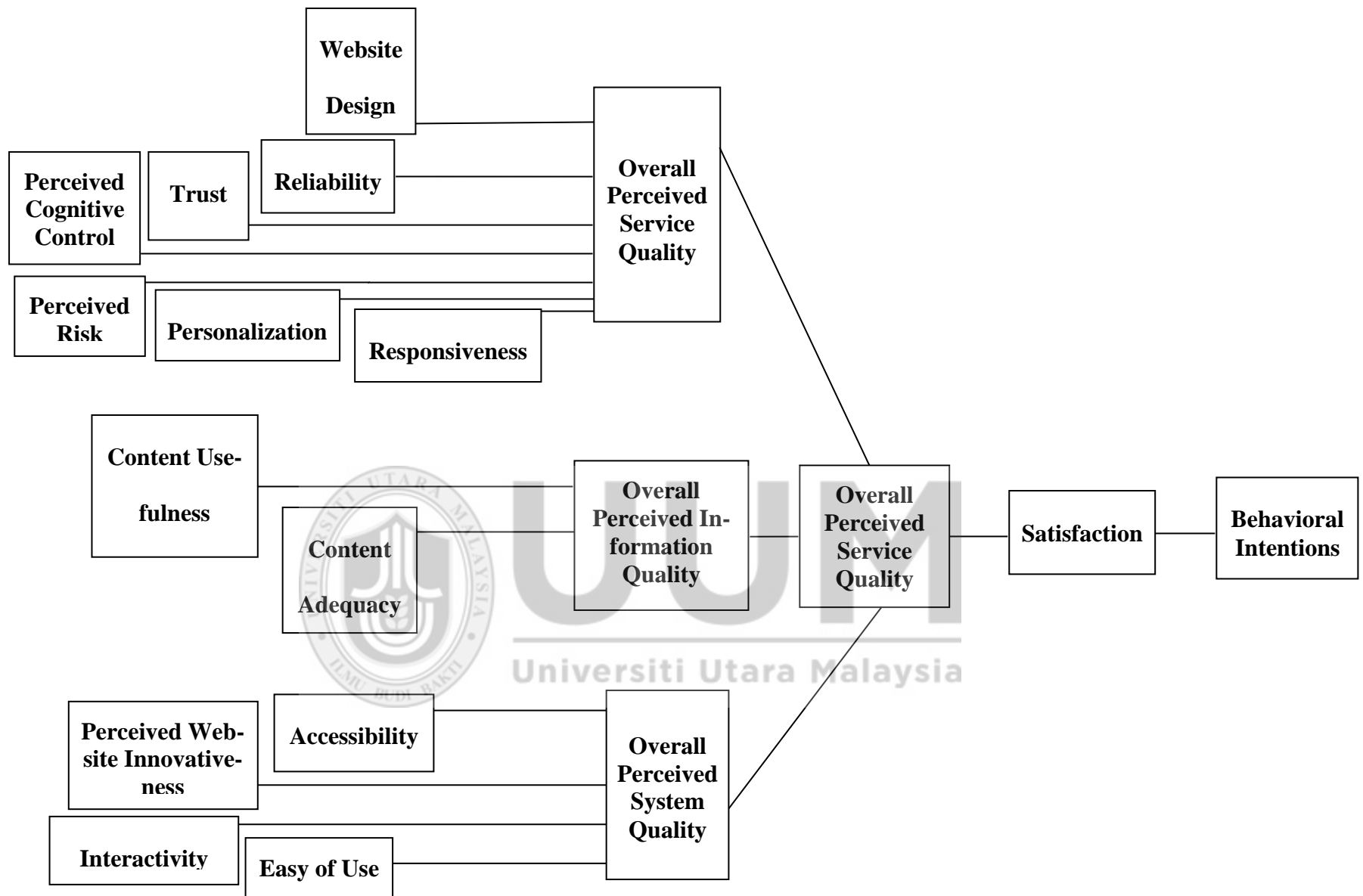


Figure 2.15: Proposed conceptual research model dimensions

### 2.14.1.1 Service Quality Dimensions

The first dimension, *website design*, refers to the appearance of mobile portal and is consistent with the tangibility dimension in the SERVQUAL model. While Parasuraman et al. (1988) defined a tangible dimension as the physical appearance, such as facilities, equipment, and personnel, many researchers replaced this definition with the user website required for adapting to the e-service context (O’Cass & Carlson, 2012; Udo, Bagchi & Kirs, 2010; Loiacono *et al.*, 2002; Wolfinbarger & Gilly, 2003; Lee & Lin, 2005; Aladwania & Palvia, 2002; Riel *et al.*, 2001). Ghose and Dou (1998) argued that the greater attractiveness of a website increases the level of user satisfaction. Website design is very important in the m-commerce service environment, because the website substitutes the role of customers’ contact in the physical commercial companies. On the overview, website design is a vital factor that determines the customer-perceived mobile commerce SQ. It has significant and positive impacts on the customers' perceived SQ.

The *reliability* dimension in the SERVQUAL model contains dependability, consistency and accuracy of promised service performance (Parasuraman *et al.*, 1988). New service-delivery studies, with options of computer technology realised that dependability of performance are consistency are important dimensions in measuring SQ, because the user's consideration of performance risks is based on new technology service (Cox & Dale, 2001; Dabholkar, 1996; Davis, Bagozzi, & Warshaw, 1992).

This is relevant to m-commerce services if the fact that: customers are always on the move and often in time-critical situations are considered. Information technology-based service has emphasized the importance of reliability (Lee & Lin, 2005; Wolfinbarger & Gilly, 2002). Also, Zhu *et al.*, (2002), and Lee and Lin (2005) in their argument posited that the dimension of reliability positively influence perceived e-service quality and customer satisfaction. According to Al-Mushasha and Hassan (2009), Barnes and Vidgen (2001), Lin and Hsieh (2011), Gefen (2002), Lee and Lin (2005), Madu and Madu (2002), Parasuraman (2002), Santos (2003), Wang (2003), Wolfinbarger and Gilly (2002), Yang and Jun (2002), Zeithaml *et al.*, (2000), Zeithaml *et al.*, (2002), the reliability is the most important determinant of the perceived m-commerce SQ.

The third dimension is *responsiveness* which is similar to the responsiveness dimension in the SERVQUAL model. The SERVQUAL model (Parasuraman *et al.*, 1988) defines responsiveness as employees' willingness in the provision of prompt service and dealing with consumer complaints. Wang (2003) stated that: "responsiveness" is a measure for the company's ability in supporting customers with the appropriate information when a problem occurs. It is also the mechanism that handles returns, and has the capacity of executing arrangement for online guarantees. Responding quickly to customers' request indicates that the company is customer-oriented. Subsequently, this can subdue the issue of uncertainty and thus increase the perceived convenience of customers (Gummerus *et al.*, 2004; Wolfinbarger & Gilly, 2003).

In as much the users identify a fast response to be an element of high-quality services (Voss, 2000), therefore, it is expected that online providers should respond promptly to their inquiries (Liao & Cheung, 2002; Jay, 2004). It is on this basis that: Yang *et al.*, (2005) argued that the responsiveness is the foremost critical factor in the determination of the customer SQ. In the same vein, Suijadaja *et al.*, (2003) argued that responsiveness is a foremost determinant in e-service operations. Having said that, it sounds logical that in order to achieve high levels of the customers' perceived m-commerce SQ, providers should particularly focus on the dimensions of the responsiveness, as well (Zeithaml *et al.*, 2000; Barnes and Vidgen, 2001; Gefen, 2002; Kaynama and Black, 2000; Madu and Madu, 2002; Parasuraman, 2002; Zeithaml *et al.*, 2002; Yang *et al.*, 2003; Parasuraman *et al.*, 2004; Lee and Lin, 2005; Lin and Hsieh, 2011; Papadomichelaki and Mentzas, 2012).

According to Lynch and Lundquist (1996), e-service with much academic discourse surrounding the security, privacy, and confidence centers on *Trust*. This is similar to the assurance dimension in the SERVQUAL model. Kimery and McCard (2002) argued that "trust is the user's willingness to accept the vulnerability of an online transaction based on their positive expectations regarding future online provider behaviors". Reichheld & Schefer (2000) pointed out that trust is a significant antecedent of participation in online settings because of the increased ease with which online transaction can behave opportunistically.

According to Bandyo-padhyay (2002), trust is an important factor since users need to have trust in providers in terms of the e-SQ, as well as the confidentiality of data. The lack of the trust in the online context has been identified by the providers as one of the major obstacles in the adoption of online transaction in a large number of discussions (Hoffman, *et al.*, 1999). In addition, Voss (2000) and Daffy (2001) emphasized the significance of the trust in the development of sustainable relationship among a company, business partners, and its customers.

Trust is one of the substantial dimensions of the m-commerce SQ, and the trustworthiness has significant and positive impacts on the customers' perceived SQ and satisfaction (Zeithaml *et al.*, 2000; Loiacono *et al.*, 2002; Madu & Madu, 2002; Parasuraman, 2002; Voss, 2000; Lee and Lin, 2005; Lin and Hsieh, 2011; Kaisara and Pather, 2011; Papadomichelaki and Mentzas, 2012).

*Personalization* in relation to SQ, is defined as caring, individualized attention for the consumer and subject knowledge of employees (Parasuraman *et al.*, 1988). Riel *et al.*, (2001), additionally defines personalization, in the e-service context, as the degree of customization of communication and service provider awareness of consumer needs in the e-service context. Personalization a key feature of most e-commerce and m-commerce business models because it offers real values for a customer and creates a perception of high-quality service. The heart of personalization is to satisfying the unique needs of each individual customer (Huang & Lin, 2005; Riel *et al.*, 2001). Thus,

personalization can completely change the ways a web-based business market promotes its products and maintains its customers' relationships (Reynolds, 2000).

Raisch (2001) argued that environmental variables and customers' characteristics variables influence the online customer's decision-making process. Thus, it is very important to address the issue of personalization as one of the effective methods of solving the problem of "managed-chaos", which exist in the current measurement and data mining of web-centered area of industries. Therefore, the researcher assumes that personalization can constitute one of the factors that determines the customers' perceived mobile SQ (Zeithaml *et al.*, 2000; Keynama and Black, 2002; Parasuraman, 2002; Yang and Jun, 2002; Yang *et al.*, 2003; Lee and Lin, 2005; Lin and Hsieh, 2011; Papadomichelaki and Mentzas, 2012).

*Risk*, from the e-customers' perception is one of the major hindrances to online shopping, therefore major m-commerce firms have endeavoured to address risk associated with security technologies, awareness campaigns, and assurance policy statements (Chang *et al.*, 2005; Liao & Cheung, 2002; Lopez-Nicolas & Molina- Castillo, 2008; Shih, 2004). Perceived risk is also often explained by terms like: personal risk, privacy risk, psychological risk, economic risk, and technological risk (Liebermann & Stashevsky, 2002; Ring & Ven, 1994; Zhang & Prybutok, 2005). System failure is part of perceived risk and is often associated with a loss. Therefore, understanding how perceived risk influences e-SQ and e-customer satisfaction is easy. Lopez-Nicolas and Molina-

Castillo (2008) and Gefen *et al.*, (2003), state that perceived risk influences shopping behavior and e-purchasing intentions. The implication is that the higher the perceived risk, the less likely is an e-customer's intention to purchase. Perceived risk can instill either good or bad feelings and consequently can affect beliefs, attitudes and behavioral intentions (Pavlou, 2003). Zhang and Prybutok (2005) concluded that perceived risk has a significant influence on e-customer perceptions of e-SQ and satisfaction. On the contrary, Chang et al. (2005) in a thorough literature review conducted to determine perceived risk's effect on online shopping, among other factors, stated that: some studies found significant negative impacts while others found no impact at all. Udo, Bagchi and Kirs (2010) stated there is no significant relationship between perceived risk, behavioral intentions, and satisfaction. However, further research is needed to explore the effect of perceived risk on how e-customers perceive web SQ (Udo, Bagchi & Kirs, 2010).

*Perceived control* depicts a cognitive state of flow experience and generally refers to the belief that the person has, at his or her disposal, a response that can influence an event (Ajzen, 1991). Among others subtle dimensions of perceived control (Ajzen, 1991), cognitive control is said to be an essentiality. Cognitive control requires a person to predict probable sequences of an event and also understand the implications of those consequences. It closely resembles the script theory model (Bateson, 1985). Cognitive control reduces uncertainty (Imada and Nageishi, 1982). It increases the service value perceived by the customers (Bateson, 1985). Also, it clarifies a situation, particularly regarding the need for service involvement (Botvinick *et al.*, 2001). In a retail setting, a customer's



perceived cognitive control should evoke affect, because perceived control closely associates with the customer's judgment of whether the environment will facilitate or frustrate his or her goal achievement (Ward and Barnes, 2001). Previous researches identified perceived cognitive control as an important and desirable feature of self-service (Dabholkar and Bagozzi, 2002; Meuter *et al.*, 2000). Bateson (1985) stated that, perceived cognitive control has the ability of controlling the customer's decision in using m-commerce service. This position thus support the claim that perceived cognitive control influences predicting probable event sequences. In e-retailing, such controls can be from a customer's perception of his or her ability to navigate the vendor's website effectively, and anticipate how the site will respond to his or her input or request (Novak *et al.*, 2000). In online shopping, perceived cognitive control is observed when customers visits the vendor's site with the knowledge of what is expected when they click on a link. It is opined that the customers previously have a good knowledge about how a transaction can be completed within a normal timeframe, or anticipate the information they will receive upon completing a transaction (Dabholkar and Bagozzi, 2002; Ding *et al.*, 2007).

#### **2.14.1.2 Information Quality Dimensions**

Scholars in the area of traditional computing settings have established well-known models to measure information quality. In a study on the determinants of IS success, De-lone and McLean (1992) assumed that IS success is measured by SQ and information quality. Delone and McLean (1992) highlighted the importance of relevance, timeliness, and accuracy of information. In the same vein, (Doll & Torkzadeh 1988; Doll, Xia &

Torkzadeh 1994) also emphasized three determinants of user satisfaction: content, accuracy, and timeliness. The dimensions suggested in these two studies and others (Aladwania & Palvia 2002; Belcher *et al.*, 2000; Bitner *et al.*, 2000; Koller 2001; Shemwell & Yavas 1999; Loiacono *et al.*, 2002; Udo, Bagchi & Kirs, 2010; Kaisara and Pather, 2011) could be classified into content usefulness and content adequacy.

*Content usefulness:* This refers to the reliability, value, currency, and accuracy of information. To be specific, the relevancy and clearness is the concerned of information value. Information reliability means the: accuracy, dependability, and consistency of the information, while Information currency is interested in the information timeliness and continuous update. Information accuracy gives the description of the extent at which the system information is free from error.

*Content adequacy:* This is the extent of information completeness. Mobile portals should give out information so as to aid the understanding of the customers as regards the materials and services offered. Additionally, the customers are in need of supplementary services like: professional advice, university information, hyperlinks to relevant sites, research reports, contact, and promotion information.

#### **2.14.1.3 System Quality Dimensions**

This refers to customers' perception of a mobile portal's performance in information retrieval and delivery. Research on IS has resulted in various instruments to measure sys-

tem quality. Among them, ease of use has been regarded as the most frequently used factor in measuring IS success or user satisfaction. In the context of websites, researchers have identified system quality factors such as interactivity, navigation, access, hyperlinks, perceived website innovativeness, enjoyment, and entertainment (La & Kandampully, 2002; Lohse & Spiller, 1998; Loiacono *et al.*, 2002; Madu & Madu, 2002; McKinney *et al.*, 2002; Riel *et al.*, 2001; Zhang & Von Dran 2002; Santos, 2003; Lin & Hsieh, 2011; O’Cass & Carlson, 2012).

The researcher will study the above dimensions and develop a conceptual model that categorizes these dimensions into three major attributes:

- a) Ease of use;
- b) Accessibility;
- c) Interactivity; and
- d) Perceived website innovativeness.



Davis *et al.*, (1992), defined *ease of use* as "the degree to which a person believes that using a particular system would be free of effort". Teo (2001) defined it as "the degree to which the user expects the use of the system to be user friendly". The ISO 20000 defines ease of use as "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (ISO, 1998). Nielsen (1996), pointed out that it can be measured by learnability, efficiency, memorability, low errors, and subjective satisfaction. However, Loiacono *et*

*al.*, (2002), considered ease of understanding and ease of navigation as two distinct aspects of ease of use when applied to the Web. Additionally, Dabholkar (1996) suggested that users may be concerned with:

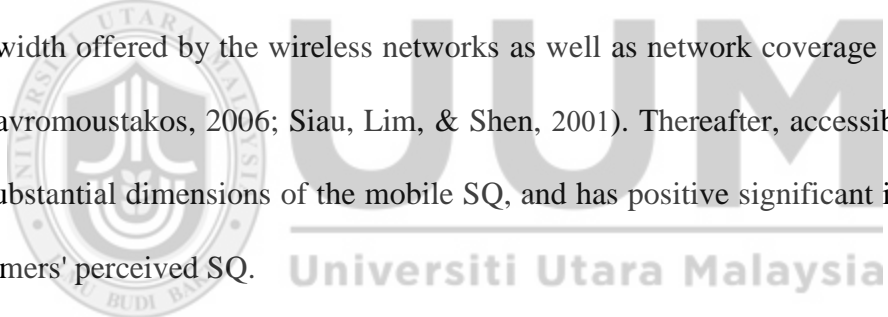
- a) saving actual effort; and
- b) Reducing social risk, including avoiding the appearance of foolishness when struggling to use a system.

In the m-commerce environment, what can be used to describe adoption and use of a system increases if there is ease when the system is used to find the customers' needs, and support services are available (Uther, 2002; Costabile *et al.*, 2005). In summary, "ease of use" plays a vital role for customers' perceived mobile SQ (Chiu *et al.*, 2004; Costabile *et al.*, 2005, Papanikolaou & Mavromoustakos, 2006; Udo, Bagchi & Kirs, 2010; Lin & Hsieh, 2011). The small screen of mobile devices demands special requirements of the user interface usability. If an m-commerce system is not usable, the customer is forced to spend much more time to understand software functionality, rather than to understand how to carry out commercial transaction and what available in its contents.

*Accessibility:* In traditional marketing literature, speed of delivery is defined as the time it takes to actively perform the service (Dabholkar, 1996). Maister (1985) argued that if consumers perceive that service is delivered quickly, they are likely to evaluate the ser-

vice more highly. In the e-services environment, speed of access may also be an important factor to lure users to a particular website (Cho & Park, 2001; Sohn, 2000).

However, accessibility in the m-commerce environment refers to the availability of the system, where and when the customers need to conduct any kind of commercial transactions. The potential benefit of using an m-commerce system cannot be successfully achieved without having reliable speedy online access, because customers expect the m-commerce services to be available on demand. M-commerce applications and services depend heavily on the underlying network support. Two of the most significant factors that influence the development and the quality of m-commerce services are the available bandwidth offered by the wireless networks as well as network coverage (Papanikolaou & Mavromoustakos, 2006; Siau, Lim, & Shen, 2001). Thereafter, accessibility is one of the substantial dimensions of the mobile SQ, and has positive significant impacts on the customers' perceived SQ.



The third dimension for measuring system quality is *interactivity*. Interactivity, in the proposed model, refers to the interactive relationship between the provider, customers, and other customers on the m-commerce portal, through e-mail communication methods and discussion group activities. According to Wang (2003), Papanikolaou and Mavromoustakos (2006), Aldridge and Rowley (1998), Yang *et al.*, (2005), Kaisara and Pather (2011), Ding *et al.*, (2011), and Papadomichelaki and Mentzas (2012), communication methods, like e-mail and discussion groups, are important tools for customers to use in

communicating complaints and inquiries to the provider. Thereafter, interactivity is one of the substantial dimensions of the mobile SQ, and has significant positive impacts on the customers' perceived SQ and satisfaction (Wang, 2003; Papanikolaou & Mavroumoustakos, 2006; Yang *et al.*, 2004; Santos, 2003, Siau, & Shen, 2003; Aldridge & Rowley, 1998; Kim & Ong, 2005; Kaisara & Pather, 2011; Ding *et al.*, 2011; Papadomichelaki & Mentzas, 2012).

The last dimension for measuring system quality is *perceived website innovativeness*. Prior offline branding studies have shown that based upon their perception of brands, consumers respond to the product or service by responses such as, finding it useful/useless, identifying they like/dislike it, or they may approach/avoid buying it (Bloch, 1995; Mono, 1997). Brand associations arising from consumers perceptions of the consumption experience are seen to influence cognitive evaluations of SQ (Brodie *et al.*, 2009). According to Parasuraman *et al.*, (1985), SQ refers to a global judgment relating to the superiority of the service, where consumers make an assessment of characteristics or attributes. Understanding SQ, as perceived by customers, is not only a critical performance outcome of the service experience, but also its role as a critical factor in influencing customer satisfaction and loyalty as determinants of firm performance (Cronin *et al.*, 2000). In the context of this study, the researcher argues that once a customer makes an assessment that the provider's website-service experience is perceived to be innovative; the consumer will then be more likely to evaluate the website to have delivered a quality e-service.

#### **2.14.1.4 The Relationships between Service Quality, Satisfaction, and Behavioral Intention**

The final section of the proposed conceptual model for this study identifies the cause and effect relationships between learner satisfaction, overall service quality, and behavioral intention. Although many previous studies have attempted to clarify the causal relationships between SQ, consumer satisfaction, and behavioral intention, no general agreement exists about these relationships due to difficulties in conceptualizing each construct (Cronin & Taylor, 1992). Depending on how those constructs are conceptualized, there are different causal relationships between these constructs.

In the research literature, there are three different relationships between SQ, consumer satisfaction, and behavioral intention. The first approach relates that satisfaction is an antecedent of perceived SQ (Satisfaction  $\rightarrow$  SQ) and SQ directly influences behavioral intentions (SQ  $\rightarrow$  Behavioral Intention) (Bitner, 1990; Bitner & Hubbert, 1994; Bolton & Drew, 1991; Mohr & Bitner, 1995; Oliver, 1981; Zeithaml, Berry, & Parasuraman, 1996). In the second approach, SQ is modeled as an antecedent of satisfaction (SQ  $\rightarrow$  Satisfaction) and satisfaction directly influences behavioral intentions (Satisfaction  $\rightarrow$  Behavioral Intention) (Anderson, *et al.*, 1994; Anderson & Sullivan, 1993; Cronin & Taylor, 1992; Gotlieb, *et al.*, 1994; Taylor & Baker, 1994). In the final approach, the relationship between SQ and satisfaction is not recursive (SQ  $\leftrightarrow$  Satisfaction); that is, neither SQ nor satisfaction is an antecedent of the other (McAlexander *et al.*, 1994; Taylor & Cronin, 1994).

Because of the absence of empirical support for the first and third approaches, and the relatively strong empirical support for the second approach, the second approach (SQ → Satisfaction → Intention) is applied to the proposed conceptual model for this study. The direct paths from both overall SQ to customer satisfaction, and the direct path from customer satisfaction to behavioral intention on the m-commerce services, are specified in the proposed conceptual model.

#### **2.14.2 Hypotheses Formulation**

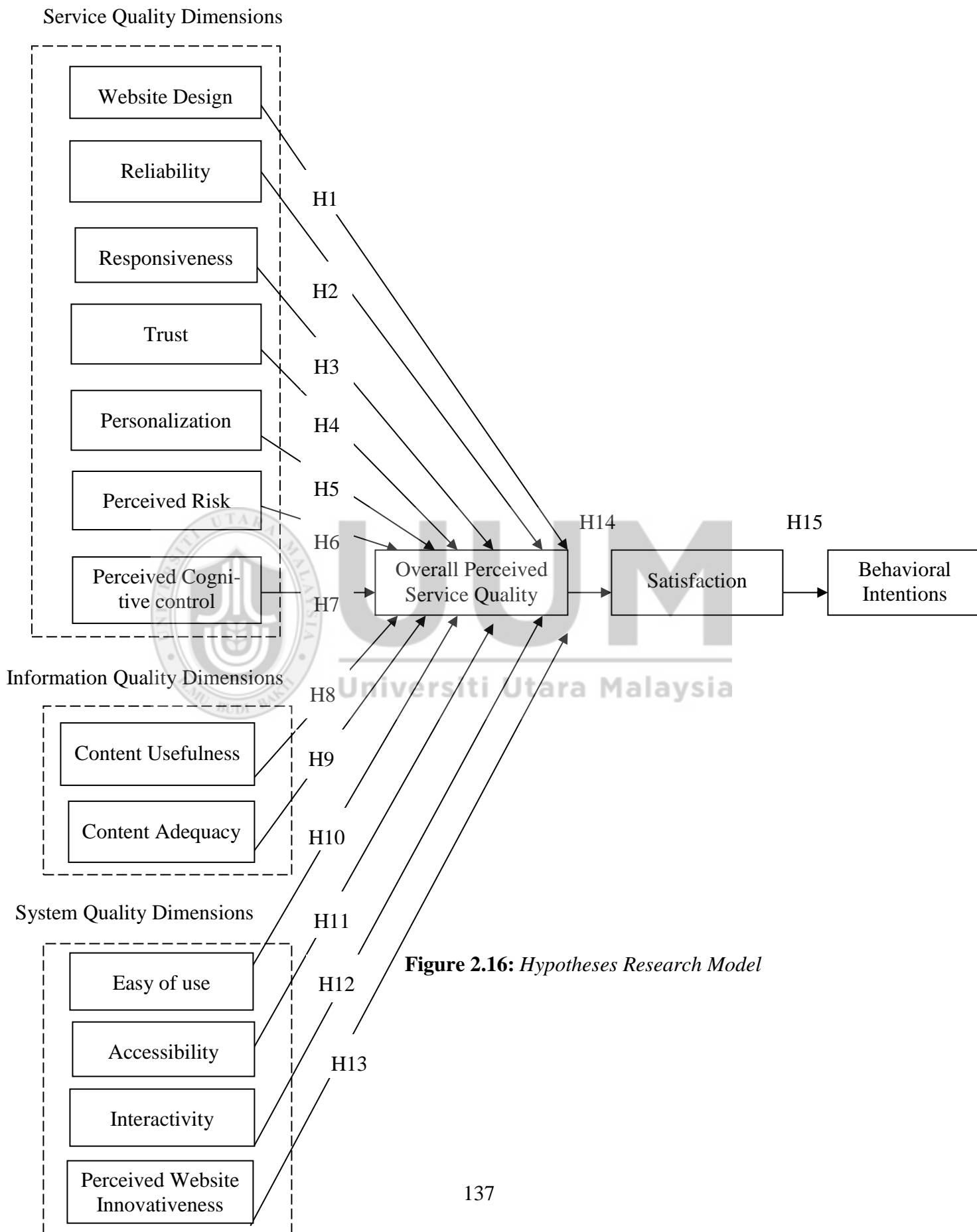
According to Sekaran (2000), instituting the differences between groups, the interdependence of factors in a study, or explaining the nature of certain relationships, there is usually an engagement in hypotheses testing. In this section, the main hypotheses for this research are formulated and presented.

Sekaran (2000), defined hypothesis as a "logically conjectured relationship between two or more variables expressed in the form of a testable statement". Relationships are validated base on the network of associations as proposed in the study's conceptual model formulated. Expectedly, solutions are found to the research problem outlined by testing the hypothesis as "statistically significant". This implies that: the researcher's confidence must be of up to 95% for the observed relationship will certify true. All the hypotheses in this study are directional as indicated. They state the relationship between two variables or compare two group terms such as 'positive', 'negative', 'more than' and 'like'.



Several testable statements or hypotheses can be drawn from the theoretical framework formulated in this study. The hypotheses are mainly used to study the m-commerce SQ, customer satisfaction, and their influence on customer behavior intentions is shown in Figure 2.16 below.





**Figure 2.16:** *Hypotheses Research Model*

### **2.14.2.1 Service Quality Hypotheses**

Based on the explanation in section 2.14.1.1 about each service quality variables dimensions the researcher hypothesizes seven hypotheses as shown in the following:

H 1: There will be a significant positive relationship between website design and overall customer perceived service quality.

H 2: There will be a significant positive relationship between reliability and overall customer perceived service quality.

H 3: There will be a significant positive relationship between responsiveness and overall customer perceived service quality.

H 4: There will be a significant positive relationship between trust and overall customer perceived service quality.

H 5: There will be a significant positive relationship between personalization and overall customer perceived service quality.

H 6: There will be a significant negative relationship between perceived risk and overall customer perceived service quality.

H 7: There will be a significant positive relationship between perceived cognitive control and overall customer perceived service quality.

### **2.14.2.2 Information Quality Hypotheses**

Based on the explanation in section 3.14.1.2 about each information quality dimension variables, the researcher hypothesizes two hypotheses as shown in the following:

H 8: There will be a significant positive relationship between content usefulness and overall customer perceived service quality.

H 9: There will be a significant positive relationship between content adequacy and overall customer perceived service quality.

#### **2.14.2.3 System Quality Hypotheses**

Based on the explanation in section 3.14.1.3 about each system quality dimension variables, the researcher hypothesizes four hypotheses as shown in the following:

H 10: There will be a significant positive relationship between ease of use and overall customer perceived service quality.

H 11: There will be a significant positive relationship between accessibility and overall customer perceived service quality.

H 12: There will be a significant positive relationship between interactivity and overall customer perceived service quality.

H 13: There will be a significant positive relationship between perceived website innovativeness and overall customer perceived service quality.

#### **2.14.2.4 Overall Service Quality, Satisfaction, and Behavioral Intention hypotheses**

Based on the explanation in section 3.14.1.4 about the relationships between SQ, satisfaction, and behavioral intention, the researcher hypothesizes two hypotheses as shown in the following:

H 14: The customer perception of overall service quality will directly influence the level of customer satisfaction.

H 15: The level of customer satisfaction will directly influence the behavioral intention.

### **2.14.3 Operationalization of the Research Variables**

In the theoretical framework, measurement of the variables is an important part of the research design. Measuring these variables will help the researcher test the research hypotheses. According to (Sekaran, 2000), there are two types of variables: the first type is concerned with the variables which are objective in nature with precise measurements. Secondly, it is concerned with the variables that are of subjective nature and do not have precise measurements. As far as the second type is concerned, there are methods that the subjective feelings and perceptions of individuals can be punctured. This can be done through the reduction of abstract notions techniques, or through concepts like: satisfaction, motivation, acceptance, and attitude. These are then transformed into observable characteristics behaviors so as to be measureable. This is called Operationalization of the concepts (Sekaran, 2000).

Sekaran (2000) asserted that: a concept is operationally defined is measurable. This means that the researcher should look at the behavioral dimensions, or properties represented by the concept then translate them into observable elements that can help measure the concept. However, actually observing individuals' behavior in particular ways would be too costly and time consuming. In seeking an alternative reliable approach, the re-

searcher could administer a survey in which individuals can respond to certain items related to the concept to be measured on a provided scale.

Figure 2.17 shows the variables of the proposed extended model. The analysis of the elements of these variables was obtained from reviewing literature, initial study analysis and hypotheses analysis. The following chapter (research methodology) contains the research instrument and the adoption origin of each item.



Dimensions (D) and elements (E) of the concept (C) M-commerce Service Quality

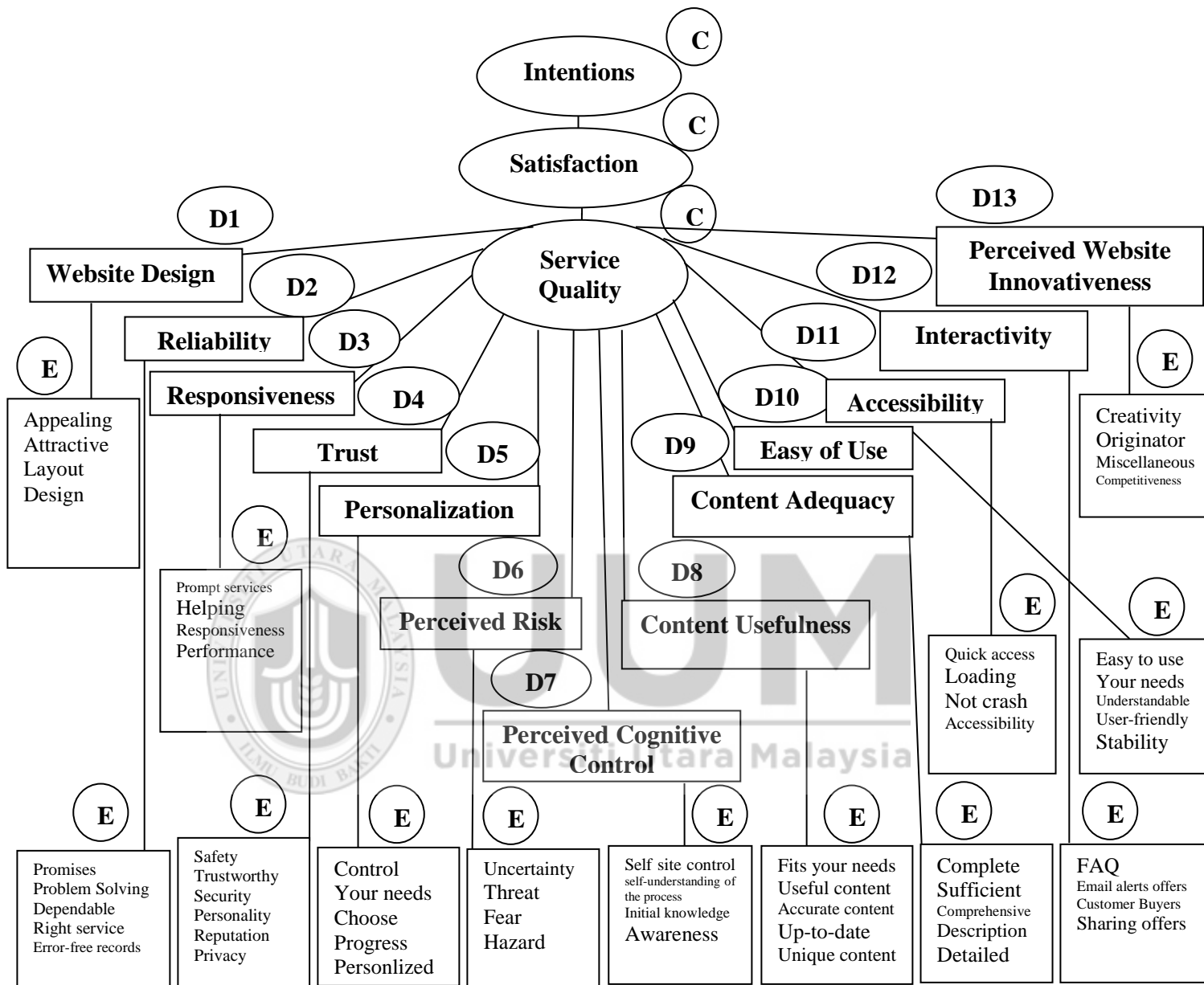


Figure 2.17: Operationalization of M-commerce Services Quality Variables

## 2.15 Chapter Conclusion

This chapter presents the detailed information about the literature and past research works that have been done on t-commerce, e-commerce, and m-commerce services. It explains the differences between m-commerce and e-commerce, and the implication of m-commerce services. Also discussed are: the implication of m-commerce services in many sectors, service quality research issues, conceptualization of service quality and SERVQUAL scale are also discussed. Finally, the researcher details out other theories and dimensions of service quality. The concepts discussed in this chapter pave the foundations for the next chapters on m-commerce service quality modeling and implementation.

It is evident that there is much research based on the perceptions of the customers about SQ and how it can be evaluated by the customers. However, there is a dearth of research that addresses the applicability of SQ to m-commerce environments. This chapter explains the detailed foundation of the conceptual model of this research. An outline of the dimensions of m-commerce SQ measured, and the various measurement models of the dimensions are given.

From the analysis of the literature, the researcher developed an m-commerce SQ model that is based on SERVQUAL model. The model proposes and formulates 15 hypotheses in trying to answer the research questions. There are 16 variables involved which include 13 variables that are concerned with customers' overall perception about m-



commerce SQ. The fifteenth variable is concerned with customer satisfaction with m-commerce service while the sixteenth variable is concerned with customer's behavioral intention to use m-commerce in future.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter explains the methodology used in this research and the theoretical basis behind the approaches taken. Due definitions of all steps used are provided for the understanding of the readers. This chapter starts by the identification of the differences between the exploratory, descriptive, and explanatory research approaches, followed by the differences between deductive versus inductive research. Then, the research strategy is discussed. Also included is the comparison of the benefits of conducting an online survey versus offline survey, and the justification of the adoption of the offline survey technique. This chapter also describes the Data analysis methods and instruments that were used in this study. Finally, a brief discussion about the validity and reliability of the study is included.

#### **3.1 Purpose of Research**

According to Yin (2003), the purpose of a research is stating what to be achieved by conducting the research and the applicability of its findings. Research purposes can be classified in various ways, a widely used method identifies exploratory, descriptive and explanatory as the classification (Yin, 2003).

*Exploratory* studies are valuable means to find out what is happening, seek new insights, ask questions and assess phenomena in a new light (Saunders *et al.*, 2000). An *exploratory* research's purpose is to gather as much information as possible about a specific subject (Yin, 2003). The three principal ways of conducting exploratory researches (Saunders *et al.*, 2000) are:

- a) Searching of the literature;
- b) Talking to experts in the subject; and
- c) Conducting group-focused interviews.

The *descriptive* research aims to give the profile of persons and events of situations an accurate record (Saunders *et al.*, 2000). The descriptive research is utilized most often when a problem is well-structured and there is no intention of investigating the cause-effect relationship (Sekaran, 2000).

The objective of *explanatory* research is to analyze the cause-effect relationship, and explain which cause produces which effect (Yin, 2003). Aaker and Day (1990) stated that the explanatory research's approach should be used when necessary in viewing of showing the variable caused by or that determines another variable's value. This goal is better accomplished through laboratory and field experiments.

The purpose of the research questions proposed in chapter one of this study shows that this study is primarily descriptive. In view of this a survey was conducted on the m-

commerce services perception aspect. In the analysis and conclusion stages, the study becomes slightly explanatory, as the research questions of this study were inferred in the final chapter and conclusions drawn.

### 3.2 Research Approach: Qualitative versus quantitative or multiple

Generally, there two types of research approaches based on the nature of the data to be analyzed are qualitative and quantitative. The qualitative research characterizes the opportunity to explore a subject in its possible reality (Saunders *et al.*, 2000). Yin (1994) further stated that common qualitative methods are case studies, where the aim is receiving thorough information and obtaining a deep understanding of the research problem. The quantitative research involves numerical data. This type of data can be quantified in numeral (Saunders *et al.*, 2000). Quantitative research is often formalized and well-structured. Quantitative research is concerned with measurement of numbers like the number of people who would buy a particular product, the percentage of people who agree with a certain statement or the satisfaction levels of customers. Online research also suits this kind of work (Sekaran, 2000). Usually, depending on the purpose of the study and the research questions, one of the two approaches is chosen (Aaker & Day 1990). According to Saunders *et al.*, (2000) however, there are more to these differences between qualitative and quantitative data. This is summarized in Table 3.1:

**Table 3.1:** *Differences between Qualitative and Quantitative Data*

<b>Qualitative Data</b>	<b>Quantitative Data</b>
Based on meanings expressed through words	Based on meanings derived from numbers
Involves non-standardized data requiring classifications into categories	Involves numerical and standardized data

**Table 3.1** (Continued)

Deals with analysis that is conducted through the use of conceptualizations	Deals with analysis that is conducted through the use of diagrams and statistics
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The researcher is interested in identifying the different factors that relate to customer's perception about of m-commerce SQ, for example, if different services or techniques added to customer satisfaction and loyalty intention to the m-commerce services 'make any difference'. These ambitions could indicate if the researcher should employ quantitative methods and the students and employees are addressed as a population. In fact, many research projects start with quantities, and later go deeper by deploying every bit of its quality. A single study can combine both quantitative and qualitative methods and use primary and secondary data simultaneously (Sekaran, 2000). Two major advantages are highlighted in employing such multi-methods approach in the same study. First, the different methods can be targeted at achieving different objectives of the study. Second, multi-methods enable triangulation to take place. Triangulation is using different data collection methods within one study so as to ensure that the finding from the data analysis is consistent, and strong enough in answering the research questions posed. In this study, it will help in gaining deeper understanding of m-commerce SQ perception phenomenon. In this research however, quantitative approach was adopted throughout the research process.

### **3.2.1 Causal vs. Correlation**

Finding answers to the study's problem, the researcher determines whether a casual or a correlation study is needed. According to Sekaran (2000), causal study when there is

need to establish a definitive cause-and-effect relationship of one or more hypotheses. The correlation study is for mere identification of the important factors that are associated as stated in the hypotheses under testing. A researcher engaging a causal study should state categorically that variable X causes variable Y. If variable X is removed or altered in some way, then problem Y can be solved.

This study's was conducted in a university environment studying many variables causing a problem. Mostly, multiple factors do influence any problem under study. This study thus tries to identify the important factors that are associated with the problem, rather than establish a cause-and-effect relationship. Correlation studies are regularly conducted so as to duly classify the important variables that are associated with the problem under study (Sekaran, 2000). This is best done by Pearson correlation matrix. This can be used to indicate the direction, strength, and significance of the bivariate relationships of all the variables in the study (i.e., the relationship between any two variables among the variables tapped in the study).

This study main objective is to find the correlation values of the variables under study. While the correlation ranges between -1.0 and +1.0, the researcher needs to identify if there is significant correlation between two variables. This is when the occurrence by chance alone or there is a high probability of its actual existence. In social science research, a significance of  $p = .05$  is accepted generally as a conventional level. The indication is that in 95 times out of 100, the researcher is certain of a true or significant corre-

lation between the two variables. When there is only 5% chance, then the relationship does not truly exist. Correlation is to essentially test for relationship and not causality.

Thus, when the hypothesis indicates that there is a significant positive relationship between two variables, it can be tested by examining the correlation between the two variables, using standardized regression weights ( $r$ ), or coefficients of correlation, between two variables. This number ( $r$ ) is between -1.00 and 1.00, indicating both the direction and the strength of the linear relationship between the two variables. That the lower limit of substantive regression coefficients is 0.05 (Compeau & Higgins, 1995), has been proposed, although the researchers' preference is a critical value of 0.10 and higher ( $r > 0.10$ ) for substantive correlations. Also ( $r$ ) can be generated for variables measured on an interval or ratio scale.

### **3.2.2 Unit of Analysis**

Considering the different data analysis stages of this study, the level of aggregation of data collected will be regarded as unit of analysis. This will be determined and guided by the research question, data collection methods, sample size, and even the variables included in the framework (Sekaran, 2000). In this study, the problem statement focuses on what are the factors affecting customers' perception about m-commerce SQ. This study is interested in individual students and employees in the university. Therefore, the unit of analysis is the individual. This study treated each student's and employees response as individual and will look at the data gathered once (i.e., cross-sectional), using

each individual as a source of data. This data have been gathered once, over a period of weeks, in order to answer the research questions.

### **3.2.3 Deductive vs. Inductive**

According to Sekaran (2000), inductive approach is when data is collected and theory developed as a result of the data analysis; while in the deductive approach, the theory and hypothesis (or hypotheses) are developed and the research designed to test the hypothesis. Deductive reasoning works from the more general to the more specific; sometimes, it is known as a “top-down” approach; inductive reasoning works the other way, moving from specific observations to broader generalizations and theories. Informally, researchers sometimes call this a “bottom up” approach (Lindgaard, 1994). This study started with thinking up a theory about a topic of interest. This will be then be narrowed that down into more specific and testable hypotheses. This ultimately led to testing the hypotheses with specific data, with due confirmation of the theoretical backing. This research has been conducted using deductive "top-down" trait approach.

### **3.3 PLS Structural Equation Modeling Approach**

The Partial Least Squares (PLS) modeling was proposed by Herman Wold (1982, 1985) as cited by Lohmöller (1987, 1989), in the computational aspect of the LVPLS software. It has also been attributed to Wold through theoretical developments and by chin (1998, 2001) and chin and Newsted (1999) for the new graphical interface (PLS-Graph) and for



enhanced validation methods. The Lohmöller's program PLSX for units x variables data is the basis of the PLS-Graph software and eventually enables similar option.

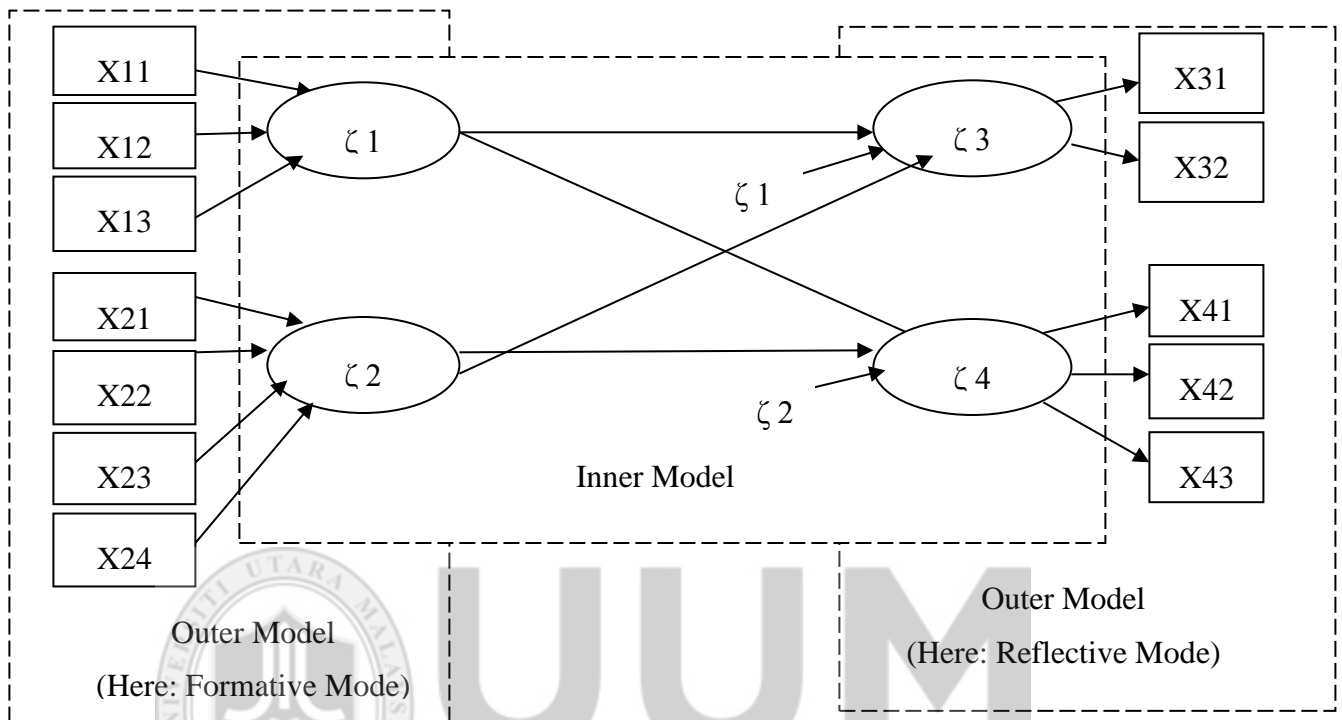
### **3.3.1 The PLS Path Model**

The PLS path modeling method is a commonly used method in the estimation of causal relationships in the field of path models involving latent constructs that are measured indirectly by many indicators. Previous studies by Wold (1982), Lohmöller (1989), Chin (1998), and Tenenhaus *et al.*, (2005) explained the methodological basis and methods for outcome evaluation and provided some instances of this methodology.

A PLS path model's description is provided by two models; a measurement model linking the manifest variable (MVs) to their latent variables (LVs), and a structural model that related endogenous LVs to other LVs. The measurement model is referred to as the outer model while the structural model is referred to as the inner one.

The inner model describes the relation between unobserved or latent variable while the outer one describes the relation between a latent variable and its manifest variable. An example of PLS path model is shown in figure 3.1. The general design of a PLS presents a recursive inner model that is exposed to predictor specifications. Therefore, the inner model comprises a casual chain system and included two varying types of outer models; the reflective and formative measurement models are represented by mode A&B respec-

tively. The choice of a particular outer mode is explained by theoretical rationals (Diamantopoulos & Winklhofer, 2001).



**Figure 3.1:** Example of a PLS Path Model

The reflective mode develops causal relations from the latent variable to the manifest variable in the block it is located in. Therefore, every manifest variable in a particular measurement model is perceived to be developed as a linear function of the latent variables along with the residual. On the other hand, the formative mode of the model develops causal relation from manifest variable to the latent ones.

In addition, it is imperative to consider how the terms, "formative" and "reflective", and the implication are linked with the classification of "causal" and "effect", highlight the

distinction between the characterization of the mode of the latent variable measurement models.

Despite the latent variable's original consideration as an exact linear combination of its indicators of the specifications of formative indicator or a causal indicator specification, the original term is broader as it considers both in an exact linear combination even when the indicators do not extensively determine the latent variable (Bollen & Davis, 2009).

### **3.3.2 The PLS Path Modeling Algorithm**

The PLS algorithm is primarily regression sequence based on weight vectors. The weight vectors achieved at convergence achieve fixed point equation. Lohmöller (1989) suggested that the basic PLS algorithm includes the following three phases:

Stage 1: An iterative estimate of latent variable scores comprising of a four-phase iterative process that is repetitive until the achievement of convergence. The steps are:

- a) The external approximation of the latent variable score,
- b) Inner weight estimation,
- c) The latent variable scores internal approximation, and
- d) Outer weights estimation.

Stage 2: The outer weight/loading and path coefficients estimation.

Stage 3: Location parameters estimation.

### 3.3.3 Methodological Characteristics

Literature concerning PLS path modeling and other publications regarding causal modeling applications using the PLS path modeling method often highlight the method's beneficial feature (e.g. Falk & Miller, 1992; Fornell & Bookstein, 1982; Jöreskog & Wold, 1982; Lohmöller, 1989).

The widespread use of PLS path modeling in the circles of scientists and practitioners stem from four basic features; (1) as opposed to singularly stressing on the common reflective mode, the PLS path modeling algorithm enables the unconfined calculation of cause-and-effect relationship models employing both reflective and formative measurement models (Diamantopoulos & Winklhofer, 2001); (2) PLS can be utilized in the estimation of path models in smaller sample sizes (Chin & Newsted, 1999); (3) PLS path models can turn very complex as they comprise of varying latent and manifest variable, but they never lead to issues of estimation (Wold, 1985). Moreover, the PLS path modeling is considered as methodologically beneficial compare to CBSEM in cases when improper or non-convergent outcomes are possible (e.g. Heywood cases, see Krijnen, Dijkstra, & Gill, 1998).

Furthermore, with increasing complex models, the amount of latent and manifest variables may be great in relation to the observation numbers. Finally, PLS path modeling can be utilized in highly skewed distribution (Bagozzi, 1994), or when the observation

independence is not guaranteed because according to Fornell (1982, P.443), "there is no distributional requirements".

### **3.3.3.1 Reflective and Formative Measurement Models**

Structural equation models often include latent variables having multiple indicators. The measurement model or the outer model provides specifications of the relationship between indicators and latent variables. The direction of the path association per measurement model and hence, the causality existing between the indicators and the latent variables are defined either through a reflective or a formative method (Henseler, Ringle & Sinkovics, 2009).

The reflective measurement model originates from the classical test theory along with psychometrics (Nunnally & Bernstein, 1994). Every indicator reflects an erroneous measurement of the latent variable. The causality direction beings from the construct to the indicators and thus, observed measure construct are reflected in the indicators' changes (Henseler *et al.*, 2009).

In certain circumstances, like the onset of the model development, it is suitable to determine causality from the measures of the construct as opposed to the other way around (Blalock, 1985). This type of circumstance reflects a formative measurement model, which is sufficient when a construct is defined as a combination of indicators. A good example is the marketing mix elements determined through the combination of variables

(Fornel, 1982) and therefore, it has to be modeled as a typically linear combination of indicators along with disturbance term (Diamantopoulos, 2006).

As a result, construct modification are often revealed in the changes in the indicators. The latent variable is consequently described as weighted score across the representative indicator variable considered as one dimension. When the value of one indicator increases, a higher score is established for the composite variable, no matter what the values of the other indicators are (Henseler *et al.*, 2009).

On the other hand, the formative measurement model utilized the overall index domain where the indicators represent the overall important dimension or independent sources of the latent variables. This implies that the omission of a single indicator could lead to the omission of specific part of the formative measurement model and modify the variable's meaning (Diamantopoulos & Winklhofer, 2001).

### **3.3.3.2 Sample Size**

The debate surrounding sample size stems from the considerable challenges faced when carrying out CBSEM with smaller samples. A significant number of simulation studies dedicate to CBSEM made comparisons to alternative discrepancy functions and their estimation bias, robustness and accuracy in terms of sample size. For instance, Boomsma and Hoogland (2001), claimed that in small samples of 200 or less, there are issues of non-convergence and improper CBSEM solution. The author conclude that CBSEM,

based on the selected discrepancy function and the model complexity, calls for several hundred or sometimes thousands samples.

In PLS path modeling the size of the sample can be significantly smaller. This aspect of the sample is illustrated by Wold (1989) through the analysis of a path model on the basis of a data set comprising 10 observations and 27 manifest variables. Based on a rule thumb, for a robust estimation of PLS path modeling, the sample size should be equal to the larger of the following sizes (Barclay, Higgins & Thompson, 1995); (1) ten times the scale's numbers of indicator with the highest number of formative indicators or (2) ten times the highest number of structural paths concentrated on a specific construct located in the inner model.

Similarly, Chin and Newsted (1999) illustrated a Monte Carlo sample study concerning PLS with small samples. The selection of a suitable sample size hinges on the relationship magnitude or the required degree of power. Clearly, it is important for the researcher to keep the following in consideration: the distributional characteristics of the data, potential missing data, the psychometric properties of the variables examined, and the relationships magnitude prior to deciding on a suitable sample size to utilize or to guarantee that an appropriate sample size concerning the phenomenon of interest is available (Marcoulides & Saunders, 2006).

Similarly, Goodhu *et al.*, (2006), emphasized that although PLS path modeling appears to lack special in small sample size, its performance in light of statistical power, is at par with other method for normally distributed data. According to them PLS path modeling is still a method that is convenient and robust which is suitable for several research situations like complex research model with too small sample sizes for CBSEM methods. Consistent with their conclusion, Marcoulides and Saunders (2006), P.VIII) reveals that "PLS rule of thumb may be effective in some circumstances, it may fail in others.

### **3.3.3.3 Model Complexity**

With the increase of model complexity, certain CBSEM discrepancy functions, such as GFI and AGFI, decline and they may become unsuitable for more complex models (Anderson & Gerbing, 1984) For instance, authors Boomsma and Hoogland (2001) conducted an experimental variation of model complexity by modifying the estimated parameters and the number of freedom levels and they revealed that the more parameters to be estimated, the more will be the occurrence of non-convergence and ineffective solution. In other word, the larger the number of estimation requirements, the more will be the information required.

Hence, PLS is widely used for its suitability in explaining complex relationships (Fornell, 1982; Fornell, Lorange & Roos, 1990). Similarity, according to Wold (1985), PLS is prominent among larger models when the important moves from individual variables and parameters to group of variables and total parameters. Hence, in complex models



having latent variables PLS is most common choice. In addition, the PLS algorithm enables a significant increase in model complexity and significant reduction between the distance of subject matter analysis and statistical methods within domains that are characterized by continuous access to data is reliable.

### **3.3.4 Evaluation of the PLS Path Model**

The PLS path modeling does not employ the condition of global-of-fit. As such, Chin (1998) proposed a catalogue of criteria for the assessment of partial model structures. The criteria comprise of a two-phase process that covers (1) the outer model assessment.

At the onset of the tow level processes, model assessment concentrates on the measurement models. The measurement reliability and validity is revealed by a systematic evaluation of PLS based on specific criteria linked with formative and reflective outer model. It is only reasonable to assess the inner path model estimates when the calculated latent variable scores reveal appropriate validity and reliability.

### **3.4 Covariance Based SEM (CBSEM) and Variance Based SEM (VBSEM) Approaches**

- a) The covariance structural equation modeling (CBSEM) was proposed as a confirmatory model and it is distinct from the PLS path modeling as the latter is prediction oriented.

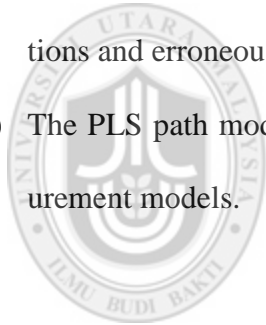
- b) CBSEM has always been the common approach for the estimation of SEMs. The popularity of PLS path modeling is recent, particularly in the consumer and service research field.
- c) The PLS path modeling should be considered as more than a less strict replacement of CBSEM but as an approach that complements CBSEM (Lohmöller, 1989).
- d) Covariance-based SEM, Components-based SEM along with PLS path modeling should be considered as methods that complement each other. The aim of the covariance-based SEM is to decrease the fit-function between the sample covariance matrix and the implied covariance one. As for the PLS path modeling, the estimates of parameters are acquired to decrease the residual variance of dependent variables, both manifest and latent. Nevertheless, conditions may exist when PLS path modeling may outperform the covariance-based SEM in its assessment of hierarchical construct models (Mathwick *et al.*, 2001).
- e) Utilizing covariance-based SEM for the identification of reflective hierarchical models is a challenging task. Even in cases when the model is identified theoretically, it may take a backlash from empirical under-identification, which could lead to non-convergence and/or unsuitable solutions. As for formative hierarchical construct models or such models with a combination of formative and reflective constructs, the challenges are multiplied. The PLS path modeling is not as vulnerable to identification issues and unsuitable solutions compared to covariance-based SEM (Mathwick *et al.*, 2001).

- f) Cassel, Hackl, and Westlund (1999) managed to present the robust deviation from normality of PLS path modeling with expectation of highly skewed distributions with the help of a Monte Carol simulation.
- g) The PLS path modeling is more suited to complex models such as those with hierarchical constructs (with a complete disaggregation method), mediating and moderating impacts (Chin, Marcolin, & Newsted, 2003).
- h) The formative constructs analysis in covariance-based SEM is challenging and it requires the identification of rules making its applications challenging particularly in multidimensional or hierarchical models. The PLS path modeling primarily enable for the convenient handling of formative constructs. Despite the well documented biasing impacts of incorrectly specifying formative constructs. Despite the well documented biasing impacts of incorrectly specifying formative constructs in Jarvis, MacKenzie, and Podsakoff (2003) literature review, Petter, Straub, and Rai (2007) stated that 30% of the constructs are specified in an incorrect manner.
- i) The primary benefit of covariance based SEM that is superior to PLS path modeling is its use of formal testing procedures enabling for the assessment of the global model fit's validity (Bollen & Bollen, 1989; Chin, 1998a; Tenenhaus *et al.*, 2005). As for hierarchical construct models, the model fit is not the only thing that is assessed through formal testing procedures but also different alternative nested models (Edwards, 2001; Marsh & Hocevar, 1985; Rindskopf & Rose,

1988). This is, however, impossible in the PLS path modeling and as a result, the model validity cannot be assessed globally.

- j) In social sciences, unobserved heterogeneity and measurement errors are prominent. PLS path modeling applications are however often based on the rationale that the data analyzed stemmed from one population. This rationale of homogeneity is always unrealistic as individuals perceptions and evaluations of latent constructs are mostly heterogeneous that can impact both the measurement part (varying latent variables means in a single segment) and the structural part (varying relations between the latent variables in a single segment) of a causal model (Williams, Edwards, & Vandenberg, 2003).
- k) There is a lack of a well-developed statistical instrument to extend and reinforce the PLS path modeling method.
- l) Monte Carlo simulations should complement the utilization of actual data sets. The Monte Carlo simulations may function as an effective tool in exploring the effect of improper solutions in covariance-based SEM for hierarchical models and the possibility for the PLS path modeling to solve the problem.
- m) The PLS modeling has to be employed in the initial stage of theoretical development to assess and validate exploratory models. In addition, one of its powerful features is its suitability for prediction-oriented research where the methodology helps researches to concentrate on the explanation of endogenous constructs.

- n) Another feature of PLS is its vulnerability to multicollinearity. PLS determines measurement models and structural models through multiple regressions, and hence its estimates can be vulnerable to issues of multicollinearity.
- o) PLS produces latent variables scores which are constructs proxies measured by one or more than one indicator (manifest variables).
- p) PLS path modeling bypass issues of small sample size and it can hence be employed in certain situations where other methods are ineffective.
- q) PLS path modeling is able to estimate highly complex models having various latent and manifest variables.
- r) The PLS path modeling has looser assumptions regarding the variables distributions and erroneous terms.
- s) The PLS path modeling can be utilized in reflective as well as formative measurement models.



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### **3.5 The Rationale behind Choosing PLS SEM for this Study**

PLS SEM technique is called a second generation structural equation modeling (Wold, 1982). The relatively new technique works well with structural equation models that contain latent variables and a series of cause-and-effect relationships (Gustafsson & Johnson, 2004). The PLS SEM approach is a good and flexible tool for statistical model building as well as prediction (Ringle, Wende, & Will, 2012).

Specifically, the PLS technique was used in this study for the following reasons:

- a) Structural equations models have been demonstrated to be superior models that perform estimations better than regressions for assessing mediation (Brown, 1997; Iacobucci, Saldanha, & Deng, 2007; Mattanah, Hancock, & Brand 2004; Preacher & Hayes, 2004). It has been reported that PLS SEM accounts for measurement error and can provide more accurate estimates of mediating effects (Chin, 1998a).
- b) PLS path modeling becomes more appropriate for real world applications and more advantageous to use when models are complex (Fornell & Bookstein, 1982; Hulland, 1999). The soft modeling assumptions of PLS technique (i.e., ability to flexibly develop and validate complex models) gives it the advantage of estimating large complex models (Aker *et al.*, 2011). The current study examined the relationships. Because of the complex relationships involved, the use of PLS SEM techniques was appropriate for better prediction.
- c) In most social science studies, data tend to have normality problem (Osborne, 2010) and PLS path modeling does not necessarily require data to be normal (Chin, 1998a). In other words, PLS treats non-normal data relatively well. By and large, PLS path modeling was selected for this study to help avoid any normality problem that might arise in the course of data analysis for the current study.
- d) PLS SEM offers more meaningful and valid results, while other methods of analysis such as a software package like SPSS often result in less clear conclusions and would require several separate analyses (Bollen, 1989). Additionally,

Tabachnick and Fidel (2007) stated that SEM is one of the most powerful statistical tools in social and behavioral sciences that have the ability to test testing several relationships simultaneously.

In this study, the SmartPLS path modeling was used to establish measurement and structural models. Measurement model was used to explain or assess constructs' reliability and validity of the current study. Secondly, structural model was used to conduct bivariate correlation analysis and simultaneous regressions analyses to establish correlations and relationship effects among the constructs under investigation. Additionally, using the PLS mechanisms of algorithm and bootstrapping, the mediating effects of (mediator) on the relationship between were possible to be analyzed.

Hair *et al.*, (2010) stated that partial least squares (PLS) is now well known as an alternative to SEM method, which includes LISREL and AMOS, among other programs. The PLS path modeling is more suited to complex models such as those with hierarchical constructs (with a complete disaggregation method), mediating and moderating impacts (Chin, Marcolin, & Newsted, 2003). The PLS modeling has to be employed in the initial stage of theoretical development to assess and validate exploratory models. In addition, one of its powerful features is its suitability for prediction-oriented research where the methodology helps researchers to concentrate on the explanation of endogenous constructs. Another feature of PLS is its vulnerability to multicollinearity. In addition, PLS determines the measurement models and structural models through multiple regressions,

whose estimates can be vulnerable to issues of multicollinearity. Lastly, the PLS path modeling can be utilized in reflective as well as formative measurement models (Chin 1998b; Chin & Newsted 1999).

### 3.6 Research Strategy

Research strategy explains the general plan to be followed in the answering of the research questions outlined (Lindgaard, 1994). Any researcher must not only be interested in theoretical matters, the empirical research strategy must also be well selected. There are five research strategies in the social sciences which are experiments, surveys, archival analyses, histories, and case studies (Yin, 2003), with each having unique advantages and disadvantages, depending on three conditions:

- a) The research questions;
- b) The investigator's control over the actual behavioral events; and
- c) The preference of focusing on contemporary as not the historical phenomena.

Table 3.2 presents three conditions, which show how those three conditions are related to the five major research strategies.

**Table 3.2:** *Relevant Situations for Different Research Strategies (Yin, 2003)*

Strategy	Form of research questions?	Require the control of behavioral events?	Focuses on contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how	No	Yes
Archival	Who, what, where, how	No	Yes/No
History	How, why?	No	No
Case study	How, why?	No	Yes

**Source:** Yin (2003)



This study's aim is to collect the responses from university students and employees as best possible way of investigating this study's problem. This study used the survey of different students and employees groups as a research strategy. This choice partly is determined by this research approach, being of quantitative nature.

Furthermore, necessary documentation like academic articles and previous studies on the research area, have been used as sources. Yin (2003) stated that documentation offers the advantage of being static and therefore must be re-examined when necessary. Preferably, documentation is exact; therefore it contains accurate references and other details, with a broad coverage over a long time.

### **3.7 Data Collection Methods**

#### **3.7.1 Online Survey vs. Offline (traditional)**

A survey is an appropriate strategy because the nature of questions to be answered like: who, what, where and how. Furthermore, because of the quantitative nature of this study, a survey is appropriate because of its quantitative character. When should the researcher consider using online survey, and when are other methods more appropriate? By this, the following criteria by Song and Zinkhan (2003) are consulted to ensure the accuracy of the decision to use traditional survey as a primary method of data collection.

These are given as:

- a) When non-written feedback is required;
- b) For tracking market share or revenue data;
- c) When trying to reach older audiences; and

- d) If audio or video stimuli are present.

What are online questionnaires good for?

- a) Measuring perception of different products or brands;
- b) Evaluating websites;
- c) Measuring awareness;
- d) Obtaining feedback about future plans; and
- e) Gaining B2B feedback.

Other advantages of survey are cost effectiveness, appropriateness for quantitative research, ease of deployment and ability to provide a good breadth of responses. For the purpose of this research, the traditional questionnaire method is more natural and effective to be adopted into this study framework.

### **3.8 Probability vs. Non-Probability Sampling**

For many research questions and objectives it will be impossible for the researcher either to collect or to analyze all the data available due to the time and money constraints, and often access. Many researchers, for example (Lindgaard, 1994; Sekaran, 2000), argued that sampling is needed:

- a) If investigations involve thousands of elements, it would be practically impossible to test, or examine, or collect data on every element. Even if it is possible, it would involve a higher cost in terms of time and human resources; and
- b) There is higher overall reliable accuracy than a census due to the reducing fatigues, which results in less error in collecting data.

According to Yin (2003), sampling techniques can be divided into two types:

- a) Probability or representative sampling; and
- b) Non-probability with two main types, convenience sampling and purposive sampling.

Probability sampling is mostly associated with survey-based research when the researcher draws inferences from the sample of a population to answer the research questions through the design of data collection instrument (Sekaran, 2000). Based on this study's data collection method, probability samplings have been the most suitable type when selecting research samples, which is explained in the next section.

### **3.8.1 Probability Sampling**

Probability sampling design is used when elements in the population have known chances as subjects in the sample (Sekaran, 2000). Probability sampling can be naturally restricted or otherwise through simple random sampling. Simple random sampling has the least bias and offers the most generalizability, because every element can be selected as subject from the population by a known and equal chance (Sekaran, 2000). It is understandable that this sampling process is expensive and also need entirely updated listing of the available population. For these reasons, other restricted probability sampling (complex probability sampling) designs are often chosen as substitute.

### 3.8.2 Population

Population is defined by Blumberg, Cooper & Schindler (2008), as those people, events, or records that contain the desired information and can answer the measurement questions. In this study, the population has been comprised students and employees at the AOU which can be considered as a mobile commerce users.

The most common complex probability sampling design is stratified sampling. Stratification provides more information with a given sample size, following the lines that are appropriate to the research questions. In this study, the population consisted of university students and employees.

Stratification ensures there is homogenous source within each stratum, however with heterogeneity between strata. The objects drawn from each of the strata is either proportionate or not to the quantity of elements available in the stratum. In disproportionate sampling, making the decisions is based on either when the stratum or strata are too small or too large or when there is more suspected variation within a particular stratum (Sekaran, 2000).

The researcher has decided to choose Arab Open University (AOU) for a number of reasons. Firstly, information from Arabou, (2012), indicates that majority of students in the University engage in full time employment in different sectors of Jordan. In this view, many of the students have the capacity to purchase when they are compared with other

students who are not actively working. Secondly, extant studies have equally proved that majority of number of studies spend more of their time searching for and purchasing product online (Sorce, Perotti, & Widrick, 2005; Taylor, Zhu, Dekkers, & Marshall, 2004). Additionally, the choice of university employees as a sample is built on the fact the employees operate bank accounts through which their salaries are paid into while they also have full access to internet facilities that afford them to use their phone to purchase online (Al-majali & Mat, 2011). Available evidence reveals that all public universities in Jordan offer internet infrastructure by Digital Subscriber Line (DSL) land line services and wireless fidelity (WI-FI) service. Therefore, this facility affords all the private university employees and their students to have full access to the internet technology from anywhere and at anytime (Cybrarians, 2009). Moreover, the sampling frame of university employees and students is readily available. As a result of argument above, the researcher selected and distributed questionnaires to the Arab Open University (AOU) respondents. Previous studies had proved simple random sampling is appropriate because of its simplicity, and its reduced cost in collecting data. In addition, sample selection was further explicated by highlighting the process through sample was selected, precision issues and confidence in determining the sample size.

### **3.9 Sample and Sampling Procedure**

Sampling is the process whereby some elements from the population are selected to represent the whole population (Blumberg, Cooper & Schindler, 2008). According to Sekaran (2000), a sample is a sub-set of a population comprising a selection of members

of the particular population. This is in agreement with Troch in (2000), he defined sample as a group of people among the population selected to be in the studied.

### **3.9.1 Sampling Technique**

Selecting appropriate sample is a very important step in research study because the ability to achieve a quality of the sample will determine how generalizable will the result be (Gay & Diehl, 1996). According to Gay and Diehl (1996), there are several techniques for selecting the sample, and all these techniques use the steps in sampling which are essentially the same:

- a) Identify the population;
- b) Determine the required sample size; and
- c) Select the sample.

According to Sekaran (2003), probability sampling is most universally associated with survey-based research, where a researcher needs to conclude based on the sample studied among the population in view of answering the research questions or achieving the research objectives. Though, it (simple random sampling) may be limited in its strength. It is further added that simple random sampling is of least bias and thus has the most generalizable quality, because every element is of equal chance of being selected as from the population. Complex probability sampling is an example of limited probability sampling design that is used in most cases. However, this type of sampling process is more expensive and it must be frequently updated since the most recent information is the point of focus. Primarily there are four basic sampling techniques or procedures,

namely, simple random sampling, stratified random sampling, systematic sampling and cluster sampling.

For the purpose of this study, simple random sampling has been used. It serves as the most basic sampling technique where a group of samples could be selected from a larger population. All members of the population have an equal chance of being selected as a part of the sample' thus making it the most appropriate method. According to Sekaran (2003), even though it is very expensive and time consuming, it gives a true sample of the population. In this study, the researcher has been selected participants (students and employees).

To implement the sampling technique chosen, this study follows the steps recommended by Gay and Diehl (1996). They suggested the following steps:

- a) Define the population - the population, according to the Human Resources Department of AOU and student academic affairs, the total number of students is 5,423 and 313 employees total of 5736;
- b) Define the desired sample size - the desired sample size is determined based on Sekaran (2003), of 361 students and employees;

As mentioned earlier, according to the AOU (2014), there are around 5736 students and employees in all faculties of AOU. According to Sekaran (2010), if the total population is between 5000-6000, the sample size should be between students and employees as

shown in Table 3.3 Therefore; this study selected 361 students and employees as the sampling size (Sekaran, 2010; Krejcie & Morgan, 1970; Chehen, 1969).

**Table 3.3:** *Determining Sample Size of Given Population according to the Rule of Thumb (Krejcie & Morgan, 1970)*

N	S
4000	351
4500	354
5000	357
6000	361
7000	364
8000	367

N= population size, S= sample size **Source:** Sekaran (2010)

Based on the above discussion, three hundred and sixty-one (361) respondents were targeted to be technically acceptable, completed, and returned. However, the recorded response rate for the students and employees in past studies is between 40-70% (Udo, Bagchi & Kirs, 2010; Lin & Sneed, 2007; Kosugi *et al.*, 2007). Moreover, results that derived from a large sample could be generalized to the whole population (Hair *et al.*, 2006). In addition, the larger the sample size, the more flexibility is provided to the researcher in determining suitable response (Sekaran, 2003). Based on this evidence, the researcher duplicated the sample size determined according to Table 3.3 Therefore, 722 (361+361) respondents were used as the sample size.

Accordingly, 870 questionnaires were distributed in four (4) faculties' students and employees in AOU. Before that, the determination of the probability sampling of students and employees for each faculty is needed. The probability sampling was calculated using the following formula: probability sampling of students and employees =  $NSP*NS/T$



( $NSP$ =Number of students and employees in each faculty in AOU;  $NS$ =Number of sample to be distributed;  $T$ = the total of the students and employees in all faculties).

**Table 3.4:** *The Probability Sampling of Students and Employees for Each Faculty in AOU*

Name of Faculty	Number of students and employees in each faculty	Percentage of Sample size	Probability Sample size of students and employees
1. Faculty of business	1619	29%	245
2. Faculty of education	1226	21%	186
3. Faculty of computer	1503	26%	228
4. Faculty of language	1388	24%	211
<b>Total</b>	<b>5736</b>	<b>100%</b>	<b>870</b>

**Source:** (AOU, 2014)

The number of questionnaires distributed for each faculty is displayed in Table 3.4. In the Faculty of business, 245 questionnaires were distributed. The number of students and employees in the Faculty of business is around 1619 students and employees, or 29% out of the number of students and employees in Faculty of business.

For the Faculty of education, 186 questionnaires were distributed. The number of students and employees in the Faculty of education is around 1226 students and employees, or 21% out of the number of students and employees in Faculty of education.

For the Faculty of computer, 228 questionnaires were distributed. The number of students and employees in the Faculty of computer is around 1503 students and employees, or 26% out of the number of students and employees in Faculty of computer.

Finally, in the Faculty of language, 211 questionnaires were distributed. The number of students and employees in the Faculty of language is around 1388 students and employees, or 24% out of the number of students and employees in Faculty of language. Table 3.5 explains the number of questionnaires distributed to each faculty in AOU.

**Table 3.5:** *Number of Questionnaires Each Faculty in AOU*

<b>Name of Faculty</b>	<b>Number of students and employees in each faculty</b>	<b>%Percentage of Sample size</b>	<b>Number of respondents</b>
1. Faculty of business	1619	29%	245
2. Faculty of education	1226	21%	186
3. Faculty of computer	1503	26%	228
4. Faculty of language	1388	24%	211
<b>Total</b>	<b>5736</b>	<b>100%</b>	<b>870</b>

### **3.9.2 Data Collection Procedure**

Data collection methods are core parts of a research design. Research design is of several data collection methods, with their peculiar advantages and disadvantages each (Sekaran, 2003). Ways of collecting data can be through interviews, telephone calls, and

so on. In this study, the questionnaire was personally administered as a form of data collection process.

The questionnaire was personally distributed and administered by the researcher with the assistance of an executive from the deanship of student affairs department in AOU. The method is chosen to obtain good feedback during the administration of the questionnaire. According to Sekaran (2003), personally administered questionnaire to a group or individuals will help to establishing good communication channels with the participants. Introducing survey on the other hand clarifies any questions raised by the participants on the point of data collection. Questionnaires were collected immediately after they are completed.

The collection of data was carried out as follows:

- a) Prior to the distribution of the questionnaires, a request letter was forwarded to the Jordanian Ministry of Communications and Information Technology in Jordan, regarding the objectives and intention of the researcher. A written approval was obtained from the Jordanian Ministry of Communications and Information Technology to facilitate the task of distributing the questionnaires;
- b) The researcher contacted AOU and got prior approval to make a visit. The researcher contacted the Dean of student affairs and fixes a date for the administration of the questionnaire. Before distributing the questionnaires, the researcher

met the Dean to explain their roles in answering the questions raised in the questionnaire.

- c) The researcher distributed the questionnaires personally, before the beginning of the lesson in ten minutes, by going to the classroom and distributing the questionnaires to the students attending the lesson. In addition, the researcher distributed the questionnaires personally to the employees. The researcher was trying his best to clarify any ambiguity that the respondents might face.
- d) The researcher collected the questionnaires from students and employees upon completion of the questionnaires at the location. In addition, the researcher waited for the respondents in each class until they finished filling the questionnaires before going to other classes and distributing the questionnaires there.

### **3.10 Measurement of Variables/Instrumentation**

A measurement is a tool or mechanism of describing some property of a phenomenon's variables of interest in the study by assigning numbers in a reliable and valid way (Sekaran & Bougie, 2010; Zikmund *et al.*, 2010). In the present section, full details of measurement items and measurement scale are presented.

#### **3.10.1 Measurement Items**

In the present study, most of 70 measurement items are adapted from previous questionnaires. All items adapted in the present study are considered to be highly reliable and have strong construct validity as the values of the original Cronbach's alpha of all items

ranged from .712 to .960 (see Table 4.6). In this regard, many researchers have statistically recommended a Cronbach's Alpha value that is equal .70 or higher, which is considered adequate for any study (Hair *et al.*, 2010; Nunnally & Bernstein, 1994).

Table 3.6 indicates the items' number and Cronbach's Alpha values for the measurement instrument from the original study.

**Table 3.6:** *The Items' Number and Cronbach's Alpha Value of Measurement Instrument by the Original Study*

<b>Variable</b>	<b>Original No. of Items</b>	<b>Original Cronbach's alpha Value</b>	<b>Scale Sources</b>
<b>Website Design</b>	5	0.86	Parasuraman <i>et al.</i> , (1988), Riel <i>et al.</i> , (2001), Pitt <i>et al.</i> , (1995)
<b>Reliability</b>	5	0.83	Parasuraman <i>et al.</i> , (1988), Pitt <i>et al.</i> , (1995)
<b>Responsiveness</b>	4	0.73	Parasuraman <i>et al.</i> , (1988), Pitt <i>et al.</i> , (1995)
<b>Trust</b>	6	0.85	Parasuraman <i>et al.</i> , (1988), Parasuraman <i>et al.</i> , (2005), Riel <i>et al.</i> , (2001)
<b>Personalization</b>	5	0.72	Parasuraman <i>et al.</i> , (1988), Yang <i>et al.</i> , (2005), Wang (2003), Yang <i>et al.</i> , (2004)
<b>Perceived Risk</b>	4	0.88	Udo, Bagchi and Kirs (2010), Zhang and Prybutok (2005)

**Table 3.6 (Continued)**

<b>Perceived Cognitive Control</b>	3	0.80	Ding <i>et al.</i> , (2011)
<b>Content Usefulness</b>	5	0.76	Liu and Arnett (2000), Yang <i>et al.</i> , (2005), Wang (2003)
<b>Content Adequacy</b>	5	0.79	Liu and Arnett (2000), Yang <i>et al.</i> , (2005)
<b>Ease of use</b>	5	0.82	Wang (2003), Yang <i>et al.</i> , (2004), Yang <i>et al.</i> , (2005)
<b>Accessibility</b>	4	0.80	Yang <i>et al.</i> , (2004), Parasuraman <i>et al.</i> , (2005), Yang <i>et al.</i> , (2005)
<b>Interactivity</b>	4	0.85	Wang (2003), Aldridge and Rowley, (1998)
<b>Perceived Website Innovativeness</b>	3	0.96	O’Cass and Carlson (2012), Loiacono, Watson, and Goodhue (2007)
<b>Overall Perceived Service Quality</b>	4	0.85	Parasuraman <i>et al.</i> , (1988), Pitt <i>et al.</i> , (1995), Yang <i>et al.</i> , (2005)
<b>Satisfaction</b>	4	0.90	Yang <i>et al.</i> , (2005), Udo, Bagchi and Kirs (2010), Wang (2003), Lim <i>et al.</i> , (2006)
<b>Behavioral intention</b>	4	0.81	Parasuraman <i>et al.</i> , (2005), Riel <i>et al.</i> , (2004) Udo, Bagchi and Kirs (2010)
<b>TOTAL INSTRUMENTS</b>	70		

The measurement instrument was including sixteen sections to specifically address all the sixteen variables conceptually studied in the present study. The following explains how each variable of the study was measured.

1. The first section is website design. The five items of website design measurement were adapted from Parasuraman *et al.*, (1988), Riel *et al.*, (2001), and Pitt *et al.*, (1995). Table 3.7 shows the items that were used to measure the website design.

**Table 3.7:** *The Items Used to Measure Website Design*

Variable	Item
<b>Website Design</b>	1. The m-commerce provides visually appealing features.
	2. The m-commerce provides attractive site colors, graphics, and fonts.
	3. The m-commerce provides a good page layout.
	4. The m-commerce provides well designed site menus.
	5. The m-commerce has innovative features.

2. The second section is reliability. The five items of reliability measurement were adapted from Parasuraman *et al.*, (1988), and Pitt *et al.*, (1995). Table 3.8 shows the items that were used to measure the reliability.

**Table 3.8:** *The Items Used to Measure Reliability*

Variable	Item
<b>Reliability</b>	1. When m-commerce promises to do something, it does so.
	2. When you have problems, m-commerce shows a sincere interest in

**Table 3.8** (Continued)

solving it.
3. The m-commerce is dependable.
4. The m-commerce always performs the service right the first time.
5. The m-commerce insists on error-free records.

3. The third section is Responsiveness. The four items of Responsiveness measurement were adapted from Parasuraman *et al.*, (1988), and Pitt *et al.*, (1995).

Table 3.9 shows the items that were used to measure the Responsiveness.

**Table 3.9:** *The Items Used to Measure Responsiveness*

Variable	Item
Responsiveness	1. I think the m-commerce gives me a prompt service.
	2. I believe the m-commerce is always willing to help me.
	3. I believe the m-commerce has never been too busy to respond to my requests.
	4. The m-commerce tells me exactly when services will be performed.

4. The fourth section is trust. The gender items of trust measurement were adapted from Parasuraman *et al.*, (1988), Parasuraman *et al.*, (2005), and Riel *et al.*, (2001). Table 3.10 shows the items that were used to measure the trust.

**Table 3.10:** *The Items Used to Measure Trust*

Variable	Item
Trust	1. The m-commerce provides safe transactions.



**Table 3.10** (Continued)

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2. The m-commerce provides trustworthy services.
3. The m-commerce provides adequate security features.
4. The m-commerce will not misuse my personal information.
5. The m-commerce has a reputation for being honest.
6. I feel like my privacy is protected at this m-commerce.

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5. The fifth section is personalization. The five items of personalization measurement were adapted from Parasuraman *et al.*, (1988), Yang *et al.*, (2005), Wang (2003), and Yang *et al.*, (2004). Table 3.11 shows the items that were used to measure the personalization.

**Table 3.11: The Items Used to Measure Personalization**

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<b>.Variable</b>	<b>Item</b>
<b>Personalization</b>	1. The m-commerce enables you to control your commercial transaction progress.
	2. The m-commerce enables you to buy the product you need.
	3. The m-commerce enables you to choose what you want to buy.
	4. The m-commerce records your commercial transaction progress and performance.
	5. The m-commerce provides the personalized commercial transaction support.

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6. The sixth section is perceived risk. The four items of perceived risk measurement were adapted from Udo, Bagchi and Kirs (2010), and Zhang and Prybutok (2005). Table 3.12 shows the items that were used to measure the perceived risk.

**Table 3.12: The Items Used to Measure Perceived Risk**

Variable	Item
Perceived Risk	1. I worry about credit card information being stolen
	2. I worry about the product quality on the Internet
	3. I worry about safe transaction online
	4. I worry about how my personal information might be used when I buy online

7. The seventh section is perceived cognitive control. The three items of perceived cognitive control measurement were adapted from Ding *et al.*, (2011). Table 3.13 shows the items that were used to measure the perceived cognitive control.

**Table 3.13: The Items Used to Measure Perceived Cognitive Control**

Variable	Item
Perceived Cognitive Control	1. I know what to expect in following steps.
	2. I know how long it takes to complete the transaction.
	3. I know what information will be provided in each page.

8. The eighth section is content usefulness. The five items of content usefulness measurement were adapted from Liu and Arnett (2000), Yang *et al.*, (2005), and Wang (2003). Table 3.14 shows the items that were used to measure the content usefulness.

**Table 3.14: The Items Used to Measure Content Usefulness**

<b>Variable</b>	<b>Item</b>
<b>Content Usefulness</b>	1. The m-commerce provides content that exactly fits your needs.
	2. The m-commerce provides useful content.
	3. The m-commerce provides accurate content.
	4. The m-commerce provides up-to-date content.
	5. The m-commerce provides unique content.

9. The ninth section is content adequacy. The five items of content adequacy measurement were adapted from Liu and Arnett (2000), and Yang *et al.*, (2005). Table 3.15 shows the items that were used to measure the content adequacy.

**Table 3.15: The Items Used to Measure Content Adequacy**

<b>Variable</b>	<b>Item</b>
<b>Content Adequacy</b>	1. The m-commerce provides complete content.
	2. The m-commerce provides sufficient content.
	3. The m-commerce provides comprehensive content compared to other systems.
	4. The m-commerce provides complete service description.
	5. The m-commerce provides detailed contact information.

10. The Tenth section is ease of use. The five items of ease of use measurement were adapted from Wang (2003), Yang *et al.*, (2004), and Yang *et al.*, (2005). Table 3.16 shows the items that were used to measure the ease of use.

**Table 3.16: The Items Used to Measure Ease of use**

Variable	Item
Easy of use	1. The m-commerce is easy to use.
	2. The m-commerce makes it easy for you to find the content you need.
	3. The content provided by the m-commerce is easy to understand.
	4. The m-commerce is user-friendly.
	5. The operation of the m-commerce is stable.

11. The eleventh section is accessibility. The four items of accessibility measurement were adapted from Yang *et al.*, (2004), Parasuraman *et al.*, (2005), and Yang *et al.*, (2005). Table 3.17 shows the items that were used to measure the accessibility.

**Table 3.17: The Items Used to Measure Accessibility**

Variable	Item
Accessibility	1. The m-commerce enables you to get on to it quickly.
	2. The m-commerce has high speed of page loading.
	3. The m-commerce does not crash.

**Table 3.17** (Continued)

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4. I can access to m-commerce whenever I need.

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12. The twelfth section is interactivity. The four items of interactivity measurement were adapted from Wang (2003), and Aldridge and Rowley (1998). Table 3.18 shows the items that were used to measure the interactivity.

**Table 3.18:** *The Items Used to Measure Interactivity*

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<b>Variable</b>	<b>Item</b>
<b>Interactivity</b>	1. The m-commerce makes it easy for you to ask questions to services providers.
	2. The m-commerce makes it easy for you to discuss questions with other beneficiaries from service.
	3. The m-commerce makes it easy for you to share what you buy with the commercial community.
	4. The m-commerce makes it easy for you to access the shared content from the commercial community.

---

13. The thirteenth section is perceived website innovativeness. The three items of perceived website innovativeness measurement were adapted from O’Cass and Carlson (2012), and Loiacono, Watson, and Goodhue (2007). Table 3.19 shows the items that were used to measure the perceived website innovativeness.

**Table 3.19:** *The Items Used to Measure Perceived Website Innovativeness*

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<b>Variable</b>	<b>Item</b>
<b>Perceived Website</b>	1. The m-commerce offers unique features for customers that are different from existing m-commerce.

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**Table 3.19** (Continued)

<b>Innovativeness</b>	2. The m-commerce is highly innovative.
	3. The m-commerce has innovative features.

14. The fourteenth section is overall perceived service quality. The four items of overall perceived service quality measurement were adapted from Parasuraman *et al.*, (1988), Pitt *et al.*, (1995), and Yang *et al.*, (2005). Table 3.20 shows the items that were used to measure the overall perceived service quality.

**Table 3.20: The Items Used to Measure Overall Perceived Service Quality**

<b>Variable</b>	<b>Item</b>
<b>Overall Perceived Service Quality</b>	1. Overall, the services provided by m-commerce have excellent quality.
	2. The service quality provided by m-commerce matches my expectations.
	3. The m-commerce delivers superior service in every way.
	4. The m-commerce offers a very competitive service.

15. The fifteenth section is satisfaction. The four items of satisfaction measurement were adapted from Yang *et al.*, (2005), Udo, Bagchi and Kirs (2010), Wang (2003), and Lim *et al.*, (2006). Table 3.21 shows the items that were used to measure the satisfaction.

**Table 3.21: The Items Used to Measure Satisfaction**

Variable	Item
Satisfaction	1. I am completely satisfied with the performance of m-commerce service.
	2. I am pleased with the experience of using the m-commerce service.
	3. My decision to use the m-commerce service was a wise one.
	4. I think I did the right thing by using the m-commerce services.

16. The sixteenth section is behavioral intention. The four items of behavioral intention measurement were adapted from Parasuraman *et al.*, (2005), Riel *et al.*, (2004), and Udo, Bagchi and Kirs (2010). Table 3.22 shows the items that were used to measure the behavioral intention.

**Table 3.22: The Items Used to Measure Behavioral intention**

Variable	Item
Behavioral Intention	1. I intend to continue using the m-commerce service in the future.
	2. I will continue using the m-commerce service in the future.
	3. I will regularly use the m-commerce service in the future.
	4. I would like to recommend the m-commerce service to others.

17. Demographic Variable, In addition to the above items, several questions regarding the participant's personal information has been also be elicited, such as age, gender, level of certificate, job title, and monthly income.

### **3.10.2 Measurement Instrument Scale**

For the present study, a Likert scale will be used to measure responses; this scale is a common format for business research (Garland, 1991). The Likert scale is a psychometric scale used in questionnaire surveys to get respondents' opinions regarding a specific level of agreement to a measurement statement (Sudha & Baboo, 2011). As indicated by Wolfer (2007), the Likert scale is often used to measure respondents' opinions on a five-point rating system for each specific question or statement. A typical five-point Likert scale might be strongly disagree, disagree, neutral, agree, and strongly agree. However, Likert scales with four to nine points have been used in various research fields. In relation to the number of scale points, no clear rules have been established concerning how many points should be used in the business research.

To record the response choice in the present study, each of the measurement items was measured on a five-point Likert scale, which provides sufficient discrimination and is easily understood by survey respondents (Brace, 2004; Sekaran & Bougie, 2010). In addition, a five-point Likert scale has been employed in most original studies of measuring success of e-SQ, such as Al-mushasha and Hassan (2009), Ding, Hu and Sheng (2011), Papadomichelaki and Mentzas (2012), Stiakakis and Georgiadis (2011), and Martinez Caro and Martinez Garcia (2008). The researchers have indicated that a five-point Likert scale is just as good as any other scale and that moving from five to seven or nine points on the scoring scale does not increase the reliability of the scores (Elmore & Beggs, 1975).



Given the above considerations, the present study measured all variables by using a 5-point Likert scale, where survey question will refer to agreement degree (i.e. 1= strongly disagree, and 5= strongly agree) of perceived service quality of the m-commerce from the respondents' view; survey questions was also refer to agreement degree (i.e. 1= strongly disagree, and 5= strongly agree) of satisfaction in m-commerce in future, and behavioral intention to use m-commerce in future.

### **3.10.3 Translation of Questionnaire**

In the present study, the questionnaire was prepared in both Arabic and English language, so that the respondents can understand and answer the questions. The use of Arabic language is practical because it is the lingua franca of the respondents. Sekaran and Bougie (2010) suggested that it is important to ensure that the questionnaire instrument is in the language preferred by each respondent in order to avoid response errors among the entire population. Therefore, the questionnaire was translated using the back-translation procedures. First, the English version of the questionnaire was translated into Arabic by two Arab translators who are proficient in English. The Arabic version of the questionnaire was then being translated back into English by a third translator to ensure the validity of the translation (Newmark, 1988).

### **3.10.4 Survey administration**

The questionnaire was in paper form. The students were the choice of filling in the paper questionnaire and return it by hand immediately. Receiving the filled questionnaire at

the spot of filling have been helps in achieving a high response rate. Sekaran (2000) emphasizes the main advantages of personally administering the questionnaires as:

- a) the researcher can collect all the completed responses within a short period of time;
- b) any unclear part in the questionnaire can be promptly brought to the researcher, and in response, he can make necessary clarification at the spot;
- c) There is opportunity to better introduce the research topic and motivate the respondents to answer; and
- d) This is less expensive and consume less time than interview method.

The questionnaire, having being well layout and designed, the appearance becomes professional, easy to read, and only requires fifteen minutes of completion. Each question will be brief and takes a line at maximum. Questions at the average will not be more than seven words each.

### **3.11 Pre-Test and Pilot Study**

The following sections provide a detailed discussion about the pre-test and pilot study of a measurement instrument of the present study.

#### **3.11.1 Pre-Test**

A pre-test is a preliminary assessment of the measurement instrument in order to look at some possible difficulties that may be encountered by the potential respondents when filling it out. In other words, pretesting entails validating the content of the measurement

instrument (Tojib & Sugianto, 2006). Content validity refers to the appropriateness degree of all items to the purpose of the measurement instrument (Zikmund *et al.*, 2010). To ensure this, the expertise of 7 lecturers (Professors and Assistant Professors) from the College Administration and Economic at Yarmouk University (YU), Othman Yeop Abdullah Graduate School of Business at Universiti Utara Malaysia (UUM OYA GSB), and College of Business (COB) was solicited. Based on their feedback, improvements were made on the items asked, the sentence structure, appropriate choice of words and its arrangement. The improvements are necessary to ensure a high response rate.

### **3.11.2 Pilot Study**

Pilot studies are conducted for several reasons. Some of these reasons according to Van Teijlingen, Rennie, Hundley and Graham (2001) include the following:

- a) to develop and test whether the research instruments are adequate,
- b) to identify logistical problems that may arise in the process of collecting data,
- c) to estimate variability in the outcomes with the purpose of estimating the sample size,
- d) to establish the effectiveness of the technique and sampling frame; and
- e) Collecting preliminary data.

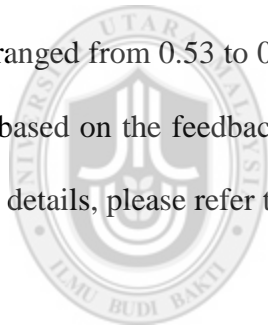
Consequently, Cooper and Schindler (2008), affirm that 25-100 respondents are suitable for pilot studies. In this clime therefore, a pilot study was conducted among 50 employees and students of AOU. In order to achieve this, the questionnaires were randomly distributed to sampled respondents where only 36 out of 50 questionnaires were received

back representing 72% response rate. With the response, the researcher performed a trial analysis for the purpose of testing the reliability, viability and validity of the research instrument. This has helped the researcher to determine number of instrument as well as time needed for the main study. In order to determine the reliability of the instruments adapted for the pilot study, Cronbach's alpha reliability coefficients was calculated as this will ensure the internal consistency of the scale used. Besides the result of the pilot study, the suggestions and comments passed by the respondents of the pilot study were also used to improve the constructions of the final questionnaire. In order to test the Cronbach's alpha of measurement instrument, SPSS version of 18 was used. Table 3.23 shows reliability test results of the measurement instrument used.

**Table 3.23:** *Reliability Analysis of Pilot Study*

<b>Constructs</b>	<b>No. of original items</b>	<b>Cronbach's Alpha</b>	<b>Item deleted*</b>	<b>Cronbach's Alpha if item deleted</b>
Website Design	5	0.710	Nil	0.710
Reliability	5	0.706	Nil	0.706
Responsiveness	4	0.701	Nil	0.701
TRUST	6	0.849	Nil	0.849
Personalization	5	0.543	Nil	0.543
Perceived Risk	4	0.732	Nil	0.732
Perceived Cognitive Control	3	0.730	Nil	0.730
Content Usefulness	5	0.844	Nil	0.844
Content Adequacy	5	0.792	Nil	0.792
Ease of use	5	0.798	Nil	0.798
Accessibility	4	0.610	Nil	0.610
Interactivity	4	0.861	Nil	0.861
Perceived Website Innovativeness	3	0.682	Nil	0.682
Overall Perceived Service Quality	4	0.535	Nil	0.535
Satisfaction	4	0.779	Nil	0.779
Behavioral Intention	4	0.763	Nil	0.763

Most importantly an instrument is deemed reliable when respondents can attach same overall meaning to each item as all the items should “hang together as a set” (Sekaran, 2003, p. 206). Therefore, Cronbach’s alpha was determined for the whole instrument and subsequently applied to each dimension for the purpose of ensuring inter-item consistency reliability (Sekaran, 2003). Past studies have proved that Cronbach’s alpha ranging from 0.50 to 0.60 are sufficient for pilot studies (Nunnally, Bernstein & Berge, 1967 cited in Dimovski & Reimann, 1994; Yusoff, 2011), while 0.70 is acceptable and over 0.80 is good (Sekaran, 2003). Cronbach’s alpha value that is closer to 1 ensures higher internal consistency and reliability. Table 3.23 above shows that all the constructs have Cronbach's alpha values that are above 0.50. The reliability value for all the variables ranged from 0.53 to 0.86. The survey instrument which contains 70 items was finalized based on the feedback that was received from the pre-test and the pilot study, (for more details, please refer to Appendix C).



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### **3.12 Chapter Conclusion**

This chapter describes the research methodology that was used in this study to investigate the relationships among SQ variables, overall perceived SQ, customers’ satisfactions, and their intentions to use m-commerce service in future.

Moreover, in this chapter, the development and validation of a new instrument was established as it is required by quantitative analysis type of study. The instrument was prepared as a questionnaire and was used to collect students' and employees perceptions of

attributes and benefits of mobile commerce services from 618 students and employees. To achieve the research objectives, measurement items were created and pre-tested and, content and face validity were measured. The new measure was pilot tested, evaluated, and refined. Sample data was analyzed (typically with exploratory factor loading) and rough assessments were made of validity and reliability. A major issue was adjusting the scales items: deleting, adding, and rewording. Also in this chapter, the research methodology that was followed and adopted by this research was detailed out. This includes all the procedures, process, and guidelines that according to research literature are suitable for this kind of research.



## CHAPTER FOUR

### DATA ANALYSIS AND RESULTS

#### 4.0 Introduction

This chapter covers presentation of results and data analysis of the study. First, this study examined how the respondents were distributed according to the demographic variables. Additionally, the main variables of the study were described with the aid of descriptive statistics after which Partial Least Squares Structural Equation Modeling (PLS-SEM) was used with the purpose of assessing the outer measurement model as a condition for the inner structural model assessment and hypotheses testing.

In particular, the goodness of the outer model as it relates to the constructs of this study was established. The constructs of the study include Service Quality, Information Quality and System Quality. The Service Quality has 7 dimensions namely: Website Design, Responsiveness, Personalization, Trust, Perceived Cognitive Control, Perceived Risk and Reliability. Information Quality has 2 dimensions of Content Usefulness and Content Adequacy while System Quality has 4 dimensions of Accessibility, Ease of use, Perceived Website Innovativeness and Interactivity. Having established the construct validity, the process was to examine the quality of the structural model. In the end, the outcomes of the hypotheses that were tested were reported while all the connectivity or relationships among the variables of overall customer satisfaction, perceived service quality, and customer behavioral intention to use m-commerce in future was reported.

The main purpose of this research is to study the relationships among service quality dimensions, system quality dimensions, information quality dimensions, overall perceived service quality, customer satisfaction, and customer behavioral intention m-commerce in the future. From the previous chapters, it has been established that studies with respect to the relationship among variables are very sparse while the results obtained were inconsistent given room for further research in this perspective. Importantly, the methodology adopted as well as the justification in the establishment of relationship among the variables of the study was discussed in chapter four. In view of this, this chapter presents the empirical evidence with regards to the relationship that exists among the chosen variables of the study using SPSS v18 and PLS. In complying fully with the sample size requirements, 870 questionnaires were distributed randomly among the employees and students of AOU personally while only 642 questionnaires were collected between March and June 2014. The response rate was 73.79% while only 618 of 642 questionnaires collected were usable, resulting in a usable response rate of 71.03%.

#### **4.1 Preparation of the Data for Analysis**

This section is purposely meant for preparation of sample data for further analysis. This section contains procedure for data screening and cleaning, steps taken in preparing data ready for analysis with respect to coding, data entry and missing data.



#### **4.1.1 Coding and Data Entry**

Coding refers to the step taken for the purpose of clarifying and translating information and responses from respondents to specific groups and procedures analysis (Kerlinger & Lee, 2000). Sekaran and Bougie (2010) recommend that sample data collected must be first coded and transcribed from the questionnaire before entering them into the data set. In this clime too, Schleicher and Saito (2005) further recommend that each item contained in the questionnaire must be given a unique name such as age, gender, education and so forth. In the present study, the data was coded by assigning character symbols.

#### **4.1.2 Missing Data**

Missing data refers to the fact that all questions on the questionnaires are not fully responded to 100% by the respondents. A number of reasons are responsible for this. For instance, many of the respondents may refuse to respond to personal questions with respect to their age, income, marital status and so on. In addition, some of the respondents may be ignorant of the topic of the research, may not understand some questions, or are not willing to provide answer to some questions (Sekaran & Bougie, 2010). Previous studies have indicated different methods of treating missing data such as deletion, distribution or replacement (Kline, 1998). In addition to deletion, the missing data can be replaced with the mean value specifically if the data that is missing is below 5% of the total required data (Hair *et al.*, 2010). Therefore, problem of missing data is a common phenomenon in research surveys (Hair *et al.*, 2010). However, it is highly essential that

PLS is used because of its statistical proficiency since the data will not run if there is any missing data (Schumacker & Lomax, 2004).

## **4.2 Preliminary Analysis**

In order to determine the suitability of sample data, further analysis was discovered in the treatment of non-response bias, and response rate.

### **4.2.1 Testing Non-Response Bias**

As mentioned earlier, survey questionnaire research design was employed for the purpose of collecting data for this research. For effective outcome, the questionnaires were distributed in all the affected locations. However, ascertaining non-response bias was essential for some reasons. For instance, many respondents only responded to the questionnaires after several visits and reminders while the period of data collection spanned over 4 months (February- June, 2014). Therefore, for the purpose of assessing non-response bias, the T-test was carried out in order to compare early responses with late responses with respect to the variables of the study. According to Armstrong and Overton (1977) and Kannan *et al.*, (1999), the significant difference between early and late responses is an indication that marks underlying difference between non-respondents and respondents. In addition, Amstrong and Overton (1982) equally maintained that feature of late respondents could be akin to non-respondents. It therefore connotes that if the difference in response between the two groups is not significant, the assumption is that non-response bias exists. To therefore determine the existence of a non-response bi-

as, Pallant (2007) suggests that the independent samples t-test can be used for the purpose of testing a non-response through comparison between the early and late responses.

There are two parts of the output of samples t-test. The first part consists of Mean, Standard Deviation, and Standard Error (SE) scores of responses which were received before and after the reminders were sent. The second part which is Levene's test is a statistical indicator that employed to assess the equality of differences in different samples (Landau & Everitt, 2004; Pallant, 2007). Tables 4.1 and 4.2 provide the results of the independent samples t-test.

**Table 4.1:** *Group Statistics of Independent Sample t-test (n=618)*

<b>Constructs</b>	<b>Response Bias (Early/Late)</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Website Design	Early Response	486	3.999	.710	.032
	Late Response	132	4.000	.736	.064
Reliability	Early Response	486	3.125	.735	.033
	Late Response	132	3.090	.743	.065
Responsiveness	Early Response	486	3.645	.781	.035
	Late Response	132	3.652	.805	.070
TRUST	Early Response	486	3.238	.876	.040
	Late Response	132	3.246	.922	.080
Personalization	Early Response	486	3.431	.748	.034
	Late Response	132	3.417	.796	.069
Perceived Risk	Early Response	486	3.833	.995	.045
	Late Response	132	3.826	1.011	.088
Perceived Cognitive Control	Early Response	486	3.495	.719	.033
	Late Response	132	3.504	.722	.063
Content Usefulness	Early Response	486	3.545	.817	.037

**Table 4.1:** (Continued)

	Late Response	132	3.553	.857	.075
Content Adequacy	Early Response	486	3.386	.787	.036
	Late Response	132	3.383	.822	.072
Ease of use	Early Response	486	3.701	.771	.035
	Late Response	132	3.697	.807	.070
Accessibility	Early Response	486	3.751	.836	.038
	Late Response	132	3.758	.841	.073
Interactivity	Early Response	486	3.472	.867	.039
	Late Response	132	3.477	.858	.075
Perceived Website Innovativeness	Early Response	486	3.776	.815	.037
	Late Response	132	3.792	.847	.074
Overall Perceived Service Quality	Early Response	486	3.551	.743	.034
	Late Response	132	3.580	.766	.067
Satisfaction	Early Response	486	3.455	.882	.040
	Late Response	132	3.443	.924	.080
Behavioral Intention	Early Response	486	3.716	.889	.040
	Late Response	132	3.689	.894	.078

Having used SPSS version 18, a T-test was executed as the two groups involved were divided into early response and late response. As initially stated, early response refers to those who responded within one after distribution of questionnaire (n= 486, 78.64 %) while late response refers to those who returned the questionnaires after 2 months of distribution (n = 132, 21.35%). In this respect all the constructs of the study were involved. Consequently, the outputs from Table 5.1 above reveals that the differences between the two groups were not significant across all the constructs since the equality of the mean responses of the two groups were supported at the 0.01 level of significance. This therefore implies that respondents from the two groups (early and late response) were not bi-

ased in terms of their responses and this has earlier been confirmed by Levene's test for equality of variances (see Table 4.2).

**Table 4.2:** *Levene's Test of Independent Samples t-test (n=618)*

Variables	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F-Value	Significance	T-Value	df	Significance
Website Design	.107	.744	-.015	616	.988
Responsiveness	.118	.731	-.084	616	.933
TRUST	.384	.535	-.098	616	.922
Personalization	.802	.371	.193	616	.847
Perceived Risk	.018	.892	.077	616	.938
Perceived Cognitive Control	.034	.854	-.126	616	.899
Content Usefulness	.292	.589	-.096	616	.924
Content Adequacy	.411	.521	.041	616	.967
Ease of use	.235	.628	.048	616	.962
Accessibility	.001	.975	-.080	616	.937
Interactivity	.122	.726	-.059	616	.953
Perceived Website Innovativeness	.017	.895	-.198	616	.843
Overall Perceived Service Quality	.198	.656	-.383	616	.702
Satisfaction	.287	.593	.132	616	.895
Behavioral Intention	.006	.936	.305	616	.760
Reliability	.028	.868	.480	616	.631

#### 4.2.2 Response Rate

According to Hamilton (2009), response is the number of respondents who responded to the questionnaire survey and which are subsequently divided into the number of respondents in the sample size. Out of the 870 questionnaires that were randomly distributed among employees and students of the AOU, a total of 642 were received back and this implies a response rate of 73.79%. However, 228 of the questionnaires representing 26.20% were not returned. Out of 642 questionnaires that were returned, the researcher observed that 24 were not completed appropriately and were discarded accordingly. This therefore implies that only 618 (71.03%) of the questionnaires were used for further analysis. Accordingly, Babbie (2007) maintained that 50% response rate is acceptable for social science research survey. This therefore implies that the rate of response for this study is appropriate and adequate. In addition, the total number of questionnaires used was regarded to be okay to run the statistical analyses that are required, especially a PLS analysis (Byrne, 2010; Hair *et al.*, 2010; Kline, 2011).

**Table 4.3:** *Summary of the Response Rate*

Questionnaires Status	Count	Percentage
Distributed questionnaires	870	100%
Unreturned questionnaires	228	26.20%
Uncompleted questionnaires	24	2.75%
Returned and entered questionnaires	618	71.03%
Response rate		71.03%

#### 4.3 Descriptive Statistics

The purpose of descriptive analysis is to transform data into a form that can be used. The descriptive statistics help to describe a set of constructs with purpose of making them

simple and understood for the purpose of interpretation (Zikmund *et al.*, 2010). The primary reason for doing such analysis is to secure a useful meaning of the data through some statistical concepts such as frequency distribution, mean, and SD, which can help the researcher to discover the dissimilarities among the variables (Sekaran & Bougie, 2010). Then, full details of this analysis were given of respondents' demographic factors and variables using 618 usable questionnaires.

#### 4.3.1 Descriptive Statistics of Respondents' Demographic Factors

The demographic variables of the respondents' were gathered with the intention of collecting information about the respondents that participated in the survey. In this respect, the respondents were asked certain questions concerning the time they have been using m-commerce, their age, gender, highest level of education, marital status and List of URL of m-commerce websites that they have visited or patronized for purchasing products/services. The questions were deliberately designed so that the respondents will be able to choose their answers based on categories instead of providing them specific information. Table 4.4 below shows the profile of the respondents' demographic factors using SPSS v18.

**Table 4.4:** *Profile of the Respondents' Demographic Factors*

<b>Construct</b>	<b>Category</b>	<b>Count</b>	<b>Percentage</b>
How long using m-commerce	Less than than 1 year	298	48.2
	Between 1 and 3 years	125	20.2
	Between 3 and 5 years	47	7.6
	More than 5 years	148	23.9
Total		<b>618</b>	<b>100.0</b>
List of URL of m-commerce	<a href="http://jo.opensooq.com">http://jo.opensooq.com</a> (opensooq)	272	44.0
	<a href="http://www.exxab.com/jo">http://www.exxab.com/jo</a> (Exxab)	27	4.4

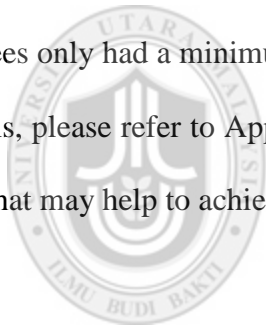
**Table 4.4:** (Continued)

	<a href="http://sallaty.jo">http://sallaty.jo</a> (sallaty)	49	7.9
	<a href="http://www.jordan-travel.jo">http://www.jordan-travel.jo</a> (Jordan-travel)	116	18.8
	<a href="http://markavip.com/jo">http://markavip.com/jo</a> (markavip)	228	36.9
	Others	70	11.3
Total		<b>618</b>	<b>100.0</b>
Gender	Male	224	36.2
	Female	394	63.8
Total		<b>618</b>	<b>100.0</b>
Age	Less than 20 years	64	10.4
	Between 21 and 25 years	238	38.5
	Between 26 and 30 years	140	22.7
	Between 31 and 35 years	90	14.6
	Between 36 and 39 years	48	7.8
	More than 40 years	38	6.1
Total		<b>618</b>	<b>100.0</b>
Highest level of education	Diploma	68	10.8
	Bachelor's degree	477	77.9
	High Diploma	39	6.1
	Masters or higher	34	5.2
Total		<b>618</b>	<b>100.0</b>
Status	Student only	208	33.7
	Employee only	70	11.3
	Both	340	55.0
Total		<b>618</b>	<b>100.0</b>

As shown in Table 4.4 above, a total number of 618 respondents constitute the final sample of the research. The female respondents (63.8 %) participated in the survey against 36.2% male respondents. This therefore indicates that majority of the participants are female. Meanwhile, the table reveals that those respondents that have less than 1 year m-commerce experience constitute 48.2% against 7.6% respondents that have between 3 and 5 years experience. It can therefore be said that the respondents are well familiar with mcommerce usage and have carried out several transactions through mobile platform. For instance, the respondents who are using <http://jo.opensooq.com> (open-



sooq) to execute their transactions occupy the highest percentage of the participants (44.0%) in the survey, while the respondents who are purchasing their items through <http://www.exxab.com/jo> (Exxab) had the lowest percentage (4.4%) in the survey. The participants whose age category falls between 21 and 25 years had highest participation of 38.5% while the respondents' whose age fall between 36 and 40 years had the lowest percentage of participation (7.8%) in the survey. This is an indication that most of the respondents are considerably young and they are used to m-commerce. In addition, the highest level of education among the participants is Bachelor's degree (77.9) against (5.2%) those who hold masters degree or higher certificate. In the final analysis, the category of adult workers constitutes maximum of 55.0% participation while full time employees only had a minimum percentage of participation (11.3%) in the survey (for more details, please refer to Appendix D). As a result, the respondents have some characteristics that may help to achieve the overall objectives of present study.



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#### **4.3.2 Descriptive Statistics of the Variables**

In order to summarize the data of the study, a descriptive analysis was carried out so as to describe the general situation of Service Quality (SQ), Information Quality (IQ), and System Quality (SQ) from the perspective of the respondents. As can be seen in Table 4.5, the mean, standard deviation, minimum and maximum of the constructs were reported. These results reflected the level of all the constructs investigated.

Importantly, the average mean of all the variables is between 3.118 and 3.999 while the standard deviation ranged between 0.715 and 0.998. The maximum and minimum responses on the variables are equally reported in Table 4.5 below (for more details, please refer to Appendix E):

**Table 4.5:** *Descriptive Statistics of the Constructs*

Dimensions	N	Minimum	Maximum	Mean	Std. Deviation
Website Design	618	1	5	3.999	.715
Responsiveness	618	1	5	3.646	.786
TRUST	618	1	5	3.239	.885
Personalization	618	1	5	3.428	.758
Perceived Risk	618	1	5	3.832	.998
Perceived Cognitive Control	618	1	5	3.497	.719
Content Usefulness	618	1	5	3.547	.825
Content Adequacy	618	1	5	3.385	.794
Ease of use	618	1	5	3.700	.778
Accessibility	618	1	5	3.752	.836
Interactivity	618	1	5	3.473	.864
Perceived Website Innovativeness	618	1	5	3.779	.821
Overall Perceived Service Quality	618	1	5	3.557	.747
Satisfaction	618	1	5	3.452	.891
Behavioral Intention	618	1	5	3.710	.889
Reliability	618	1	5	3.118	.736

#### 4.4 Underlying Statistical Assumptions

Some basic statistical assumptions such as normality, linearity, multicollinearity, and homoscedasticity, are useful for multivariate analysis. Importantly, such assumptions are essential for the purpose of accommodating multiple constructs so as to identify and comprehend the complex relationship that is in existence among them (Hair *et al.*,

2010). Therefore, the researcher explains these underlying assumptions in the preceding sections using 618 usable questionnaires.

#### **4.4.1 Normality Assumptions**

Normality assumption is a bell shape curve of the data distribution for an individual metric variable and its correspondence to a normal distribution (Hair *et al.*, 2010). A normality distribution of sample data is explained as a symmetrical bell-shaped curve that has the highest range of frequency in the middle with smaller range of frequencies towards the extremes (Gravetter & Wallnau, 2000).

In fact, it is essential to check the normality distribution of a variable especially for each multivariate analysis, such as multiple regression, factor analysis, and SEM. It is regarded as a standard for assessing other statistical methods (Hair *et al.*, 2010). It is however important to emphasize that non-normality distribution often bring about distortion in the relationships among variables and the significance tests of results (Hulland, 1999). It is therefore important to check for normality distribution before analysis of sample data.

According to Pallant (2007), Skewness and Kurtosis are the main or only tests that researchers often use for the validation of normality assumptions. Accordingly, skewness is used to describe the extent to which the samples data distribution. It thus addresses whether it is balanced, unbalanced, shifted to the right, left, centered or symmetrical with about the same shape on both sides. On the other hand, Kurtosis refers to the meas-

ure of normality assumptions by comparing them with a “peakedness” or “flatness” of the sample data distribution (Hair *et al.*, 2010).

Conservatively, Hair *et al.*, (2010) posited that if the test of Skewness values and test of Kurtosis values are between  $\pm 1.96$  at the .05 significant level and  $\pm 2.58$ , at the significant level .01, the sample data is considered to be normal. Tabachink and Fiedell (2007) also support the rule of thumb by arguing that when Skewness values are within  $\pm 2.00$  and the Kurtosis values are within  $\pm 7.00$  the sample data is also considered to be normal. In addition, Kline (2011) also argued that Skewness values that are within  $\pm 3.00$  and Kurtosis values are within  $\pm 10.00$  are indications of normal distribution of data. A critical examination of the Skewness and Kurtosis, as illustrated in Table 4.6 below shows that none of the variable items had Skewness values greater than (.141) and Kurtosis values greater than (1.768). It is therefore essential to state that the outcomes indicate that the sample data is consistent with a normality assumption required for further use in multivariate analysis (for more details, please refer to Appendix F).

**Table 4.6:** *Assessment of the Normality Assumption*

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Website Design	-.955	.098	1.768	.196
Responsiveness	-.557	.098	.319	.196
TRUST	-.503	.098	.084	.196
Personalization	-.273	.098	.396	.196
Perceived Risk	-.895	.098	.458	.196
Perceived Cognitive Control	.090	.098	.304	.196

**Table 4.6:** (Continued)

Content Usefulness	-.577	.098	.437	.196
Content Adequacy	-.165	.098	-.320	.196
Ease of use	-.538	.098	.455	.196
Accessibility	-.511	.098	-.052	.196
Interactivity	-.577	.098	.369	.196
Perceived Website Innovativeness	-.909	.098	1.281	.196
Overall Perceived Service Quality	-.486	.098	.280	.196
Satisfaction	-.681	.098	.165	.196
Behavioral Intention	-.574	.098	.386	.196
Reliability	.141	.098	-.202	.196

#### 4.4.2 Multicollinearity Assumptions

Multicollinearity happens when one or set of independent variables are closely correlated with other independent variables in a correlation matrix. When the problem of multicollinearity occurs, it is always difficult to ascertain the specific influence of each independent variable on the dependent variable (Hair *et al.*, 2010; Sekaran & Bougie, 2010). In this view, Hair *et al.*, (2010) recommend that multicollinearity among the variables should be established first before performing the hypotheses testing of the model.

It is generally agreed that multicollinearity assumptions can be consummated by testing the Tolerance value and Variance Inflation Factor (VIF) value (Pallant, 2007). Tolerance value is an indicator that determines the extent in which dependent variable is predicted by other independent variables in the regression variate. On the hand, VIF indicates the level in which other independent variables have influence on the standard error of a regression coefficient. It is Tolerance's inverse (Hair *et al.*, 2010). It should be noted that

multicollinearity occurs when the results reveal values of tolerance that below or equal 0.10 and VIF values that are higher or equal to 10 (Hair *et al.*, 2010; Sekaran & Bougie, 2010). Table 4.7 below presents the results of the multicollinearity test using SPSS v18.

**Table 4.7: Test of Multicollinearity\***

IVs	DV	Collinearity Statistics	
		Tolerance	VIF
Website Design		.614	1.628
Responsiveness		.600	1.666
TRUST		.572	1.748
Personalization		.556	1.798
Perceived Risk		.925	1.082
Perceived Cognitive Control	Overall Perceived Service Quality (OVSQ)	.511	1.958
Content Usefulness		.509	1.966
Content Adequacy		.506	1.978
Ease of use		.394	2.539
Accessibility		.427	2.340
Interactivity		.539	1.856
Perceived Website Innovative- ness		.494	2.025
Reliability		.522	1.916

\*Dependent Variable: Overall Perceived Service Quality (OVSQ)

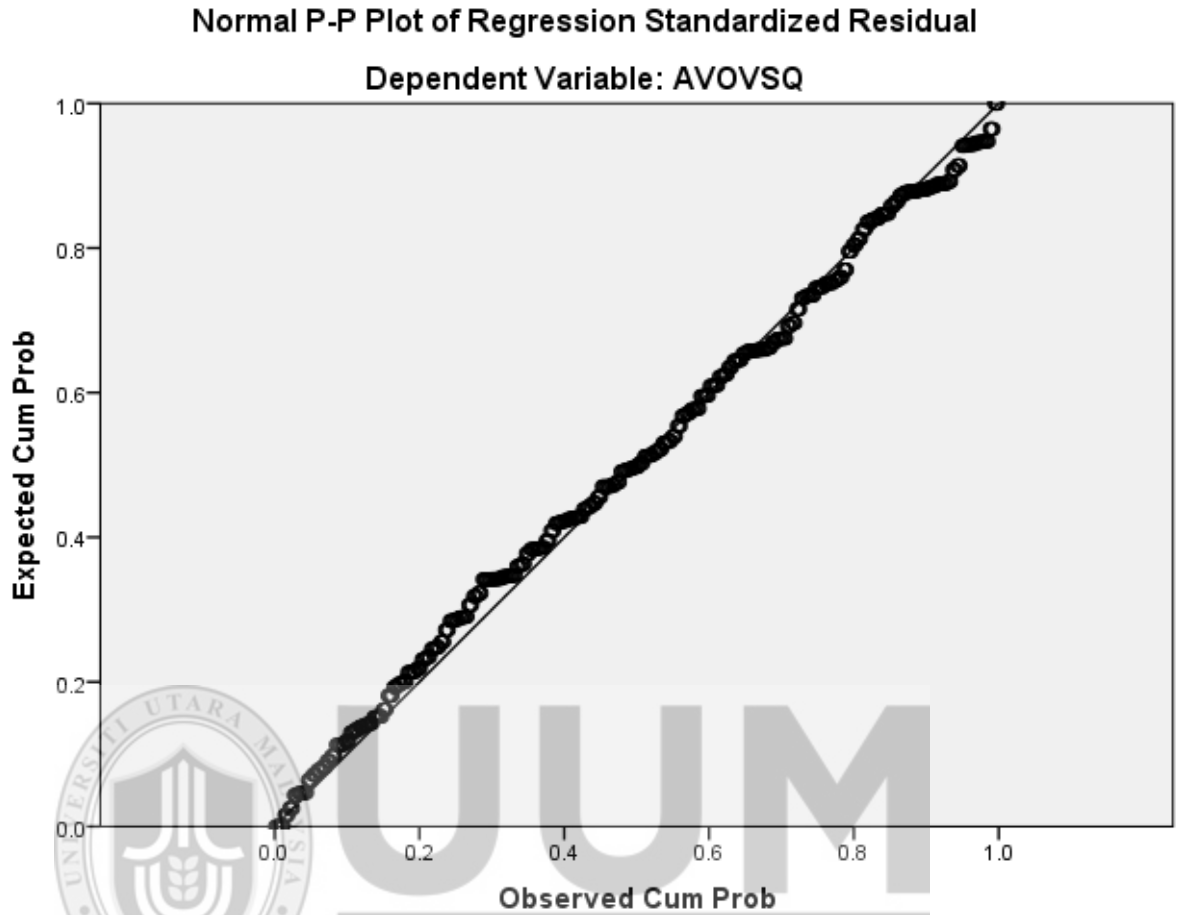
The results of multicollinearity that is displayed in Table 4.7 show that the Tolerance values fall between the ranges of .394 to .925, while VIF between the range of 1.082 and

2.539. Therefore, the results confirmed that the multicollinearity was absent among the variables of this study (for more details, please refer to Appendix G).

#### **4.4.3 Linearity Assumptions**

Having examined the scatter plot residuals with the aid of SPSS v18, the outcomes therefore show a straight-line relationship with the predicted dependent variable scores Mean of customer overall perceived service quality in m-commerce (AVOVSQ), and subsequently did not indicate any support for non-linearity. Since the correlations only represent the linearity associations among the variables, nonlinear effects will not be represented in the correlation value (Stamatics & Raton, 2003). Accordingly, there was no proof to challenge the linearity assumption (AVOVSQ) as shown in Figure 4.1.





**Figure 4.1:** *Normal P-P Plot of Regression*

#### **4.4.4 Homoscedasticity Assumptions**

Homoscedasticity refers to the assumption of the predicted dependent variable displays similar amounts variance across the range of values for an independent variable (Huang, 2007). Importantly, efforts should be made in multivariate analysis to ensure that the opposite effects called heteroscedasticity is avoided since often leads to reduction in the correlation between variables (Hair *et al.*, 2010). Researcher can check the presence of homoscedasticity by looking at the scatter-plot between dependent constructs and independent constructs. Importantly, the data sample is homoscedastic if the residual scatter-



plot that is captured is almost equal in width for all values of the predicted dependent variable (Tabachnick & Fidell, 2007). In addition, it could be ascertained that homoscedasticity is in existence among the set of independent variables and the variance of independent variables if homoscedasticity test findings through scatter plot diagrams of standardized residuals reveal that. Furthermore, a visual inspection of the distribution of residuals suggested an absence of heteroscedasticity as shown in Figure 4.2.

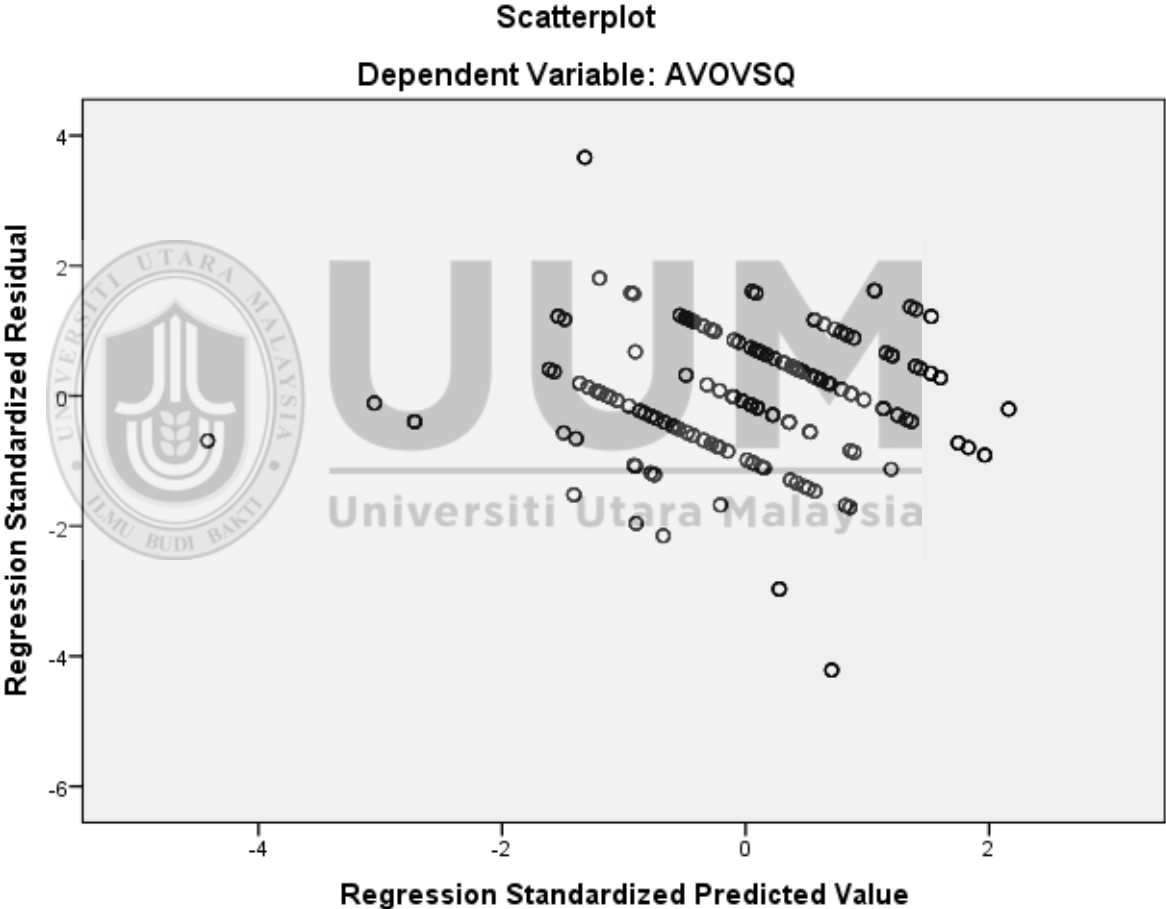
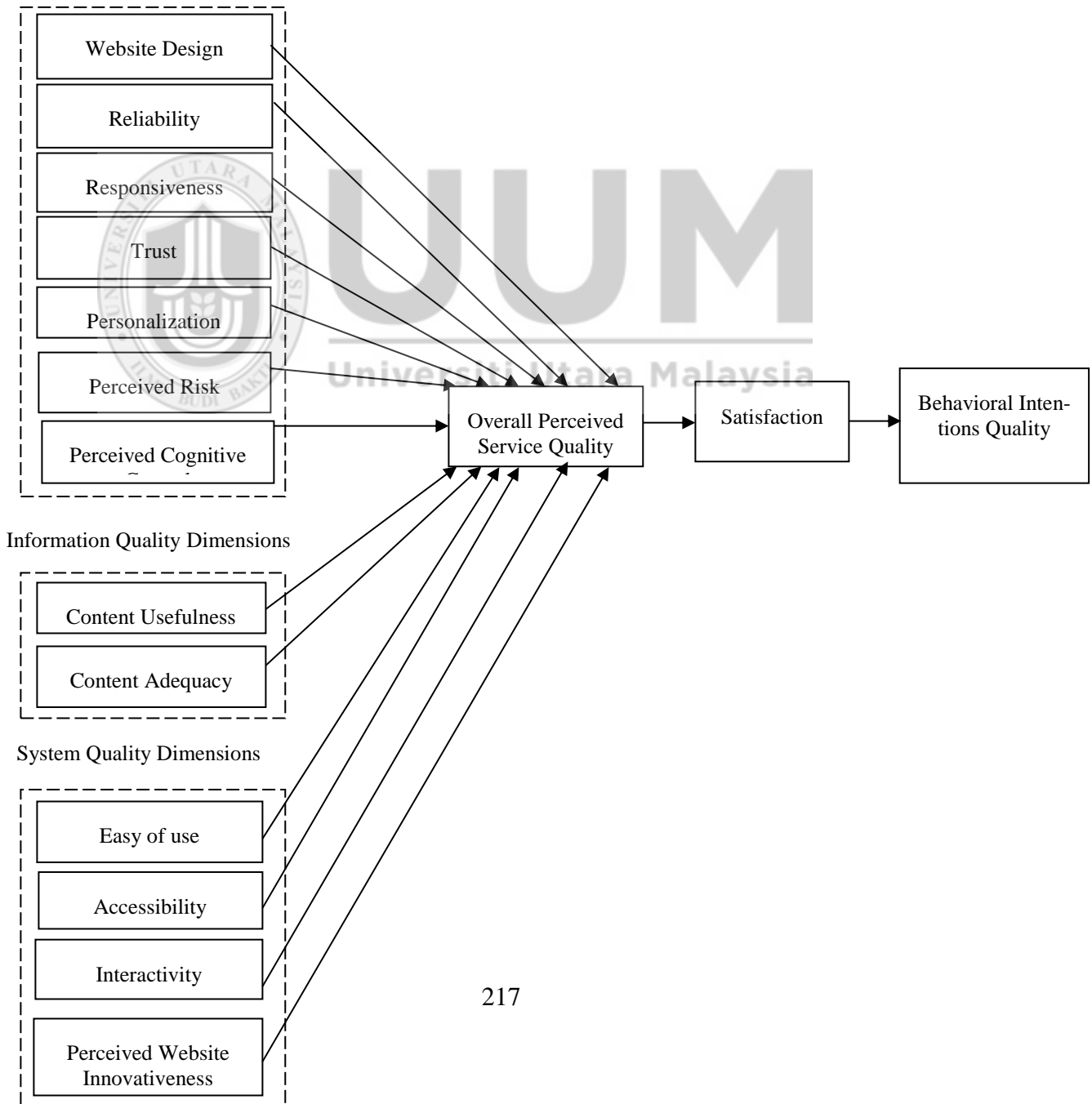


Figure 4.2: Scatter Plot

#### 4.5 Testing the Measurement Model Outer Model Using PLS Approach

Before the hypotheses of the study were tested, outer model and the measurement model were assessed with the aid of the Partial Least Squares Structural Equation Modeling (PLS-SEM) techniques. In order to achieve this, the two steps approach as suggested by Anderson and Gerbing (1988) were followed. Figure 4.3 shows the model of the study with structural dimensions.

**Figure 4.3: The Research Model**



### **4.5.1 The Construct Validity**

For the purpose of establishing construct validity, the researcher must first ascertain content validity, convergent validity and discriminant validity (Hair *et al.*, 2010).

#### **4.5.1.1 The Content Validity**

This refers to the extent in which the items generated to measure a construct can appropriately measure the concept they were designed to measure (Hair *et al.*, 2010). Importantly, all the items designed to measure a construct should load higher on their perspective construct than their loadings on other constructs. This was achieved through a comprehensive and detail review of existing literature for the purpose of generating the items that have been established and subjected to test in the previous studies. The results displayed in tables below clearly indicated the content validity of the measures used as illustrated in two ways:

- a) The items reveal that respective construct has high loading when compared to other constructs.
- b) The content validity of the measures used in the study was confirmed since items loadings were significantly loading on their respective constructs, for more details, please refer to Appendix H (Chow & Chan, 2008).

#### 4.5.1.2 The Convergent Validity of the Measures

According to Hair *et al.*, (2010), convergent validity refers to the degree in which a set of variables converges while measuring a specific concept. For the purpose of establishing convergent validity, certain criteria such as composite reliability (CR), factor loadings and average variance extracted (AVE) were simultaneously used as suggested by Hair *et al.*, (2010). In achieving this therefore, a thorough examination of the items loadings were done and the results indicate that all the items have loadings more than 0.5 and further indicate that they are at acceptable level (Hair *et al.*, 2010). In addition to that, all the factors loadings were significant at the 0.01 level of significance.

Composite reliability is the second part of the convergent validity and it indicates the extent to which a set of items repeatedly indicate the latent construct (Hair *et al.*, 2010). The procedure was then to examine the composite reliability values as depicted in Table 4.8 it can be noticed that the composite reliability values ranged from 0.831 to 0.934 which exceeds the recommended value of 0.7 (Fornell & Larker, 1981; Hair *et al.*, 2010). These results confirm the convergent validity of the outer model.

Furthermore, the values of average variance extracted (AVE) were examined with the purpose of confirming the validity of outer model. The average variance extracted (AVE) therefore shows the average of the variance that was extracted among a set of items relatively to the variance shared with the measurement errors. More specifically, AVE measures the variance captured by the indicators in relative to the variance assign-

able to the measurement errors. As suggested by Barclay *et al.*, (199), the AVE values that of 0.5, indicates that these sets of items has an adequate convergence in measuring the concern construct. For this study, the average variance extracted (AVE) values ranged between 0.5 and 0.7 indicating a good level of construct validity of the measures used (Barclay *et al.*, 1995).

**Table 4.8: The Convergent Validity Analysis**

<b>Constructs</b>	<b>Items</b>	<b>Load- ing</b>	<b>Cronbachs Alpha</b>	<b>Composite Reliability (CR)<sup>a</sup></b>	<b>AVE<sup>b</sup></b>
Accessibility	ACC1	<b>0.766</b>	<b>0.755</b>	<b>0.845</b>	<b>0.577</b>
	ACC2	<b>0.814</b>			
	ACC3	<b>0.691</b>			
	ACC4	<b>0.762</b>			
Behavioral Intention	BI1	<b>0.911</b>	<b>0.905</b>	<b>0.934</b>	<b>0.780</b>
	BI2	<b>0.915</b>			
	BI3	<b>0.847</b>			
	BI4	<b>0.857</b>			
Content Adequacy	CA1	<b>0.781</b>	<b>0.848</b>	<b>0.892</b>	<b>0.623</b>
	CA2	<b>0.817</b>			
	CA3	<b>0.784</b>			
	CA4	<b>0.826</b>			
	CA5	<b>0.735</b>			
Satisfaction	CS1	<b>0.869</b>	<b>0.891</b>	<b>0.924</b>	<b>0.753</b>
	CS2	<b>0.862</b>			
	CS3	<b>0.875</b>			
	CS4	<b>0.866</b>			
Content Usefulness	CUF1	<b>0.759</b>	<b>0.821</b>	<b>0.874</b>	<b>0.582</b>
	CUF2	<b>0.753</b>			

**Table 4.8: (Continued)**

	CUF3	<b>0.752</b>			
	CUF4	<b>0.798</b>			
	CUF5	<b>0.750</b>			
Ease of use	EOU1	<b>0.797</b>	<b>0.847</b>	<b>0.891</b>	<b>0.620</b>
	EOU2	<b>0.792</b>			
	EOU3	<b>0.818</b>			
	EOU4	<b>0.792</b>			
	EOU5	<b>0.737</b>			
Interactivity	INTA1	<b>0.816</b>	<b>0.873</b>	<b>0.913</b>	<b>0.725</b>
	INTA2	<b>0.875</b>			
	INTA3	<b>0.850</b>			
	INTA4	<b>0.863</b>			
Overall Perceived Service Quality	OVSQ1	<b>0.760</b>	<b>0.738</b>	<b>0.837</b>	<b>0.566</b>
	OVSQ2	<b>0.797</b>			
	OVSQ3	<b>0.828</b>			
	OVSQ4	<b>0.605</b>			
Perceived Cognitive Control	PCC1	<b>0.825</b>	<b>0.822</b>	<b>0.894</b>	<b>0.738</b>
	PCC2	<b>0.874</b>			
	PCC3	<b>0.876</b>			
Personalization	PERS1	<b>0.623</b>	<b>0.771</b>	<b>0.845</b>	<b>0.522</b>
	PERS2	<b>0.773</b>			
	PERS3	<b>0.733</b>			
	PERS4	<b>0.736</b>			
	PERS5	<b>0.739</b>			
Perceived Risk	PR1	<b>0.830</b>	<b>0.860</b>	<b>0.902</b>	<b>0.696</b>
	PR2	<b>0.820</b>			
	PR3	<b>0.827</b>			
	PR4	<b>0.860</b>			
Perceived Website Innovativeness	PWIN1	<b>0.832</b>	<b>0.810</b>	<b>0.887</b>	<b>0.724</b>
	PWIN2	<b>0.852</b>			

**Table 4.8:** (Continued)

	PWIN3	<b>0.869</b>			
Reliability	REL1	<b>0.633</b>	<b>0.739</b>	<b>0.835</b>	<b>0.560</b>
	REL2	<b>0.817</b>			
	REL3	<b>0.790</b>			
	REL5	<b>0.739</b>			
Responsiveness	RESP1	<b>0.775</b>	<b>0.760</b>	<b>0.848</b>	<b>0.583</b>
	RESP2	<b>0.780</b>			
	RESP3	<b>0.817</b>			
	RESP4	<b>0.677</b>			
TRUST	TRST1	<b>0.782</b>	<b>0.844</b>	<b>0.885</b>	<b>0.564</b>
	TRST2	<b>0.802</b>			
	TRST3	<b>0.833</b>			
	TRST4	<b>0.630</b>			
	TRST5	<b>0.751</b>			
	TRST6	<b>0.690</b>			
Website Design	WEB1	<b>0.574</b>	<b>0.757</b>	<b>0.831</b>	<b>0.500</b>
	WEB2	<b>0.630</b>			
	WEB3	<b>0.804</b>			
	WEB4	<b>0.783</b>			
	WEB5	<b>0.717</b>			

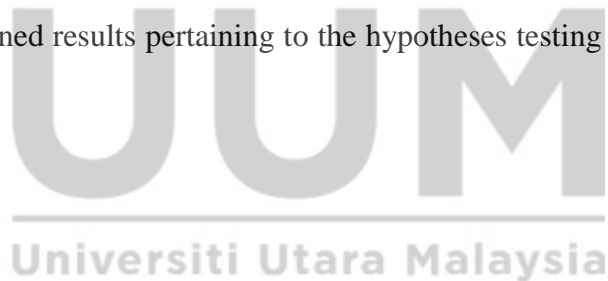
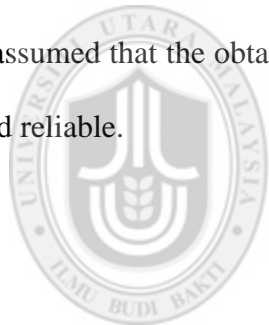
a: Composite Reliability:  $CR = (\sum \text{factor loading})^2 / \{(\sum \text{factor loading})^2 + \sum (\text{variance of error})\}$

b: Average Variance Extracted:  $AVE = (\sum \text{factor loading})^2 / \{(\sum \text{factor loading})^2 + \sum (\text{variance of error})\}$

#### 4.5.1.3 The Discriminant Validity of the Measures

The purpose of discriminant validity is to confirm the construct validity of the outer model. This should be carried out before the hypotheses of the study are tested via path analysis. The discriminant validity reveals the extent to which items of the study are differentiated with respect to the constructs. Simply put, it shows that the items used different constructs and they do not overlap. In this respect therefore, even though the con-

structs are correlated, they measure different concepts. This concept was clearly explained by Compeau *et al.*, (1999) where he reached a conclusion that if the discriminant validity of the measures was established, it means that the shared variance between each construct and its measures should be greater than the variance shared among distinct constructs. This study employed the method of Fornell and Lanker (1981) to confirm the discriminant validity of the measures. As illustrated in Table 4.9, the square root of average variance extracted (AVE) for all the constructs were placed at the diagonal elements of the correlation matrix. As the diagonal elements were higher than the other elements of the row and column in which they are located, this confirms the discriminant validity of the outer model. Having established the construct validity of the outer model, it is assumed that the obtained results pertaining to the hypotheses testing should be valid and reliable.





**Table 4.9: The Discriminant Validity Analysis**

Constructs	AC C	BI	CA	CS	CUF	EO U	IN- TA	OVS Q	PCC	PER S	PR	PWI N	REL	RES P	TRS T	WE B
(1)Accessibility	<b>0.76</b>															
(2)Behavioral Intention	0.60	<b>0.88</b>														
(3)Content Adequacy	0.62	0.53	<b>0.78</b>													
(4)Satisfaction	0.60	0.74	0.55	<b>0.86</b>												
(5)Content Usefulness	0.55	0.57	0.64	0.61	<b>0.76</b>											
(6)Ease of use	0.68	0.63	0.63	0.65	0.59	<b>0.78</b>										
(7)Interactivity	0.60	0.59	0.52	0.52	0.53	0.62	<b>0.851</b>									
(8)Overall Perceived Service Quality	0.61	0.69	0.60	0.68	0.61	0.61	0.596	<b>0.752</b>								
(9)Perceived Cognitive Control	0.49	0.49	0.59	0.48	0.57	0.54	0.519	0.449	<b>0.859</b>							
(10)Personalization	0.51	0.49	0.50	0.58	0.54	0.64	0.477	0.471	0.509	<b>0.723</b>						
(11)Perceived Risk	0.16	0.19	0.14	0.13	0.20	0.23	0.139	0.118	0.116	0.227	<b>0.834</b>					
(12)Perceived Website Innovativeness	0.59	0.63	0.53	0.55	0.61	0.65	0.509	0.601	0.476	0.451	0.163	<b>0.851</b>				
(13)Reliability	0.39	0.35	0.49	0.42	0.41	0.44	0.387	0.406	0.451	0.422	0.120	0.311	<b>0.748</b>			
(14)Responsiveness	0.50	0.52	0.54	0.45	0.51	0.48	0.436	0.521	0.442	0.496	0.157	0.466	0.563	<b>0.764</b>		
(15)TRUST	0.56	0.47	0.48	0.53	0.44	0.55	0.416	0.444	0.492	0.507	0.030	0.469	0.504	0.388	<b>0.751</b>	
(16)Website Design	0.44	0.41	0.43	0.40	0.51	0.49	0.412	0.457	0.293	0.329	0.096	0.546	0.241	0.394	0.334	<b>0.707</b>

#### 4.6 The Prediction Quality of the Model

It is widely known in multivariate data analysis literature that  $R^2$  of the endogenous variables is responsible or is the cause of the variance of a particular variable as explained by the predictor variables. Therefore, the degree of the  $R^2$  for the endogenous variables was considered as an indicator of predictive power of the mode. Additionally, in order to ascertain this further, the technique of sample reuse as developed by Stone (1975) and Geisser (1975) was applied for the purpose of predicting the model validity. Wold (1982) in this perspective argued that for this technique to perfectly fit, the PLS modeling approach must be adopted (Göts, Liehr-Gobbers, & Krafft, 2011).

Specifically, the Stone-Geisser non-parametric test can be used to ascertain the predictive relevance of the model (Chin, 1998b; Fornell & Cha, 1994; Geisser, 1975; Stone, 1975). This can be achieved through the employment of the blindfolding procedure as contained in Smart-PLS 2.0 package. The procedure of blindfolding is scheduled for the purpose of removing some of the data as well as handling them as missing values to estimate the parameters. After this, the parameters estimated are then used to restructure the raw data which are previously assumed to be missing. As a result, the blindfolding process produces general cross-validating metrics  $Q^2$ .

Generally,  $Q^2$  has different forms which researcher can obtain depending on the form of prediction that is desired. For instance, when using underlying latent variables for the prediction of data points, a cross-validated communality  $Q^2$  is obtained. On the other

hand, if LVs that are used to predict the block in question and the data points is obtained, then a cross-validated redundancy Q2 is the output.

**Table 4.10:** *Predictive Quality of the Model*

<b>Constructs</b>	<b>Variable Type</b>	<b>R Square</b>	<b>Cross-validated Redundancy</b>	<b>Cross-validated Community</b>
BI	Endogenous	0.559	0.432	0.780
CS	Endogenous	0.464	0.345	0.753
OVSQ	Endogenous	0.575	0.321	0.566

Fornell and Cha (1994), assert that the cross-validated redundancy measure can be a reliable indicator of the predictive relevance of the examined model. Fornell and Cha maintained that as a criterion test, if the value of redundant community was found to be greater than 0 for all the endogenous variables, the assumption is that the model has predictive validity power, otherwise, the predictive relevance of the model cannot be concluded. The results of the study, related to the prediction quality of the model, as illustrated in Table 4.10, indicate that the cross-validated redundancy for the Behavioral Intention (BI), Customer Satisfaction (CS) and Overall Perceived Service Quality (OVSQ) were 0.432, 0.345 and 0.321 respectively. These values are more than zero indicating an adequate predictive validity of the model based on the criteria suggested by Fornell and Cha (1994).

#### 4.7 The Goodness of Fit of the Whole Model

Unlike the CBSEM approach; PLS Structural Equation Modeling has only one measure of goodness of fit. As defined by Tenenhaus *et al.*, (2005), a global fit measure (GoF) for PLS path modeling is the geometric mean of the average communality and average of R<sup>2</sup> for the endogenous constructs. Therefore, the goodness of fit measure accounts for the variance extracted by both outer and inner models. In this view, the GoF values was estimated based on the procedures laid down by Wetzels, Odekerken-Schroder, and Van Oppen (2009) in order to support the validity of the PLS model as given in the following formula:

$$(1) \text{ GoF} = \sqrt{(R^2 * AVE)}$$

For the purpose of this study, the obtained GoF value was 0.580 as calculated by the formula.

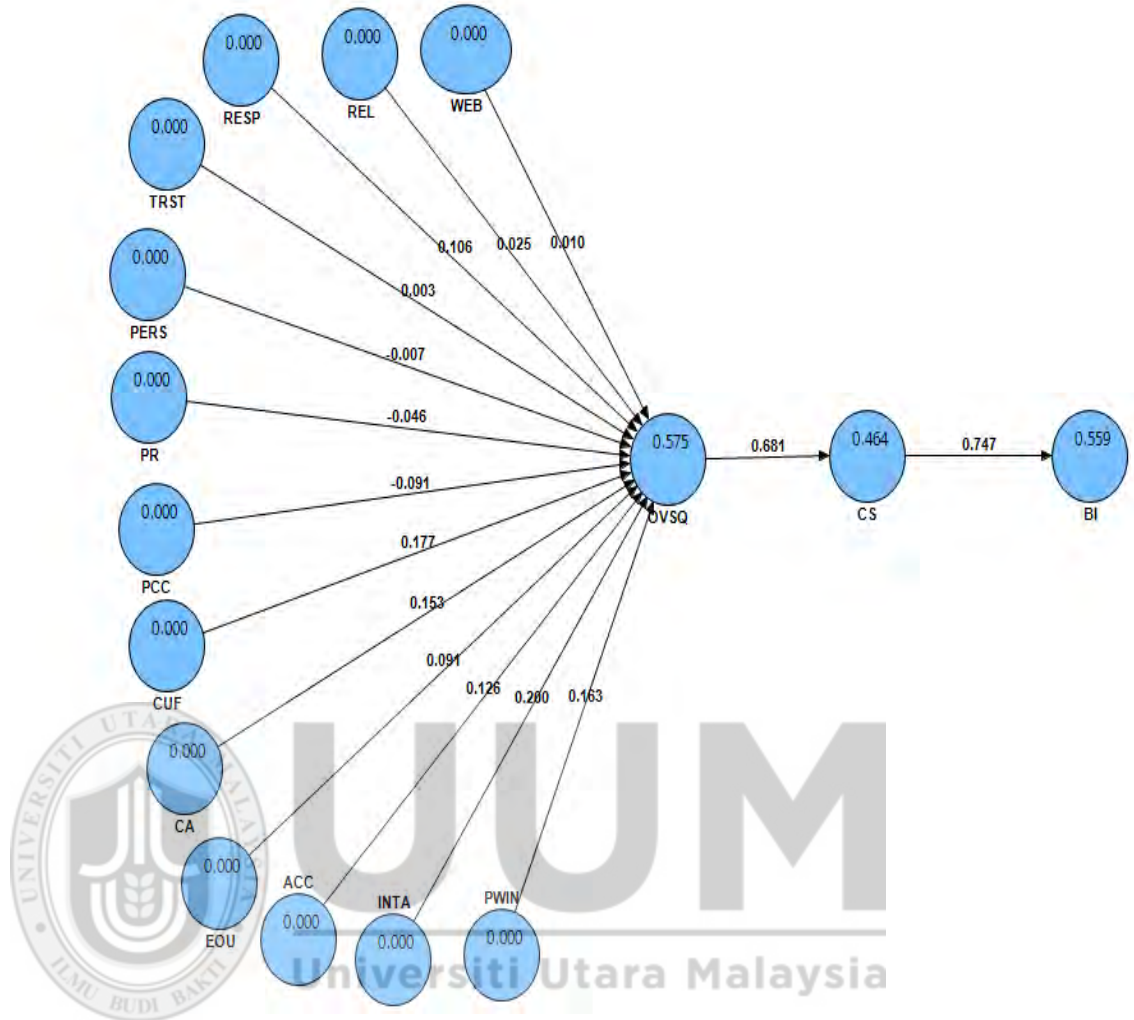
$$(2) \text{ GoF} = \sqrt{(0.532 * 0.632)} = 0.580$$

Importantly, baseline values of GoF (small = 0.1, medium = 0.25, large = 0.36) as suggested by Wetzels *et al.*, (2009) formed the standard for comparison. The outcomes revealed that the goodness of fit model tends towards large and this indicates an adequate of global PLS model validity.

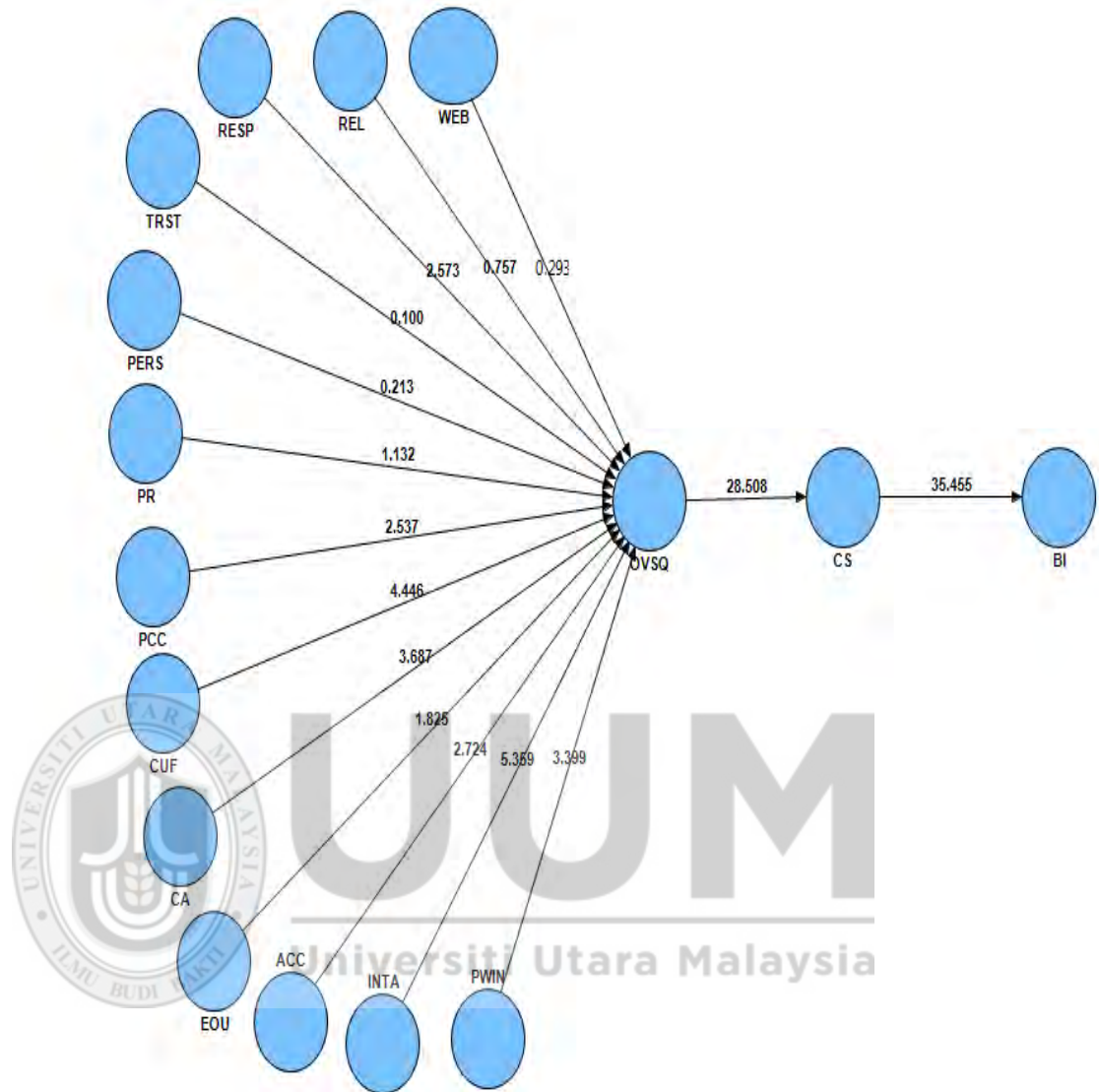
#### **4.8 The Assessment of the Model and Hypotheses Testing Procedures**

After the goodness of the model has been confirmed, the next step that followed was the testing of the hypothesized relationships among the constructs. With the aid of SmartPLS2.0, the hypothesized relationship of the model was tested by performing the PLS Algorithm after which the coefficients paths were generated as depicted in the Figure 4.4 and Figure 4.5.





**Figure 4.4:** *Path Model Results*



**Figure 4.5:** *Path Model Significance Results*

In order to reach a conclusion whether the path coefficients are statistically significant or not, bootstrapping techniques as contained in the SmartPLS2.0 were employed. Specifically, the T values that follow each path coefficient was generated with aid of the bootstrapping technique and eventually the P values were generated as shown in Table 4.11. The influence of Service Quality (SQ) dimensions on the Overall Perceived Service

Quality (OVSQ) was critically examined and the results revealed that the Website Design (WEB) has no influence on Overall Perceived Service Quality (OVSQ) ( $\beta= 0.010$ ,  $t= 0.293$ ,  $p> 0.1$ ), Reliability (REL) ( $\beta= 0.025$ ,  $t= 0.757$ ,  $p> 0.1$ ), Trust (TRST) ( $\beta= 0.003$ ,  $t= 0.100$ ,  $p> 0.1$ ), Personalization (PERS) ( $\beta= -0.007$ ,  $t= 0.213$ ,  $p> 0.1$ ), and Perceived Risk (PR) ( $\beta= -0.046$ ,  $t= 1.132$ ,  $p> 0.1$ ). These results, however, rejected the hypothesized relationship as postulated in H<sub>1</sub>, H<sub>2</sub>, H<sub>4</sub>, H<sub>5</sub>, H<sub>6</sub>. On the other hand, the results revealed that Responsiveness (RESP) has a positive and significant influence on the Overall Perceived Service Quality (OVSQ) ( $\beta= 0.106$ ,  $t= 2.273$ ,  $p< 0.01$ ). However, these results supported the relationship that was hypothesized and as postulated in H<sub>3</sub>, Moreover, leading to the significant relationship between Perceived Cognitive Control (PCC) and Overall Perceived Service Quality (OVSQ) ( $\beta= -0.091$ ,  $t= 2.537$ ,  $p< 0.01$ ) making H<sub>7</sub> to be supported.

On the other hand, the influence of Information Quality (IQ) dimensions on the Overall Perceived Service Quality (OVSQ) was equally examined. The results revealed that the Content Usefulness (CUF) has a positive significant influence on the Overall Perceived Service Quality (OVSQ) ( $\beta= 0.177$ ,  $t= 4.446$ ,  $p< 0.01$ ), Content Adequacy (CA) ( $\beta= 0.153$ ,  $t= 3.687$ ,  $p< 0.01$ ). These therefore indicate that the hypothesized relationship with regards to H<sub>8</sub> and H<sub>9</sub> are supported.

Furthermore, a critical assessment of the influence of System Quality (SQ) dimensions on the Overall Perceived Service Quality (OVSQ) revealed significant relationship. In



specific term, influence of Ease of use, Accessibility, Interactivity, and Perceived Website Innovativeness (PWIN), had positive influence with parameters ( $\beta= 0.091$ ,  $t= 1.825$ ,  $p< 0.05$ ), ( $\beta= 0.126$ ,  $t= 2.724$ ,  $p< 0.01$ ), ( $\beta= 0.200$ ,  $t= 5.359$ ,  $p< 0.01$ ) and ( $\beta= 0.163$ ,  $t= 3.399$ ,  $p< 0.01$ ) respectively. These outcomes supported, hypothesized relationship as postulated in  $H_{10}$ ,  $H_{11}$ ,  $H_{12}$ ,  $H_{13}$ .

Lastly, having examined the impact of the Overall Perceived Service Quality (OVSQ) on the Customer Satisfaction (CS), the result revealed a significant positive relationship ( $\beta= 0.681$ ,  $t= 28.508$ ,  $p< 0.01$ ). Additionally, the result also revealed a significant positive influence of customer satisfaction on behavioral intention ( $\beta= 0.747$ ,  $t= 35.455$ ,  $p< 0.01$ ). Importantly,  $H_{14}$  and  $H_{15}$  were supported by these results.

**Table 4.11: The Results of Inner Structural Model**

No	Hypotheses	Path Coefficient	Standard Error (STERR)	T value	P value	Decision
1	WEB -> OVSQ	0.010	0.034	0.293	0.385	Not Supported
2	REL -> OVSQ	0.025	0.034	0.757	0.225	Not Supported
3	RESP -> OVSQ	0.106***	0.041	2.573	0.005	Supported
4	TRST -> OVSQ	0.003	0.033	0.100	0.460	Not Supported
5	PERS -> OVSQ	-0.007	0.034	0.213	0.415	Not Supported
6	PR -> OVSQ	-0.046	0.041	1.132	0.129	Not Supported
7	PCC -> OVSQ	-0.091***	0.036	2.537	0.006	Supported
8	CUF -> OVSQ	0.177***	0.040	4.446	0.000	Supported
9	CA -> OVSQ	0.153***	0.042	3.687	0.000	Supported
10	EOU -> OVSQ	0.091**	0.050	1.825	0.034	Supported
11	ACC -> OVSQ	0.126***	0.046	2.724	0.003	Supported

**Table 4.11:** (Continued)

12	INTA -> OVSQ	0.200***	0.037	5.359	0.000	Supported
13	PWIN -> OVSQ	0.163***	0.048	3.399	0.000	Supported
14	OVSQ -> CS	0.681***	0.024	28.508	0.000	Supported
15	CS -> BI	0.747***	0.021	35.455	0.000	Supported

\*: p<0.1; \*\*: p<0.05; \*\*\*: p<0.01

As shown in the Table 4.12 below, the impact of exogenous variables on the endogenous variables are obtained using the following formula:

$$Effect\ size(f) = \frac{R_{incl}^2 - R_{excl}^2}{1 - R_{incl}^2}$$

**Table 4.12:** *The Effect Size of Exogenous Constructs*

Endogenous Construct	Exogenous Constructs	Effect Size
<b>OVSQ</b>	ACC	0.014
	CA	0.021
	CUF	0.031
	EOU	0.007
	INTA	0.047
	PCC	0.009
	PERS	0.000
	PR	0.005
	PWIN	0.028
	REL	0.002
	RESP	0.014
	TRST	0.000
	WEB	0.000

The effect size of all the Exogenous variables as depicted in Table 4.12, was between 0.000 and 0.047 for all variables; thus, this range described according to Cohen's (1992) criterion that all value less than 0.1 and therefore can be described as small.

#### 4.9 Summary of the Findings

Partial Least Squares Structural equation modeling (PLS SEM) was employed by this research as the major analysis technique because the assumption of multivariate normality of the data was not fulfilled. Importantly, this study elaborated the mechanisms of PLS SEM analysis because it is a relatively new analysis technique.

Before the model of this of this study was tested, thorough procedures were followed with the purpose of establishing validity and reliability of the model especially as it adheres to the standard of SEM data analysis reporting. Having established that the validity and reliability of the measurement model, the hypothesized relationships were tested. Consequently, before the examination of the hypothesized relationships, effort was made to ascertain the predictive power of the model and this was reported while the overall goodness of the model was also confirmed. After that, the structural model was examined and the results were reported in details as shown in the Table 4.13.

**Table 4.13:** *Summary of the Findings*

Hypothesis	Hypothesized Path	Decision
H1	There will be a significant positive relationship between website design and overall customer perceived service quality.	Not Supported

**Table 4.13:** (Continued)

H2	There will be a significant positive relationship between reliability and overall customer perceived service quality.	Not Supported
H3	There will be a significant positive relationship between responsiveness and overall customer perceived service quality.	Supported
H4	There will be a significant positive relationship between trust and overall customer perceived service quality.	Not Supported
H5	There will be a significant positive relationship between personalization and overall customer perceived service quality.	Not Supported
H6	There will be a significant negative relationship between perceived risk and overall customer perceived service quality.	Not Supported
H7	There will be a significant positive relationship between perceived cognitive control and overall customer perceived service quality.	Supported
H8	There will be a significant positive relationship between content usefulness and overall customer perceived service quality.	Supported
H9	There will be a significant positive relationship between content adequacy and overall customer perceived service quality.	Supported
H10	There will be a significant positive relationship between ease of use and overall customer perceived service quality.	Supported
H11	There will be a significant positive relationship between accessibility and overall customer perceived service quality.	Supported

**Table 4.13:** *(Continued)*

H12	There will be a significant positive relationship between interactivity and overall customer perceived service quality.	Supported
H13	There will be a significant positive relationship between perceived website innovativeness and overall customer perceived service quality.	Supported
H14	The customer perception of overall service quality will directly influence the level of customer satisfaction.	Supported
H15	The level of customer satisfaction will directly influence the behavioral intention.	Supported

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In the next chapter further discussion and explanation of the findings were provided in the light of the underpinning theories, models, and the context of the study undertaken.



## CHAPTER FIVE

### DISCUSSION AND CONCLUSION

#### 5.0 Introduction

This chapter summarizes and discusses the outcomes of this research that were aimed to investigate the factors that lead to service quality of m-commerce in commercial environment. The contributions to theory and practice are described. The research limitations are described and suggestions are offered for future research. Finally, this chapter ends with conclusions that can be drawn from this research.

#### 5.1 Discussion of the Research Objectives

To recapitulate, the main objectives of this study are:

- a) to identify the current customers' perceptions toward m-commerce services;
- b) to identify the factors which positively affect the m-commerce service quality;
- c) to identify the most important factors that determine customers' perception toward m-commerce service quality; and
- d) to explore the relationship between service quality, customers' satisfaction, and customers' behavioral intention on the use of m-commerce services in the future.

Academic researchers and practitioners would therefore gain insight from the achievement of the objectives of this study on how to recognize and explain the position which

m-commerce occupies in the scheme of e-commerce environment. In this clime therefore, the section that follows explains the justification and support for achieving those outcomes.

## **5.2 Determination of the Significant and Insignificant Relationships**

Chapter 4 of this study contains the hypotheses that are primarily designed to explain the relationships among the variables of the study. Importantly, the outcomes of the quantitative analysis support many of the hypothesized relationships. The purpose of this section is to argue, justify and presents the results of the hypotheses that were tested. This section therefore discusses the outcomes with respect to the relationship among all the variables. As shown in Table 4.12 (Summary of the findings), ten of out 15 hypothesized relationships were supported while 5 relationships were not supported. The supported relationships include the relationship between responsiveness, perceived cognitive control, content usefulness, content adequacy, ease of use, accessibility, interactivity, perceived website innovativeness, and overall perceived service quality. Moreover, the outcomes of the study also indicate that the customer perception of overall service quality directly influences customer satisfaction while customer satisfaction directly influences behavioral intention as hypothesized. In contrast, the direct path of website design, reliability, trust, personalization, and perceived risk to m-commerce service quality was not supported.

### **5.2.1 Objective one: to identify the current customers' perceptions toward m-commerce services**

The 1<sup>st</sup> objective of this study is to identify the perceptions of customers toward m-commerce services. The essence of this objective is to identify significant parameters that can impact the successful implementation and adoption of m-commerce services. As was noticed in the previous chapter, based on the result that appeared in (H1) the yardsticks should be closely and cautiously monitored during design phase. Evidences from previous studies have equally shown that consumers' perception and attitude have strong influence on the usage rate of the e-commerce. For instance the finding in (H10) indicates to, when customers feel comfortable while using e-commerce platform, they tend to develop positive attitude toward m-commerce. In fact the process of obtaining and using mobile technology is very essential for m-commerce services adoption.

Finally, m-commerce services should not just be regarded as simple services since it is the strong expectation of customers that they will necessarily be supported and receive a variety of services in the course of utilizing m-commerce platforms. This therefore implies that having developed m-commerce platforms, the finding in (H13) give a hint to the service provider that should continue to update it with latest features that can give best value to customers that use the platform. Based on the findings of this study therefore, a conclusion can be reached that the future of m-commerce is very bright and much efforts will be required to put necessary strategies in place towards meeting and satisfying high expectation of customers in order to guaranty high rate of m-commerce usage.



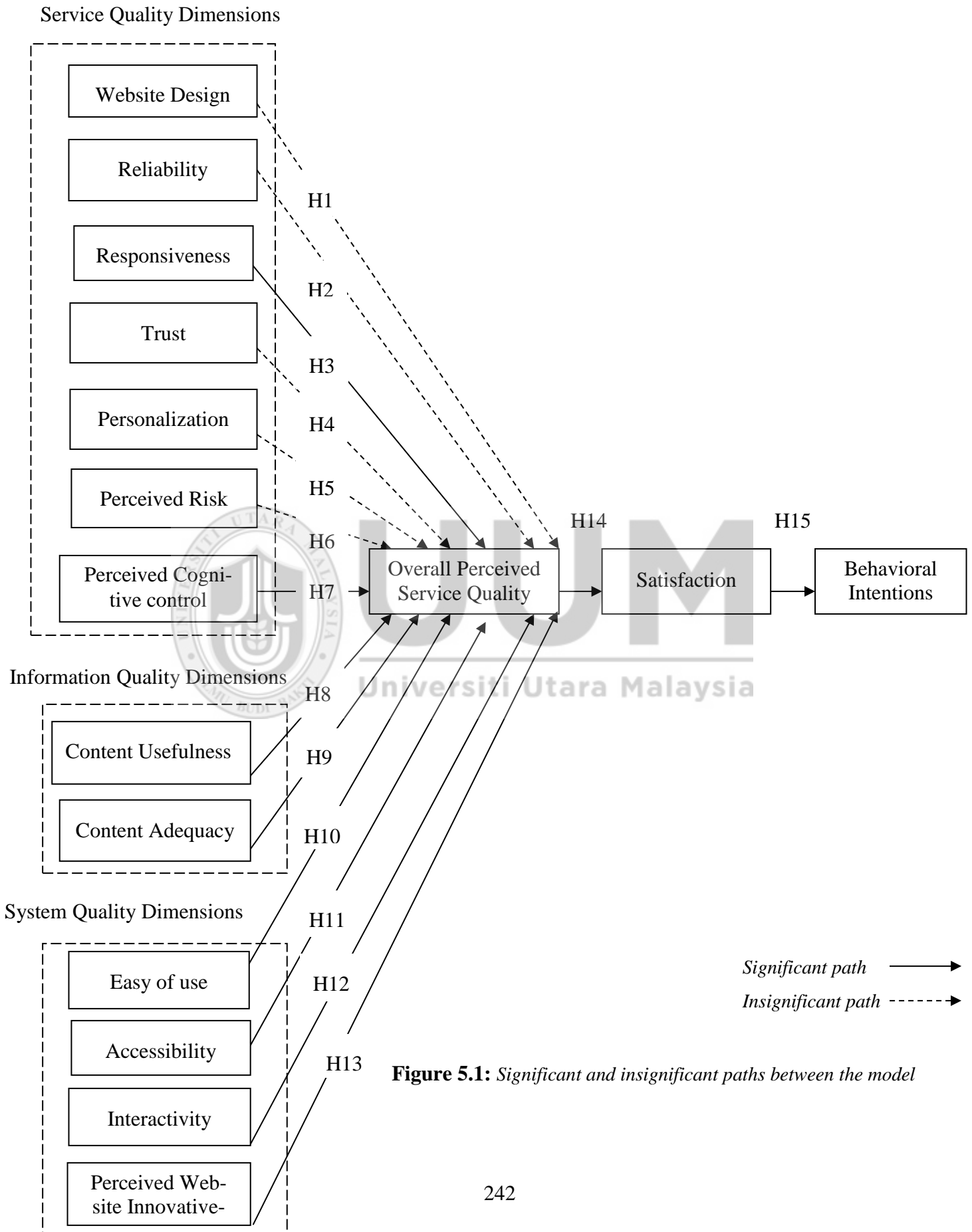
### **5.2.2 Objective two: to identify the factors which positively affect the m-commerce service quality**

In order to achieve this objective, a number of relationships and paths were hypothesized. The first path consists of service quality dimensions (website design, reliability, responsiveness, Trust, personalization, perceived risk, and perceived cognitive control) and overall perceived service quality. In this path, seven hypotheses (H1- H7) were tested with two (H3, H7) out of all supported. Precisely, while the relationship between responsiveness (H3) and overall perceived service quality was supported, In addition, the relationship between perceived cognitive control (H7) and overall perceived service quality was supported as well, other relationships between website design (H1), reliability (H2), Trust (H4), personalization (H5), and perceived risk (H6) overall perceived service quality were not supported.

The second path/relationship was between the information quality dimensions (content usefulness and content adequacy) and overall perceived service quality (OVSQ). Based on this path, the two hypothesized relationships (i.e., content usefulness (H8) and content adequacy (H9)) were supported. The third path hypothesized relationships between system quality constructs (easy of use (H10), accessibility (H11), interactivity (H12), and perceived website innovativeness (H13)) and overall perceived service quality (OVSQ) with all the relationships being supported. The last path hypothesized relationships between overall perceived service quality (OVSQ) and customer satisfaction (H14) and between customer satisfaction and intention to use m-commerce in future (H15)

with the two hypotheses being supported. Therefore, the next paragraphs discuss each hypothesis separately. In addition, Figure 5.1 shows the significant and insignificant path among the model variables.





**Figure 5.1:** Significant and insignificant paths between the model

### **5.2.2.1 The relationship between website design and overall perceived service quality (H1)**

The finding here reveals that website design (WEB) does not determine overall perceived service quality (OVSQ) ( $\beta = 0.010$ ,  $t = 0.293$ ,  $p > 0.1$ ). In this circumstance, Hypothesis (H1) is not supported and is contrary to the previous studies findings (O’Cass & Carlson, 2012; Udo, Bagchi & Kits, 2010) that emphasize that web design is a crucial component in the e-service quality since it refers to the way portal of mobile service appears and can be likened to the tangibility of dimension of SERVQUAL model.

Despite that website and its features as discussed earlier are essential to attract customers, this study however found that the website design does not determine the overall service quality. This result may however be attributed to the fact that customers pay attention to functionality of a website and prefer a site that quickly responds to their needs and requests. Essentially, this may also indicate that customers want clear information and normal background since aesthetic/e-scape are not meaningful for the overall perceived service quality of m-commerce.

Built on this foundation, it is therefore highly important that while designing mobile commerce system, the designers should pay attention to utility instead of aesthetic features of the site. This is essential since website design as found in this study is not a factor which customers use to determine the overall perceived service quality of mobile commerce. A site is deemed useful and perceived to be of high quality, if users can

achieve the objectives of visiting the website through prompt service delivery as this is preferable to the readability and users interface that is appealing.

#### **5.2.2.2 The relationship between reliability and overall perceived service quality**

##### **(H2)**

The empirical result of this study shows that the relationship between reliability (REL) and overall perceived service quality (OVSQ), based on the path coefficient is insignificant ( $\beta = 0.025$ ,  $t = 0.757$ ,  $p > 0.1$ ) at the 0.1 level. Even though the outcome reveals that REL has positive effect on OVSQ; such effect is insignificant as shown in the path coefficient analysis. Hence, H2 is not statistically supported. Surprisingly, this result is contrary to the findings of other authors who found that reliability is significant and effective in the determination of web-based service quality (e.g. Kuo, 2003; Lee & Lin, 2005; Wolfenbarger & Gilly, 2003). Though the finding of this research contradicts the previous outcomes, it is highly important to assert that reliability is an essential ingredient of service quality and for any organizations to meet the and exceed the needs of their online customers, they must start to improve the dimensions of reliability which include provision of current and accurate information, strengthening of online security, meeting up transaction promises and so on (Lee & Lin, 2005).

However, this result is obtained perhaps because customers give less priority to website reliability in favor of other factors that determine their choice of website quality. Importantly, customers of the contemporary give preference to site agility than just reliabil-

ity that may not necessarily provide them with the type of service that they need. This is justified on the ground the service provider should not just rely on reliability of their sites but they should consider other factors that will help to attract the customers.

### **5.2.2.3 The relationship between responsiveness and overall perceived service quality (H3)**

The result this hypothesis reveals that the relationship between the responsiveness (RESP) and overall perceived service quality (OVSQ) is significant and positive. This makes hypothesis H3 to be supported. In this respect previous studies have equally found similar outcomes thereby indicating when service providers are responsive high level of customers' perception about m-commerce will be achieved (Gefen, 2002; Yang *et al.*, 2003; Parasuraman *et al.*, 2004; Lee & Lin, 2005; Lin & Hsieh, 2011; Papadomichelaki & Mentzas, 2012).

The dimension of responsiveness affects overall perceived service quality and for m-commerce. This finding appears because of the fact that the customers are always looking to high responsiveness from the prompt delivery of products, but might tolerate slower financial transactions if such transactions have increased security (van Riel *et al.*, 2001).

Responsiveness which refers to the willingness of service provider to assist customers and provide prompt service is highly essential in the determination of overall service quality. This dimension does emphasize attentiveness and promptness in dealing with

the requests, complaints, questions and problems of customers (Zeithmal & Binter, 1996). Importantly, it is also captured by the notion of flexibility and ability to customize the services being rendered to the customers.

In order to succeed on this dimensioning process, mobile-commerce organizations must be proactive by viewing the process of delivery service and requests handling from the perspective of the customers and not the point of view of the organization. This is essential as standards for speed and promptness which show the organization's view of internal process requirement may not be the same with that of customer's requirement for promptness and speed.

Additionally, the responsiveness also indicates that m-commerce service providers should imbibe the culture of promptness and accuracy while delivering their services through their webs. Failure to achieve this milestone may result to lack of synchronization between online (e.g. marketing and sales functions) and offline (e.g. inventory and logistics management functions) processes (Van Hoek, 2001). Therefore, it is highly essential that m-commerce service providers apply information systems that will ensure that needs of customers are promptly attended to.

#### 5.2.2.4 The relationship between trust and overall perceived service quality (H4)

Theoretically, the outcomes in this relationship indicates that trust (TRST) is not significant in determining overall perceived service quality (OVSQ) ( $\beta= 0.003$ ,  $t= 0.100$ ,  $p> 0.1$ ). Thus, hypothesis H4 is not supported.

This result is contrary to the findings of Voss, (2003) and Lee & Lin, (2005) who assert that trust is a determinant of perceived service quality. However, as found in this study and in line with Teoh *et al.*, (2013), users of mobile commerce do not regard trust as an important determinant of service quality since they believe that the service providers are already taken several steps to protect their privacy, data and other information. This is obvious since mobile service Institutions are now putting in place regulations that guide how businesses collect, store, use and disclose personal information of customers. Aside, these institutions are also coming up with initiatives of developing and incorporating privacy policy into their codes of practice and this has ensured that no cases of mobile commerce frauds are reported.

Furthermore, even though evidence has shown that m-commerce is still somehow new in Jordan, the findings of this study has further proved that trust is not an important factor to motivate students and employees of AOU to use the m-commerce with respect to the overall perceived service quality. This fact is coming to light since many of the Jordanians still believe that there is certainty in the environment of m-commerce in Jordan. In order to increase the perception of quality among the students and employees of AOU



therefore, less emphasis should be laid on features of trust by developing m-commerce system with valuable function to the users.

#### **5.2.2.5 The relationship between personalization and overall perceived service quality (H5)**

Personalization has insignificant and negative relationship toward OVSQ. Thus, H5 is not supported and this is in line with the findings of previous studies (e.g., Lee & Lin, 2005). The implication of this finding might be that customers entertain fear that their personal information might be traded and compromised without their consent. Evidently, previous studies have shown that there has been an increase in number of cases of customers' personal information being hijacked, compromised and misused at detriment of the customers who supplied the information initially (Than & Grandon, 2002).

Generally, personalization or customization has been highly advocated in the contemporary as an important tool that is being used by service provider to assure customers of high level of quality service, however in this study, personalization has been found a negative relationship with OVSQ. This result as explained in the above paragraph may be attributed to other factors which customers lay emphasis on than personalization. For instance, the nature of respondents of this study particularly the students in a university environment has revealed that the young users who are savvy with technology do not give priority to customization of service but rather prefer a website that easily navigated and full of speed while surfing. Many of the young users give credence to hedonic fea-

tures of the site through which they can derive fun and enjoyment while they browse to patronize m-commerce.

Despite that personalization is not significant in this study, it is highly essential that efforts should be put in place to ensure that the personal needs of customer are met always by the mobile commerce website. This is essential because if customers hold the belief that an organization's website doesn't take into consideration their distinguished services, then there is likelihood that they will move to other organizations' websites. Service personalization programs should therefore continue to be norms and be implemented for the purpose of securing continuous customers patronage.

#### **5.2.2.6 The relationship between perceived risk and overall perceived service quality (H6)**

H6 projects a negative relationship between perceived risk and overall perceived service quality. However, a contrary result was obtained from the analysis making the hypothesis not to be supported. This implies that perceived risk has an insignificant influence on overall perceived service quality (OVSQ) ( $\beta = -0.046$ ,  $t = 1.132$ ,  $p > 0.1$ ) at the 0.1 level of significant. The result that is obtained here is consistent with the findings of other studies (Udo, Bagchi & Kirs, 2010; Zhang & Prybutok, 2005).

Though there are a number of factors that may be responsible for this; the findings of most studies on the influence of perceived risk on OVSQ tend to be mixed and incon-

sistent. For instance, Chang *et al.*, (2005) reviewed nine studies with the purpose of examining the influence of perceived risk on OVSQ and found that 6 out of 9 of the studies found a negative and significant relationship while others found no impact as in the case of this present study. Purposively, the justification of the insignificant relationship might be due to 3 major reasons:

- a) over the years, technology has advanced
- b) the respondents' age
- c) cooperation of m-commerce sites operators with some leading financial organizations.

For instance, the technology advancement especially with online security over the years has made an important milestone to be achieved. Today, almost every available m-commerce website makes provision for a detailed privacy and security statement that makes the customers to feel rest assured. In view of this, risk perception of the customers has been significantly reduced over the years. Additionally, it is a known fact that young internet and m-commerce users care less about risk than the older generations who are risk averters (Riley & Chow, 1992).

The majority of respondents in this study are students who are within the age of 21 and 25 years. It might be claimed that young users are more likely to be risk-takers and adventures when it comes to m-commerce. To confirm this assumption, respondents were classified into different age groups where a statistical test was implemented. The result

showed significance level favoring the young age. This means that the young m-commerce users are more likely to buy online because they are more risk-takers and adventures (for more details see appendix I). In their study for instance, Salam, Rao, and Pegels (2003) also note that a large percentage of online companies today are now being guaranteed by some reliable and trusted companies such as, banks, credit cards, Pay Pal etc who do act as intermediaries between online customers and their service providers. These organizations that act as intermediaries often guarantee a refund of payment in case anything goes wrong in service rendition or where fraud occurs.

Finally, one can also argue that the usage of internet in the contemporary has naturally engendered the need for security and other privacy protection mechanisms because of different unpalatable events over the years. Therefore, customers of today now naturally believe that security and other online basic features of protection must be present on the web. This thereby makes them perceived lesser risk while operating on the m-commerce website and consequently has little effect on their intention to continue use the web.

#### **5.2.2.7 The relationship between perceived cognitive control and overall perceived service quality (H7)**

The result that is obtained here is a negative relationship. Even though the relationship is negative; the t-value and p-value are however strong and positive and which makes hypothesis (H7) to be supported. This result significantly indicates that even though customers who patronize m-commerce feel that they have required knowledge and other

skills to navigate the m-commerce site, the absence of desired features such as colorfulness, easy navigation, aesthetic characteristics and so forth of m-commerce site have therefore hindered their ability (PBC). However, PBC in this circumstance as shown in the t-value and p-value of this hypothesis, is still regarded as a deciding factor of OVSQ. This finding is in accordance with related previous empirical findings (Gopi & Ramayah; 2007).

Perceived cognitive control is therefore assumed to be very crucial for the m-commerce users since it indicates that customers have the necessary skills and the technological background that are necessary to purchase online and demonstrating a full ability of using mobile commerce operations. To confirm this assumption, respondents were classified into groups at different levels and education in m-commerce where a statistical test was implemented. It was demonstrated that experienced m-commerce users were more likely to show a complete understanding at online purchase (for more details refer to appendix J).

Based on the above, the importance of perceived cognitive control cannot be underplayed not minding its negative impact on OVSQ as it poses a challenge to m-commerce service provider and government to put certain strategies in place that will help the customers to increase their knowledge on how to use m-commerce going forward.

#### **5.2.2.8 The relationship between content usefulness and overall perceived service quality (H8)**

Theoretically, the result that is obtained here shows that content usefulness is the most significant factor that influences m-commerce overall service quality. Hence hypothesis 8 is accepted. This outcome is in line with the findings of previous studies (Aladwania and Palvia 2002; Alsajjan & Dennis, 2008; Alsomali *et al.*, 2009).

This finding essentially indicates that m-commerce service helps customers to achieve and enhance online purchasing productivity and activities. Apart from this, the result also shows that customers nurse positive feelings towards m-commerce platform since it is helping them to accomplish their daily online purchasing objectives and general job performance through their mobile phone. Additionally, customers also require that certain strategies that will promote reliability, accuracy of information, currency and value should be incorporated into m-commerce system since this will enhance their perception of usefulness.

Moreover, review of existing literature has equally shown that customers who patronize m-commerce seem to be gaining some advantages which include cost reduction, faster service, online purchasing convenience, online access to many global sites and etc. All these benefits make customers to feel that m-commerce sites have higher level of usefulness and which importantly influence their perception of OVSQ. It is therefore essen-

tial for m-commerce service providers to keep communicating these features to the users in order to continue to create a positive attitude towards m-commerce among customers.

#### **5.2.2.9 The relationship between content adequacy and overall perceived service quality (H9)**

H9 posits a positive relationship between content adequacy and overall perceived service quality (OVSQ) with the hypothesis being supported. The result is in line with outcomes of other studies that regard content adequacy of online site to be a significant factor in determining OVSQ (Shemwell & Yavas 1999; Loiacono *et al.*, 2002; and Novak *et al.*, 2000). Importantly, Customers believe that mobile commerce that supplies them with accurate information will enhance their comprehension about services, products and materials being offered by the organization.

Additionally, content adequacy is also measured by the ability of mobile commerce to provide some supplementary services which may include but not limited to professional advices, price lists, hyperlinks to other useful sites, information about the availability of other products and services. In the contemporary, the need for content adequacy is becoming more important because of continuous advancement in technology, construction, materials of online commerce.

Furthermore, content adequacy captures the totality of organization presence and its image. It is assumed that it does influence the way service quality is perceived. Important-

ly, the content adequacy is often measured by the customer using the quality and appropriateness of the amount of information, media types, mode of information presentation, types and sizes of image and all of which can influence the way customer perceive service quality of the web. For instance, Yang (2001) also argue that e-service quality can be determined by a number of content-based factors that appeal to the customers and this includes content accuracy, attractiveness of the site, graphics and pictures and website substance. Also, Koenig (2003) argues that that website content that is effective can possibly influence customers' attitude towards adopting the site. Summarily, web content that is effective can make web-based service more real and experiential to the e-commerce and will determine the rate of patronage.

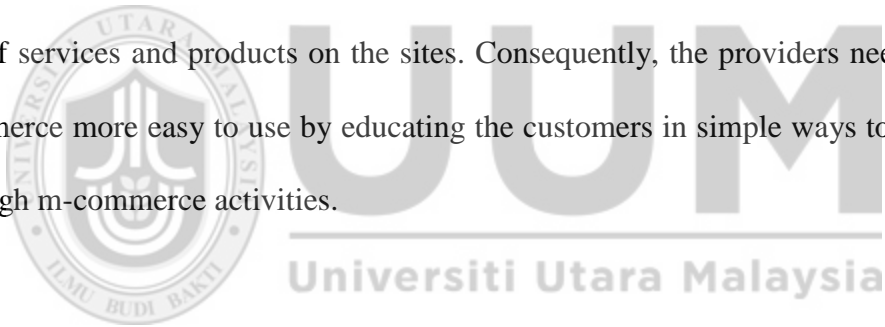
#### **5.2.2.10 The relationship between ease of use and overall perceived service quality (H10)**

The finding of this study reveals that ease of use (EOU) has significant and positive relationship with overall perceived service quality (OVSQ) and which makes H10 to be supported. In this study, ease of use is regarded as the extent in which customers can navigate and search for information easily on the web. Previous studies have equally found a similar result (Chiu, 2004; Costabile *et al.*, 2005; Papanikolaou & Mavromoustakos 2006). For instance, Papanikolaou and Mavromoustakos (2006), assert that ease of use plays a pivotal function in determining perceived mobile service quality and satisfaction of a website. It therefore implies that customers of m-commerce do not face any form of difficulty or use extra mental and physical efforts while using or navigating



through the mobile commerce site. The outcomes also reveal that positive effect of ease of use (EOU) on overall perceived service quality (OVSQ) could be as a result of ability of the m-commerce site to easily meet with the expectations of the users.

Additionally, customers may be willing to overlook some minor challenges that may be inherent in the usage of mobile commerce website preferably if the site can meet up with some critical functions and as well as their expectations since no amount of ease of use can compensate for maximum system functionality (Davis, 1989). In fact, the result obtained may be due to the fact that service providers have paid required and more attention in order to educate the customers about the easiness that is associated with purchasing of services and products on the sites. Consequently, the providers need to make m-commerce more easy to use by educating the customers in simple ways to help them go through m-commerce activities.



#### **5.2.2.11 The relationship between accessibility and overall perceived service quality (H11)**

The relationship between accessibility and overall perceived service quality is found to be positive and this makes hypothesis 11 to be subsequently supported in this study. This outcome is in line with the findings of previous studies (e.g, Jun, Yang & Kim, 2004) and it simply indicates that accessibility of a mobile commerce website helps customers to easily gather necessary information they require in making their decision quickly. Since the customers prefer to have more than one way of contacting their mobile com-

merce service provider, the quality of service rendered in this clime will therefore be enhanced if the service provider can provide different alternatives which customers can keep in touch. Even though transactions are been carried out online, alternatives such as email addresses, telephone and fax numbers should be made available through which customers can reach the service provider either to lodge complaint, make order or enquiries about availability of service. For instance, Burke (2002) and Cox and Dale (2001) discovered that online consumers regularly prefer to talk to company representative through telephone or through other normal means of communication. It is therefore important that m-commerce service provider be proactive through provision and adoption of electronic CRM like call centre which can handle complaints and queries from various channels as this will improve the perception of overall service quality of the mobile commerce (Kim & Eom, 2002). In addition, informative sources such as online bulletin boards and chat rooms through which online customers can obtain and update their information can be made available as this will allow the customers to make informed decisions.

#### **5.2.2.12 The relationship between interactivity and overall perceived service quality (H12)**

In this study, the relationship between interactivity and overall perceived service quality is found to be positive and hence, Hypothesis 12 is supported. This finding is in line with the outcomes of other studies (e.g., Huang, Zhu & Zhou, 2013; Sukoco & Wu, 2011). According to Sukoco and Wu, (2011), interactivity is one of the significant fac-

tors that determine or describe information quality of the website with respect to product and price that is being offered. Interactivity importantly helps to give possibility of participation to m-commerce users in modifying the form and content of a mediated environment in real time. Therefore, for customers' perception about the quality of mobile commerce website and users' virtual experience to be improved, greater attention must be paid to interactivity (Li, Daugherty, & Biocca, 2002). For customers, interactivity represents a greater investment on the part of the service provider and it has a greater implication in generating better brand and product attitude (Schlosser, White & Llyod, 2006).

Furthermore, when a website is highly interactive, communication can be easily facilitated, information can be customized and images on the site can be manipulated to stimulate the interest and entertain the customers (Fiore, Kim & Lee, 2005). Besides, high interactivity also helps in reducing price consciousness since it does help the customers to have control over information presentation as well as provides immediate responses to enquiries and which automatically helps the customers to focus attention on the process of interaction instead of price.

In view of the above, Sicilia, Ruiz and Munuera, (2005) find that website with higher interactivity helps to stimulate smooth information processing and automatically leads to a flow of state and of course which can be equated to high level of service quality. Importantly, if consumers find it easy to flow on the site, they are more likely to continue

to stick and patronize the site and their intention to switch to other the site will be reduced significantly.

#### **5.2.2.13 The relationship between perceived website innovativeness and overall perceived service quality (H13)**

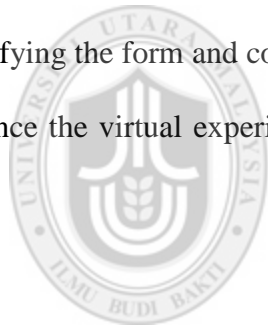
H13 posits a positive relationship between website innovativeness and overall perceived service quality (OVSQ) with the hypothesis being supported. The result is in line with outcomes of other studies that regard website innovativeness to be a significant factor in determining OVSQ (e.g., O’Cass & Carlson, 2012). The implications of this finding highlights the importance of ensuring that m-commerce service providers design and deliver a dynamic and unique website consumption experience to consumers as this will go a long way to influence the way consumers perceived overall service quality of the site. Importantly, when customer perception of site innovativeness is enhanced, other positive factors that will bring about repeated online purchase shall be guaranteed.

In addition, this result further indicates that m-commerce companies can take advantage of innovativeness for quickly responding to events and changes that are unpredictable in online service environment, this goes beyond their normal or conventional approach to customer service issues as it requires the organization to be proactive. This further implies that m-commerce organization needs to invest heavily in their innovativeness capabilities with the purpose of thriving in the contemporary highly competitive market so

as to increase their share of market and financial performance while responding to uncertainty in the business environments.

### **5.2.3 Objective three: to identify the most important factors that determines customers' perception toward m-commerce service quality**

In this study, the most important factor that impacts or influence m-commerce service quality is interactivity with t value of 5.359 and path coefficient of 0.200 ( $p < .000$ ). This implies that interactivity significantly explains the variability in service quality of mobile commerce. Therefore, it is highly essential for m-commerce service providers to make their websites to be highly interactive as this will allow users to participate in modifying the form and content of mediating environment in real time as this can help to enhance the virtual experience of users and can generate better brand and product attitude.



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Apart from this, high interactive website helps in two way communication and which thus enhances consumers' experience of the website perceived quality. In fact Scholars such Fiore *et al.*, (2005) and Sicilai *et al.*, (2005) found that interactivity has significant influence on website quality and which eventually ensures that customers stick to the site since they will be spending less time and effort while navigating through the site.

Furthermore, the impact interactivity has also been established of generating customer involvement by stating that that website interactivity can increase the rate of online

shopping (Jiang, Chan, Tan & Chua, 2010). More specifically, the outcomes of this study further suggests that when website is highly interactive, customers can be induced and be actively absorbed and involved in navigating the websites (Ghani, Supnick & Rooney, 1991) which can eventually lead to high level of satisfaction and future behavioral intention.

#### **5.2.4 Objective four: to explore the relationship between service quality, customers' satisfaction, and customers' behavioral intention on the use of m-commerce services in the future**

The final two research hypotheses concerned the relationships between overall customer perception about m-commerce service quality, customer satisfaction with m-commerce services, and behavioral intention to use m-commerce services in future.

##### **5.2.4.1 The relationship between overall perceived service quality and satisfaction (H14), and relationship between satisfaction and behavioral intention to use m-commerce (H15)**

The last two hypotheses here are accepted. H14 for instance posits a direct influence of customer perception of overall service quality on level of customer satisfaction while H15 hypothesizes that level of customer satisfaction will directly influence behavioral intention of m-commerce.

Regarding the two hypotheses, the results that are obtained here clearly reveal that the influence of customer perception on overall service quality of m-commerce services is significant and supported (0.681,  $t=28.508$ ,  $P<0.01$ ). Similar result is also obtained with respect to the influence of customer satisfaction on m-commerce services behavioral intention (0.747,  $t=35.455$ ,  $p<0.01$ ). Accordingly, previous studies findings have corroborated the outcome of this study (Anderson *et al.*, 1994; Anderson & Sullivan, 1993; Cronin & Taylor, 1992; Gotlieb *et al.*, 1994; Kettinger & Lee, 1995; Taylor & Baker, 1994; Yang, 2001; Lee & Lin, 2005; Udo, Bagchi & Kirs, 2010). Consequently, the implication of these outcomes indicates that the rate of customer satisfaction will increase when the level of perceptions about m-commerce overall service quality increases. Importantly, the results of customer satisfaction can be manifested in the form of future purchase intention loyalty and perhaps increased in rate of profit for the organization. Finally, the summary of the discussion of hypotheses were reported in details as shown in the Table 5.1.

**Table 5.1:** Summary of the discussion of hypotheses

<i>H</i>	<i>Results</i>	<i>Support from past studies</i>	<i>Why this result</i>
<b>H1</b>	$WEB \rightarrow OVSQ (+ve)$ $INSig)$	Vijayarathy and Jones (2000)	The perception of customer reflects that a website that is poorly designed may manifest some features that can frustrate users and have negative impact on website quality
<b>H2</b>	$REL \rightarrow OVSQ (+ve)$ $INSig)$	Lee & Lin (2005)	This result is obtained perhaps because customers give less priority to website reliability in favor of other factors that determine their choice of website

**Table 5.1:** (Continued)

			quality. Importantly, customers of the contemporary give preference to site agility than just reliability that may not necessarily provide them with the type of service that they need
<b>H3</b>	<i>RESP</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Gefen, 2002; Yang <i>et al.</i> , 2003; Parasuraman <i>et al.</i> , 2004; Lee and Lin, 2005	This indicates that service providers should imbibe the culture of promptness and accuracy while delivering their services through their webs
<b>H4</b>	<i>TRS</i> → <i>OVSQ</i> (+ve <i>INSig</i> )	Madu & Madu, (2002)	This result is obtained perhaps because the view of customers about online activity is changing. Virtually, customers of the contemporary have access to various online service providers who are trustworthy in terms of interaction and promptness in the delivery of service according to service agreement. This has therefore made the customers to lay less emphasis on trust as a major determinant of OVSQ.
<b>H5</b>	<i>PERS</i> → <i>OVSQ</i> (-ve <i>INSig</i> )	Lee & Lin, 2005; Than & Grandon, 2002).	Customers entertain fear that their personal information might be traded and compromised without their consent
<b>H6</b>	<i>PR</i> → <i>OVSQ</i> (-ve <i>INSig</i> )	(Udo, Bagchi & Kirs, 2010; Zhang & Prybutok, 2005).	Customers of the contemporary feel security features have become part of website they therefore exercise little anxiety



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**Table 5.1: (Continued)**

<b>H7</b>	<i>PCC</i> → <i>OVSQ</i> (-ve <i>Sig</i> )	(Gopi & Ramayah; 2007).	Customers who patronize m-commerce feel that there are external and internal factors that significantly impact their decisions to m-commerce platform
<b>H8</b>	<i>CUF</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Aladwania and Palvia 2002; Alsajjan & Dennis, 2008; Alsomali <i>et al.</i> , 2009	Customers feel that m-commerce service helps customers to achieve and enhance online purchasing productivity and activities
<b>H9</b>	<i>CA</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Shemwell and Yavas 1999; Loiacono <i>et al.</i> , 2002; and Novak <i>et al.</i> , 2000	Customers believe that mobile commerce that supplies them with accurate information will enhance their comprehension about services
<b>H10</b>	<i>EOU</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Chiu (2004, Costabile <i>et al.</i> , 2005; Papanikolaou & Mavromoustakos 2006). For instance, Papanikolaou & Mavromoustakos (2006	This shows that customers perceived m-commerce to be easily used without extra mental and physical effort
<b>H11</b>	<i>ACC</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Jun, Yang & Kim, 2004	This simply indicates that accessibility of a mobile commerce website helps customers to easily gather necessary information they require in making their decision quickly
<b>H12</b>	<i>INTA</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	Huang, Zhu & Zhou, 2013; Sukoco & Wu, 2011	This indicates that customers regard interactive of the website as a great asset or investment that could motivate them to patronize m-commerce
<b>H13</b>	<i>PWIN</i> → <i>OVSQ</i> (+ve <i>Sig</i> )	O'Carson & Carlson (2012)	This result is obtained as customers place preference on the need to improve general attributes such as e-commerce

**Table 5.1:** (Continued)

			capabilities, supplementary service offers and so on.
<b>H14</b>	<i>OVSQ</i> → <i>CS</i> (+ve Sig)	Anderson et al. 1994; Anderson and Sullivan 1993; Cronin & Taylor 1992; Gotlieb et al. 1994;	This result is obtained as customer perceived that when the quality of service received through website is good; their level of satisfaction will be enhanced and guaranteed.
<b>H15</b>	<i>CS</i> → <i>BI</i> (+ve Sig)	Taylor and Baker 1994; Yang 2001; Lee and Lin 2005; and Udo, Bagchi and Kirs 2010	This result implies that customers tend to repeat purchase when they are satisfied with previous transactions.

### 5.3 Research Contributions

This research has several contributions with regards to empirical analysis and subsequent implementation of its findings. It is important to emphasize that theories emanated from practice and they also form foundation for the development of new practice. In this climate therefore, SERVQUAL is employed in this research as an underpinning theory and this is the first time that the model is used in the context of Jordan. Importantly, the outcome of this research reveals that SERVQUAL is very effective in predicting customer intention to use m-commerce in the future and especially its ability to critically examine the perception of customers about OVSQ. Furthermore, the findings of this study are equally in line with the outcomes of other studies. Particularly, the disagreement and agreement of these studies were anchored on the premise that whether their findings can be applied in the m-commerce settings. In this respect, the application of

SERVQUAL model in this study forms a distinct contribution to the body of knowledge. Summarily, the contribution can be summarized into practical and theoretical contributions. This contribution can be clarified in the following sections:

### **5.3.1 Academic Contributions**

Premised on the empirical analysis that has been done in the previous chapter, this study has contributed to the body of knowledge. Firstly, this study through its model has introduced many variables such as reliability, website design, responsiveness, personalization, trust, perceived cognitive control, perceived risk, content adequacy, usefulness of content, accessibility, ease of use, perceived website innovation and interactivity. Theoretically, this study does provide an understanding about how perception of these variables does affect OVSQ and subsequently satisfaction and intention in Jordan.

Generally, the present research demonstrates that the extension of SERVQUAL model can be applied to all countries (Western or otherwise) and that the model is transient in nature since it can equally be used to explain IS success in different culture. Very scanty of previous SERVQUAL studies have been conducted in Arab countries and particularly in Jordan. In this respect therefore, the extension of SERVQUAL as done in this study is regarded as a contribution and this thereby implies that the independent variables of this study will significantly improve SERVQUAL model in the future.

In line with this too, Bagozzi and Dabholkar (2000) asserted that addition of new variables to a model could shed more light into those factors that that can help in predicting customer behavior but this can be achieved if the researcher can use external variables to explain the SERVQUAL model. Similarly, the outcomes of this study have also contributed more since it helps to enhance the understanding of OVSQ than when SERVQUAL model is studied in isolation. Moreover, this is the first time that SERVQUAL is being extended and applied in the Arab countries with respect to how customers overall perceived quality in m-commerce can be predicted.

In addition to the above, this study has equally enhanced the knowledge about how m-commerce perception service quality can be measured theoretically. Importantly, when a new technology or service is being introduced, theoretical findings and models of this study can be built on by academic scholars to predict the likely usage of the new system. As noticed here in this study, most of the hypotheses that have been tested showed significant relationship with OVSQ, where ten out of 15 hypotheses have been supported indicating the high value of the study in predicting usage if new system such as m-commerce and especially in AOU context.

### **5.3.2 Practical contribution**

Apart from the theoretical contributions of this study, some insights can also be derived by m-commerce practitioners and policy makers. This is essential as theoretical findings may just remain purely academic and of less value if such theoretical findings cannot

provide a guide(s) to practitioners. Hence, it is the belief of the researcher that this study has contributed immensely to practices and some of the contributions are discussed below.

Practically, the growth that is being witnessed in the last few years in the m-commerce industry can be traced to the progress being made in the internet technology and previous retail boom period. As a result, the focus of this study is on how customer perceived overall perceived service quality in m-commerce of (OVSQ) with the purpose of achieving a consequential satisfaction and intention to use m-commerce in the future. This is important because customers are the key determinant of continued existence of any organization and retaining of existing customers is less expensive than attracting new ones (Kotler & Armstrong, 2008). Therefore, the practical contributions of the finding of this study can be viewed from the impact of all the independent variables on OVSQ since the outcome will be beneficial for service providers to create relevant strategies and policies.

This study has contributed to the mobile commerce services implementation practice. The outcome of this study suggests that that the key dimension of how the customers perceived service quality in m-commerce is service quality itself. Although, the technical usability and reliability of service are considered as important aspects of m-commerce service quality, the primary concern in a commercial environment should be in how m-commerce services enhance performance and effectiveness. As a result of this, customers will embrace the technology much more easily if that technology can enhance

their purchasing life and make it easier and within reach. This is an important issue given the fact that many customers hold performance-oriented goals. Which in turn can motivate their attitude toward new services and technology. The result of this study shows that the targeting customers who have a general attitude and have a general knowledge in the domain of information technology, would greatly benefit the m-commerce services implementation process within the organization.

Importantly, innovativeness is a unique variable of the model of this study since the modern trend in m-commerce requires service provider to go the extra mile of introducing something new and which cannot be found in e-commerce. This assertion is supported as the result of this study reveals that innovativeness is a deciding factor of OVSQ. For instance, the recent innovation by Apple and Sony where new devices with touch control and attractive designs are launched is an indication of innovativeness in the contemporary information technology and consumer behavior fields. Therefore, this has challenged m-commerce service provider to continue to be innovative in their bids to serve their customers more otherwise they will be left behind or taken over. For example, Microsoft has just taken over Nokia in a recent bid due to lack of innovativeness on the part of Nokia.

Furthermore, based on the outcomes of this study, the trend of usage of m-commerce among AOU students and employees will continue to increase since m-commerce users believe that their service providers are committing enough resources to maintain the

overall perceived quality of the mobile commerce. However, for this to continue, m-commerce service providers in Jordan must not renege in their efforts to continue to sensitize the users by creating the awareness of latest updates and how the customers can benefit from such. This is important as such steps will enable the industry to meet its vision of becoming the global hub of mobile commerce in Arabian.

#### **5.4 Research Implications**

Some research implications can be derived from this study. The result of this study indicates that SERVQUAL model can be applied to developing countries like Jordan and others. Subject to giving due consideration to the limitation in the study findings. For instance, the inculcation of perceived risk, perceived cognitive control and perceived website innovativeness structure in the SERVQUAL model is very apparent from the outcomes of the study which therefore suggests the necessity to examine other possible constructs that can provide more power in explicating online behavior in developing countries. Secondly, the extended SERVQUAL model used in this study can be used in other online behavior such as m-payment or m-government. Since this study examined information quality dimension that has two variables, system quality dimension with two variables and service quality dimension with seven variables towards measuring OVSQ, future scholars might consider other contexts and pay attention to more controlled subsets of users with the purpose of identifying exceptions and other constraints on how the customer can perceive overall service quality in m-commerce. Additionally, it would also be of great benefit and significance if longitudinal studies can be performed for the

purpose of testing other proposed studies that may come up overtime. It would be advantageous to include other sets of antecedents or mediate variables such as subjective norm, and attitude.

This study therefore presents many findings that are related to significant factors that have impacted on OVSQ. Therefore, the outcomes have several and implication for service providers and other establishment that are venturing into e-purchasing in the developing countries.

Additionally, organizations decision makers can use the result of this study to forecast the role of m-commerce customer attitude toward OVSQ can simply come up with policies to win more customers. The outcome can also be used to develop strategies through which more customers can be attracted by showing them the benefits and usefulness they can derived from the services they offer and give values through reduction of cost and time.

In addition, service provider by using the findings of this study can allow the customers to have trials of their services and through this customer can develop some sort of comfort or confidence towards using the service. Importantly, the chance given to the customers to try m-commerce service will reduce the level of fears and uncertainty that the customers may be nurturing and hence the customers trust will enhance and will eventually have important influence on the customer's attitude towards OVSQ.



The current study brings to light the significance of service quality, information quality, and system quality dimensions in determining the OVSQ setting. Importantly, perceived website innovativeness has a strong impact on customers toward OVSQ. Lastly, in this view therefore, m-commerce providers can use the findings of this study for the purpose of caring for their customers and update the information, appeal, and color of their sites and which allow the customers to make right decision while purchasing on the net.

### **5.5 Limitation of the Study**

Despite the findings of this study, it has some limitations. To the limited knowledge of the researcher, this is the first study that investigates the essence of m-commerce service quality. In this view, the readers and those that may be applying the findings of this study should exercise caution due to its limitation. Some of the limitations of this study include the following:

- a) As initially stated, this is the first attempt to study OVSQ in Jordan using SERVQUAL extension, an additional research needs to be conducted to confirm the results of the study.
- b) Additionally, some the results of this study do not support some of the hypotheses of the study. This implies that the results are mixed. In this sense therefore, additional studies are required to resolve the inconsistencies as obtained here.

- c) Limitations in unit of analysis, while the notion of m-commerce services it was appeared to be a universal regardless of industry or size, this study limited itself to the study of m-commerce service quality.
- d) This study investigated the OVSQ variables while others such as the influence of features of the customers of OVSQ or the features of the m-commerce providers that provide m-commerce service are not considered.
- e) Lack of abundant previous and relevant researches are also some of the limitations of this study.
- f) In addition, generalization of this study may be limited due to the fact that the study was conducted within the geographical region of Arab (Jordan) with different population and culture. In this view, more diverse population and samples can be used by future researchers in order to verify the dimension this study has developed.
- g) Finally, very few variables of OVSQ were discussed while others were neglected. In this sense, additional works are required to research for the purpose of adding to the variables of OVSQ.

## **5.6 Future Research**

Given the limitations of this study, opportunities for future research abound and some of which include the following:

- a) Future studies can possibly consider more factors or variables that can impact OVSQ. These variables can be investigated on a larger scale but with special attention paid to OVSQ.
- b) Future scholars could carry out similar studies with respect to OVSQ in developing countries because few attempts of such have been made. Additionally, a comparative study between developing and developed countries concerning OVSQ can be carried out.
- c) SERVQUAL model was used in this study; future studies could apply this model by extending it as well as using technology acceptance model (TAM) variables and other theories such as UTAUT in developing countries context.
- d) Since this study examines the relationships between customer OVSQ, customer satisfaction and behavioral intention in m-commerce environment, future researchers can consider important variables such as customer loyalty and value of m-commerce service.
- e) The scope of this study was limited to university environment; other studies can consider business enterprises, and government organizations with the purpose of finding the impact of m-commerce in their services enhancement.
- f) Additionally, this study used only questionnaire to collect data, other researchers can use qualitative method - in-depth interview – with a view of getting more suitable variables that could impact customers overall perceived m-commerce. This can be better achieved when the researcher builds a trusted relationship with them and speaks their language.

- g) The era of information technology that we are today has made the customers to be aware and mature about the type of online service quality they want. In this climate therefore, future studies may adopt expectation-disconfirmation paradigm for the purpose of measuring service quality and customer satisfaction.
- h) A study on the effect of the globalization trends and the universal moiled interaction services based on geography and cultural differences of user preferences.
- i) Some demographic variables in this study such as (age, qualification, and experience using m-commerce) shown that can effect the overall result of hypotheses formulation, additional work can use to measure the influence of demographic variables and it is mediating effect with OVSQ.

## 5.7 Conclusions

This study examines the constructs that influence customer overall perceived service quality (OVSQ) in m-commerce. In all, the result of this study reveals ten direct significant and five insignificant relationships. Firstly, the service quality dimension shows that responsiveness, and perceived cognitive control has direct significant relationship toward OVSQ, while website design, reliability, trust, personalization, and perceived risk all have insignificant relationships with OVSQ. Secondly, in information quality dimension it was found that content usefulness and content adequacy have direct significant relationship toward OVSQ. Thirdly, in system quality dimension, accessibility, interactivity, and perceived website innovativeness, and ease of use have insignificant relationships with OVSQ. Fourthly, a significant relationship between customer satisfaction,

customer behavioral intention and customer overall perceived service quality in m-commerce was found.

Furthermore, the research extended SERVQUAL with the purpose of ascertaining those factors that determine perceived OVSQ and online behavior in m-commerce. The extended model inculcates content usefulness, responsiveness, content analysis, innovativeness, content adequacy, and accessibility. As initially stated, the focus of this study is to examine how SERVQUAL which was developed in developed countries can be applied to developing or non-western cultures. The general perception regarding most of the IS models such as TAM and others is that they are culturally biased since most of them are developed by western researchers and that their application to a less developed country may call for questioning because of the difference (social-cultural systems) that exists between developed and developing countries. Contrarily however, the advancement in information technology in the last one and half decade especially with advent of internet technology, mobile phone their advantages has made business to be conducted across the globe with little or no hitch using mobile devices.

This research has brought to light many practical and theoretical issues of m-commerce service quality. Importantly, the research has discovered some possible and positive factors that make the pursuance of m-commerce service quality to be a worthy exercise. In this respect, therefore, this research has therefore challenge the entire information technology research to continue to investigate into those factors that can influence mobile

commerce service quality by applying new applications that match background and preferences of users. Even though mobile commerce may be deemed to be costly and risky; its values and worth cannot be underestimated while its rewards for users are great. Importantly, since m-commerce is a service strategy; it has become an instrument that is globally used for communication and coordination using can technology that permit the combination of all IT services so that IT can effectively be mobilized with industrial, global, organizational, and societal infrastructure.

Jordan is a modern society that can boast of a free market economy with an active and growing IT environment as a result of enhancement that was done to telecommunication in the year 2000. Aside, Jordan has access to modern and reliable infrastructures that are well recognized in the Middle East (MOICT Jordan, 2005) covering a broad range of the market and attracting competitor. Consequently, the state plan project and competitive pricing environment have made internet technology and smart mobile phone available for all, thereby making countries and users have a wider access to ICT. In this view, the development in the ICT arena is making transfer of service readily available. This therefore implies that the world is becoming global since internet technology and the ICT have liberally changed the Jordanians' perceptions and expectations. Therefore, where the digital divide is minimizing based on ICT distribution; it is acceptable that the SERVQUAL model be applied for measuring e-service technologies in Middle Eastern countries such as Jordan. However, this will require re-strategizing the way m-

commerce service quality is conceptualized and eventually implemented in other to bring about the required change in the future.



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