Factors Influencing the Adoption of E-commerce in Saudi Arabia: Study of Online Shopping

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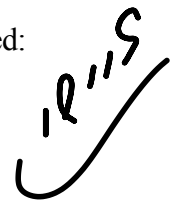
DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Abdullah Saleh Alqahtani

Signed: 

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LIST OF ABBREVIATIONS

B2B	business-to-business
B2C	business- to-customers
B2G	business-to-government
C2C	customer-to-customer
C2B	customers-to-business
C2A	commerce-to-administration
ICT	information and communication technology
IT	information technology
IP	internet protocol
E-payment	electronic payment
E-commerce	electronic commerce
E-government	electronic government
E-banking	electronic banking
CITC	Communication and Information Technology Commission
WTO	World Trade Organization
US	United States
KSA	Kingdom of Saudi Arabia
UAE	United Arab Emirates
SR	Saudi Riyal
ISPs	internet service providers
NCITP	National Communications and Information Technology Plan
NSTIP	National Science, Technology and Innovation Plan
AMOS	analysis of moment structures
URL	uniform resource locator
TRA	theory of reasoned action
TAM	technology acceptance model
TPB	theory of planned behaviour
DTPB	decomposed theory of planned behaviour
TAM2	technology acceptance model 2
UTAUT	unified theory of acceptance use of technology
TAM3	technology acceptance model 3
DOI	diffusion of innovation
PBC	perceived behavioural control
Bi	behaviour intention
SN	subjective norms
PU	perceived usefulness
OPEC	Organization of the Petroleum Exporting Countries
CEO	chief executive officer
GDP	gross domestic product
BMI	Business Monitor International
MCIT	Ministry of Communication and Information Technology
MCI	Ministry of Commerce and Industry
KACST	King Abdul-Aziz City for Technology and Science
MENAP	Middle East, North Africa, Afghanistan, and Pakistan
AAG	Arab Advisors Group
LDC	less developed country

E-mall	The first online marketplace in Arabic and English language and one of the projects of Saudi Post
SAMA	Saudi Arabian Monetary Agency
IORMA	International Omni Retailing Members Association
SADAD	the Saudi national electronic payment system
PayPal	web-based application for the secure transfer of funds between member accounts
ATM	automated teller machine
Zajel	one of the fastest courier companies in UAE
Aramex	provides domestic and international standard parcel services for business customers
FedEx	provides domestic and international standard parcel services for business customers
DHL	provides domestic and international standard parcel services for business customers
SMSA	provides domestic standard parcel services for business customers in Saudi Arabia
Alma Express	provides domestic standard parcel services for business customers in Saudi Arabia
Aymakan	provides domestic standard parcel services for business customers in Saudi Arabia
AVS	address verification system
GIS	geographic information systems
WASEL	a service to deliver all postal services to homes of citizens and residents
MENA	Middle East and North Africa
AMOS	analysis of moment structures
EFA	exploratory factor analysis
CFA	confirmatory factor analysis
SEM	structural equation modelling
KMO	Kaiser-Meyer-Olkin
Df	degrees of freedom
PCA	principal components analysis
RMSEA	root mean square error of approximation
GFI	goodness-of-fit index
CFI	comparative fit index
PRATIO	the parsimony ratio
NFI	normed fit index
TLI	Tucker-Lewis index
IFI	incremental fit index
PNFI	parsimonious normed fit index
AGFI	adjusted goodness-of-fit index
AVE	average variance extracted

ABSTRACT

The inventions of computer and internet have revolutionised the way people communicate, work and play in the modern world, and have transformed how we do business. Not only have computers and computer networks become fully integrated into most actual business operations, businesses have also moved into the virtual space available through the internet to offer products and services online.

The first e-commerce web sites began to appear in the 1980s, and with the development of the internet and its release in the early 1990s, shopping transactions online have grown steadily in sophistication and number worldwide. It is disappointing, therefore, that the Kingdom of Saudi Arabia (KSA) is lagging behind in the development of the e-commerce sector. The country is already a leading oil producer, and has made significant progress in the ICT sector in the Middle East in terms of both computer hardware and software. However, it is a matter of concern that such a wealthy country has such a low adoption of retail e-commerce, and an exploration of the reasons for the low take up of retail e-commerce (online shopping) was required, and has been undertaken in this study.

A review of the literature showed a lack of research into the adoption of e-commerce in developing countries, such as Saudi Arabia, and few studies have investigated the issue of online commerce from different perspectives. Published research lacks a comprehensive and coherent approach, and has not yet considered the views of the adopters and suppliers of retail e-commerce in a developing market like Saudi.

The major gaps in the literature are the result of a focus on the B2B model for e-commerce, and technological and environmental features, while ignoring human psychology and capacities. Another gap that of classifying the existing users into different user groups, was also identified. The research reported in this dissertation was an attempt to bridge these gaps by exploring the current situation of e-commerce (online shopping) in the Saudi Arabia, identifying the requisite factors for the adoption of e-commerce in Saudi Arabia, developing a statistical model to capture the relationship between e-commerce adoption and relevant factors from a B2C point-of-view, classifying different types of e-commerce adopters and investigating the influence of age, gender and knowledge on the adoption of e-commerce in Saudi Arabia.

In conducting the research, both qualitative (semi-structured interviews) and quantitative (online survey using Likert scaling) methods were used to generate data and the results were triangulated with existing research to observe the coherence, as well as contradictions and confirm the outcomes.

The study found that three classes of e-commerce users currently exist in the kingdom – those who frequently shop online, those who are moderate online shoppers and those who rarely go online to shop. The research also showed that Saudi women shop online more frequently than men because of Islamic culture and tradition. Greater online usage was also observed among young adults, who demonstrated a superior knowledge of ICT and the internet.

The qualitative findings highlighted the significance of the constructs in the model and emphasised the age, gender and knowledge issues specific to the Saudi Arabian cultural context. Additionally, qualitative data generation and analysis provided insight into the attitudes and feeling of users of e-commerce in Saudi Arabia. Ultimately, age, gender, ICT knowledge, payment, delivery system, product availability, trust, and prior experience all proved to be factors in the adoption of e-commerce in Saudi Arabia.

The research concluded by noting the practical implications, limitations and future directions for e-commerce in Saudi Arabia.

Factors Influencing the Adoption of E-commerce in Saudi Arabia: Study of Online Shopping

CHAPTER 1: INTRODUCTION

This thesis is a study of understanding the factors which influence e-commerce adoption among the main categories of users in Saudi Arabia. This chapter presents an overview of the research undertaken and reported in this thesis. Firstly, the research background is presented. Secondly, technology and e-commerce adoption are briefly discussed to introduce the basic ideas relevant to the research. Following these introductory sections, online shopping, which constitutes the major part of e-commerce in Saudi Arabia, is briefly discussed, as well as the research problem, the motivation for, and the significance of, the research. Following this, the aims of the research are presented, along with the questions to be answered. Thereafter, the scope and boundaries of the research are delineated, and the structure of the dissertation is outlined.

1.1 Background of the study

The current era is often named the Information Age, the Digital Revolution or alternatively the New Technological Revolution, depending on the commentator's perspective. These descriptors share the common characteristic of being based on the widespread adoption of computing and computer networking. Over the last twenty years, technology has reorganized our living, communication, and learning (Siemens, 2005). The most ubiquitous symbol of the age is the smart phone, essentially a handheld computer. It is a computer that enables global telephony often with video capability, image and video capture, email and data processing. A myriad of *apps* is available, that is, small computer applications that run partially on the mobile phone, while linking in many cases with remote servers to allow a steadily increasing number of different functions (already in the millions) that are making a reality of the continuously connected user (Siau et al., 2001).

Being online has become synonymous with being able to access the internet – a hyperlinked network of websites and services running over a global network of telecommunications links connecting physical and virtual computers world-wide. Using this vast and continuously growing network, people around the world bank; shop; gamble; communicate; listen to music; share ideas, videos, and pictures; and search for information. The best known proprietary search tool, Google, for example, received 40,000 requests for information a second, translating to 3.5 billion searches

a day and business to customer sales worldwide using the internet amounted to $US 1471 billion in 2015 (Statista.com, 2015).

As a form of descriptive shorthand, activities on the internet were originally described as *electronic*, thus communications sent electronically over the internet became electronic mail (email), and as the internet became ubiquitous, *e-* became a pre-fix for any functionality that had been migrated from physical precursors to electronic (i.e. virtual) equivalents. This led in time to such terms as: e-payment, e-banking, e-government, e-commerce and so forth. Alternatively, internet users may refer to their network-based activities using the term *online*. For example: online shopping, online banking, and online registration of vehicles. Being electronically connected by way of the internet has given humans literally a new dimension to explore a dimension of experience that is directly related to the ability of the individual to access and process vast amounts of knowledge and transform that knowledge into previously unavailable opportunities to explore and share news, information, and the world around them.

The spread of computers and latterly computer and mobile telephone networks has transformed business processes in the last 40 years. Now it is widely accepted that to achieve organizational goals information technology (IT) and business resources need to be well aligned (Wagner et al., 2014). However, the arrival of the internet and its rapid development into a globally ubiquitous resource has not only accelerated previously initiated and computer driven change, but in addition has introduced many more major changes. One of the most relevant to consumers has been the rise of e-commerce. Online stores and more recently omni-channel stores combining physical and online infrastructure and presence are never closed and allow shopping from anywhere at any time, as long as an internet connection is available (Bodhani, 2012, Piotrowicz and Cuthbertson, 2014).

Developed countries have already produced sophisticated online shopping malls and e-stores like Amazon and eBay, while the booming marketplace of China offers Ali-baba and Tencent. E-stores such as these are at the top of a list of global online sellers who are either already global brands or rapidly evolving in that direction. All of whom are an integral part of a virtual, global, mega-shopping system.

The Kingdom of Saudi Arabia (KSA), can use the internet and e-commerce to leapfrog some stages of industrial and social development within their societies. However, even wealthy developing nations with rapidly improving access to the internet still face many challenges related to the acceptance and adoption of e-commerce within the context of their particular national circumstances (White et al., 2014, Kapurubandara and Lawson, 2006a) .

1.1.1 The uptake of ICT facilities

Globalisation through vast new information and communication technology (ICT) networks has enabled countries like Saudi Arabia to develop and grow, and the services that ICTs enable are slowly but surely entering mainstream Saudi life. Saudis are gradually being exposed to and adopting a variety of online activities, such as electronic funds transfer, e-marketing, online shopping, online data provision (e-newspapers, magazines, and blogs), and online communication(Abdullah, 2014, Alanezi, 2016). The Saudi business sector is already familiar with advanced supply chain management practices, online transactions, electronic data exchange, and all the online support services that major international companies are accustomed to deploying and using in advanced Western nations (AlGhamdi et al., 2012b). In Saudi Arabia today, e-commerce activities may flow from businesses-to-businesses, business-to-customers and government-to-business, or government-to-citizens.

E-commerce facilities and activities at the level of retail and ICT services provided to consumers are being adopted less quickly than by large businesses in Saudi Arabia. This is not simply due to cultural factors, but also due to setup costs, deployment issues to remote locations, and natural human resistance to change (MCIT, 2014a, Aladwani, 2003, Albadr, 2003). According to Saudi Arabian Communication and Information Technology Commission (CITC) Report (2014), although Saudi Arabia's government encourages e-commerce, only 6% of Saudis have had previous experience buying products and services online, and only 16% intend to buy online products and use e-commerce services, in particular virtual shopping. In 2005, Saudi Arabia began collaboration with the World Trade Organization (WTO) to enable international e-commerce and online stores, such as eBay and Amazon, to sell their products in the country. The adoption of technology and e-commerce tools outside of major corporations, however, has been extremely limited to date (AlGhamdi, Nguyen, Nguyen, and Drew, 2011).

1.1.2 Identifying the reasons for the slow uptake of ICT-enabled activities, such as e-commerce.

Several previous researchers have investigated the adoption and use of e-commerce in Saudi Arabia from varying points of view. Some studies have considered environmental factors, while others focused on the legislation, logistics, and ICT infrastructure (AlGhamdi, Drew, & Al-Ghaith, 2011; AlGhamdi, Drew, & Alkhalaf, 2012; Eid, 2011). Several studies have investigated e-commerce in Saudi Arabia in a business-to-business (B2B) environment, while others have studied the business-to-consumer (B2C) context. Behavioural factors associated with e-commerce adoption have also been studied (Eid, 2011, Sait et al., 2004, Alfuraih, 2008, Al-Otaibi and Al-Zahran, 2003, Al-Gahtani et al., 2007, Aleid et al., 2010a, AlGhamdi et al., 2011a, AlGhamdi et al., 2012a).

These studies have begun the development of a knowledgebase related specifically to e-commerce in Saudi Arabia, which may prove helpful to the development of e-commerce in the kingdom insofar as local differences and preferences in e-shopping can be identified. None of the studies has produced a comprehensive picture of the of level of e-commerce adoption in the B2C context, and there are clear gaps in identifying the behavioural factors related to e-commerce adoption as well as in understanding how factors related to infrastructure, culture, legislation, technical aspects, national awareness, and national economy influence the adoption of e-commerce in the form of shopping online.

As the existing body of research is not comprehensive and there are no detailed guidelines for different stakeholders (i.e., online service providers), issues related to low adoption of e-commerce in Saudi Arabia may be exacerbated. The slow uptake of e-commerce in past years has deprived many Saudis of the benefits offered by internet-based e-shopping, along with online access to other services. In order to change this situation, it is imperative that the reasons for the slow adoption of internet-based technologies be better understood in order that they might be redressed. This research is, therefore, of importance for all e-commerce stakeholders in Saudi Arabia.

The need to identify different kinds of e-commerce adopters, relevant technical and behavioural issues, and necessary support systems was addressed in this study. The study, also attempted to add new knowledge to the field of online business and e-commerce in Saudi Arabia. This knowledge could potentially assist professionals interested in services supported by ICT, the

wider business community, and the government to undertake comprehensive, effective, and sustainable solutions for the betterment of e-commerce in Saudi Arabia.

1.1.3 The adoption of technology

Technology adoption is a critical concept when discussing the motivations and barriers in the emergence and growth of a technological innovation. A wide range of definitions for technology adoption exist in the literature, but even after synthesising the research on technology acceptance and its determinants, there is no clear meaning for technology acceptance as a construct. Davis (1985), who offered one of the earliest conceptualisations of technology acceptance, stated that 'technology adoption is a decision made by users about how and when they will access and use technology' (Davis, 1985).

Understanding the factors influencing technology adoption may assist in predicting and managing who adopts new technologies, when, and under what conditions technologies are adopted. This knowledge is of particular importance in jurisdictions such as Saudi Arabia, which have dirigisme economic and social policies. Armed with this information, government planners can assess the adoption process and support individuals as they move from technology recognition to acceptance through to usage, including usage of the functions the technology supports, such as e-commerce. (See Chapter 4 for more information about this issue).

Various researchers have sought to understand factors that affect technology adoption on three different levels: the individual level (Pantano and Di Pietro, 2012, Susanto, 2012, Klopping and McKinney, 2004), the firm level (Wymer and Regan, 2005, Al-Qirim, 2008, Grandon and Pearson, 2004) and the country level (Zhu and Kraemer, 2005, Zhu et al., 2003). ICT innovation is taking place with increasing rapidity, and such innovations as well as ICT deployment in places where there was no or little previous ICT infrastructure is playing a vital role in the globalisation of the world economy. Indeed, countries that do not engage with ICT through innovations such as e-commerce may put the competitiveness of their economies at risk (Turban et al., 2012).

However, gaining acceptance for online technologies and helping populations understand and use them is not a straightforward process. Legal, social, cultural, and ethical issues all present barriers that must be overcome or lessened to achieve success in the provision, adoption, and innovative

use of ICTs (Turban et al., 2009). There are, in addition, structural matters, of extant infrastructure and the availability of online options. There is also the consideration of any given population's level of digital education and willingness to participate; participation that in turn influences the size and growth of ICT and its applications in that society (Ho et al., 2007).

1.1.4 Technology adoption and online shopping in Saudi Arabia

Saudi Arabia is an important country for several reasons. One reason is that Saudi Arabia is among the largest oil producers in the world, which allows the government to fund many science, technology, ICT, and internet initiatives for the betterment of Saudi society. Another reason is that its holy sites are at Islam's heart and this attracts millions of travellers each year. With government support and demand from the indigenous population, millions of foreign workers, and further millions of religious pilgrims arriving each year, online shopping is a growing trend. Indeed, the majority of businesses in Saudi Arabia now offer information about their products, their type of business, and their location online (Al-Zahrani, 2006, Al-Somali et al., 2009). Many companies also utilise electronic devices for marketing.

Despite the majority of businesses having at least a token presence online, as recently as 2010, less than 10% of businesses actually offered services, as well as information and promotions online (Awoyelu et al., 2010). It should be noted that most business firms in Saudi Arabia are small and medium-sized enterprises. A study in 2004 suggested that at that time many of these SMEs underestimated or failed to understand how their businesses could be improved when actually operated using ICTs (Koh and Kim, 2004).

The potential exists for small and medium sized businesses to sell online, boosting business activity (Insights, 2008). According to information provided by the Centre of the Ministry of Commerce and Industry in Saudi Arabia, the kingdom is the fourth fastest growing economy in the Middle East and 31st on the international level of readiness for internal infrastructure (AlGhamdi and Drew, 2011). Although the percentage of the population using online services in Saudi Arabia is currently low, on trend, it is expected that 75% of the population will be using the internet by 2020 (CITC, 2015).

Businesses selling services, rather than goods, in Saudi Arabia are more inclined to use ICTs and offer their clients an online system of purchasing, selling, and/or exchanging services, which may reflect the ease of distribution of services versus goods in Saudi Arabia. Education, the availability of the internet, the increasing availability of digital devices such as smart phones, and cultural factors all play a role in the growth of the availability of services online, just as the convenience of online shopping is anticipated to continue to lure people online. The pace of e-commerce growth is expected to eventually increase when the right combination of factors is finally in place (Lee and Chen, 2010).

In order to determine the right combination of factors for e-commerce and online shopping growth in Saudi Arabia, more research is necessary. As previously noted, there is lack of research to identify crucial factors for e-commerce adoption and implementation in Saudi Arabia, an issue this study sought to address. In addition to providing current information about Saudi Arabia's ICT adoption and e-commerce uptake, the research sought to identify a suitable strategy for the improvement of e-commerce adoption in the kingdom.

1.2 Significance of the study

Early studies explored the factors that influenced the adoption of e-commerce services, in developed countries where e-commerce first became common. Early studies were mostly conducted in the United States (Grandon and Pearson, 2004), the United Kingdom (Matlay and Addis, 2003), Canada (Sparling et al., 2007) and Italy (Scupola, 2003). More recent studies have focused on developing countries, including Latin America (Davis 1999), Mongolia (Enns and Huff, 1999), Ukraine (Jennex and Amoroso, 2002), Malaysia (Mukti, 2000), Thailand (Wongpinunwatana and Lertwongsatien, 2003), Taiwan (Thatchera et al., 2006), South Africa (Moodley and Morris, 2004, Cloete et al., 2002), Iran (Ghobakhloo et al., 2011), Nigeria (Ma'aruf and Abdulkadir, 2012), and Sri Lanka (Kapurubandara and Lawson, 2006b), and very recently on China where there has been very rapid e-commerce growth (McKinsey, 2013). Little research has been conducted in the Middle East and North Africa (MENA), and very little specific or recent exists on Saudi Arabia. Consequently, an investigation of e-commerce adoption in Saudi Arabia is both relevant and timely.

It was widely acknowledged as far back as the 1970s that theories and management practices developed in the context of industrialised and developed countries in the West needed to be re-examined in the context of developing countries to fit the cultural context of the less mature nations (Austin, 2002, Hofstede et al., 1980). This is because management practices based on theories developed in mature economies may not be appropriate in less developed countries (LDCs). However, appropriate and effective management practices may impact e-commerce adoption in developing countries.

Considering that the primary goal of e-commerce is 'to integrate businesses, government agencies, and contractors into a single community with the ability to communicate with one another across any computer platform' (Edwards et al., 1998), as well as to bring organisations closer to their actual customers, the low rate of e-commerce adoption in some developing countries may become a critical issue over time as their businesses come to suffer from a lack of competitiveness due to poor ICT usage and the failure to adopt e-commerce tools.

Many studies have been conducted on different aspects of e-commerce adoption in developing countries, including Latin America (Davis 1999), Mongolia (Enns and Huff, 1999), Ukraine (Jennex and Amoroso, 2002), Malaysia (Mukti, 2000), Thailand (Wongpinunwatana and Lertwongsatien, 2003), Taiwan (Thatchera et al., 2006), South Africa (Moodley and Morris, 2004, Cloete et al., 2002), Iran (Ghobakhloo et al., 2011), Nigeria (Ma'aruf and Abdulkadir, 2012), and Sri Lanka (Kapurubandara and Lawson, 2006b). Most of the studies focused on the macro level (or global) constraints and explored the barriers and motivators in e-commerce adoption.

Many of these previous studies looked at major e-commerce adoption factors in developing countries. It was found that in the late 1990s and in the first decade of the 21st century, the major issues in developing regions at the time were slow internet speeds, the high prices of internet service providers (ISPs), insufficient regulatory environments, and poor infrastructure; whereas, in developed countries, the main issues were privacy and taxes (Molla and Licker, 2005). In 2004, Ein-Dor et al. conducted a four-country study that included Finland, Israel, New Zealand, and Singapore. Their study indicated that differences in culture, attitudes toward information and communication technology (ICT), and socioeconomic status all impacted the adoption of e-commerce (Ein-Dor et al., 2004).

Existing cultural conditions always determine whether, when, how, and in what form a new innovation will be adopted (Dunphy and Herbig, 1995). Moreover, studies conducted in Western countries tend to embody the values, attitudes, and beliefs of the West, which are different from those of non-Western cultures. In a comparison of the organisational cultures of 40 independent nations, Hofstede (Hofstede, 1980) argued that many of the differences in management styles and organisational practices of companies throughout the world could be related to differences in the collective mental programming of people in different national cultures.

This study focused upon Saudi Arabia as a developing country with several distinctive features. Saudi Arabia is a deeply religious Islamic country controlled by a religiously-influenced autocratic government, and, as one of the three largest oil producers in the world, its oil production and resulting economic growth places it among the ranks of the richest countries in the world (Alkolibi, 2002). The rulers of the kingdom are well aware, however, of the dangers to the country's stability of dependence on a single commodity and have since the 1970s been seeking to diversify the economy (Albassam, 2015). As part of this effort they have encouraged the introduction and use of ICTs. Continually in search of income and economic diversity, Saudi Arabia is strongly determined to expand its commerce in a digital era. Saudi Arabia was specifically selected for this research due to strong and ongoing efforts by its government to foster e-commerce.

As recently as 2006-07, few individual Saudis conducted business transactions online (CITC, 2007), and even fewer studies addressed e-commerce adoption factors in Saudi Arabia. Such studies as existed mostly focussed on environmental constraints, including physical, technological, institutional and socio-economic e-readiness and e-commerce barriers. The lack of research on the reasons for the relative failure of e-commerce in developing Arab countries in the early years of the 21st century has left a significant gap in the literature related to this geographical area (Alrawi and Sabry, 2009).

Generally, a belief has arisen that the Arab world has not yet received enough attention from social scientists and organisational analysts wanting to understand the changes occurring in the Middle East (Al-Yahya, 2009). Although there were some significant studies on e-commerce adoption within organisations and government, little attention has been given to citizens'

adoption of e-commerce as consumers. Therefore, the significance of this study is to make available results identifying those factors responsible for e-commerce adoption and growth, which will assist the understanding of policy makers and the e-commerce industry. Furthermore, this study will provide both insight and sustainable strategies for e-commerce and online shopping in Saudi Arabia.

1.3 Research aim and objectives

Motivated by the issues identified above, this study has attempted to bridge the knowledge gap in the current Saudi Arabia and Middle Eastern literature about B2C e-commerce and shed some light on the adoption of e-commerce by individuals as the end users of e-commerce services. Saudi Arabia's e-commerce sector has yet to find a pathway by which to effectively join the global business market, and their e-commerce framework and its implementation remains to some extent in the development stage.

The aim of this study was to achieve a comprehensive understanding of the factors which influence e-commerce adoption among the main categories of users in Saudi Arabia.

In order to achieve the aim several objectives were developed:

- to identify the current situation of e-commerce adoption for Saudi Arabia
- to understand the factors responsible for e-commerce adoption by different kinds of users in Saudi Arabia and explore the challenges in the growth of e-commerce (online shopping)
- to identify and adopt strategies in order to overcome the challenges and provide guidelines for the improvement of e-commerce for Saudi Arabia.

1.4 Research questions

In order to achieve the research aim, a broad research question was developed. The study investigated the question:

What are the major factors influencing e-commerce adoption by different users in the Kingdom of Saudi Arabia (KSA)?

This question was subsequently divided into a number of sub-questions to facilitate the research:

RQ1: *What is the current state of e-commerce in Saudi Arabia?*

RQ2: *What types of e-commerce adopters are now present in Saudi Arabia?*

RQ3: *What are the factors that influence individuals' adoption of e-commerce in Saudi Arabia?*

RQ4: *What are the major predictors of intention to use e-commerce services in Saudi Arabia?*

RQ5: *What are the strategic solutions to maximise e-commerce adoption in Saudi Arabia?*

This study reviewed the previous e-commerce adoption models proposed at the micro and macro levels, and analysed the practical implications of the factors involved in the implementation of e-commerce services to improve user acceptance. The research involved designing and developing a new conceptual e-commerce adoption model, validating the model, and proposing recommendations for decision makers in Saudi Arabia and other developing countries.

1.5 Methodology of the research

In order to achieve the desired objectives of the research, the whole study was conducted systematically. Firstly, a broad and in-depth literature review related to e-commerce was conducted. In addition to e-commerce and online shopping, research was undertaken to establish the current situation of e-commerce and online retailing in Saudi Arabia, while considering different theories of technology adoption relevant to e-commerce and online retailing. The literature clarified the research background and provided insight into how the research problems and questions could be answered from scientific and academic perspectives. Insight gained from the literature contributed to the choice of both deductive and inductive approaches to the present investigation and assisted in the formulation of the study's research questions, hypotheses, and conceptual model.

As the research design was being developed, a sample population of e-commerce users in Saudi Arabia was identified. Thereafter, an online customer survey was used to collect data related to the adoption and use of e-commerce in Saudi Arabia for quantitative analysis using IBM-*SPSS*, and a conceptual model was developed using structural equation modelling techniques in IBM-*AMOS* software. Answers to the research questions were sought, and the developed hypotheses proved or disproved by the data (See Chapter 4).

Inductive approaches were then applied through semi-structured interviews to add depth and richness to the statistical data. Both online service providers and relevant users were interviewed. In the methodology chapter, all the methods of the study have been explained in detail. In addition, both the qualitative and quantitative aspects of the study are discussed in greater detail in a later chapter.

1.6 Scope of the study

The topic of e-commerce is broad and involves several different and distinct models (e.g. B2B, B2C, B2G), and for this reason it is difficult for a single comprehensive study to include all aspects of e-commerce adoption and usage. To gain the maximum coverage of e-commerce adoption factors in Saudi Arabia, the research focused on the B2C e-commerce model. In addition to this, boundaries were established to keep the scope of the study realistic, and the research focused and efficient in order to provide the best possible answers to the research questions and solve the research problem. The framework of this study was bounded by:

- the investigation of the B2C (business to consumer) model of the e-commerce system
- a focus on online shopping and online shoppers rather than the larger number of online users
- a focus on the personal and individual environment, and the preferences of the users
- an examination of the demand side of online shopping compared to the supply side.

1.7 Thesis structure

The dissertation of this research has been organised into nine chapters.

Chapter 1 introduces the research, sets the background, briefly explains the topic, defines the aims and objectives, states the motivation and significance, presents the research questions, and finally delineates the scope of the study.

Chapter 2 discusses the national context of Saudi Arabia as a whole and in particular the environment for e-commerce.

Chapter 3 provides the general literature review for the research, ideas of e-commerce, online shopping, their aspects and relationship. In addition, theoretical models related to e-commerce adoption are also presented.

Chapter 4 presents the specific factors and constructs related to e-commerce adoption in Saudi Arabia. In addition to these, Chapter 4 also presents the research hypotheses and the conceptual model based on the literature review.

Chapter 5 explains the methodology, presenting in detail all the methods used in this research, including population and sample, qualitative and quantitative survey, and types of analysis.

Chapter 6, the quantitative analysis and results are presented. Judgments about the hypotheses are made based on the models and other tests, and descriptive statistics are provided.

Chapter 7 focuses on qualitative data analysis. In this chapter, the interviews were summarised in relation to the factors of e-commerce adoption as well as a comparison of factors for quantitative and qualitative findings.

Chapter 8 offers detailed discussions of the results from quantitative and qualitative analysis and outputs.

Chapter 9 provides the strategic solutions, discusses the contribution of the research, provides the recommendations, discusses limitations, and explores the scope for further studies.

1.8 Summary

This chapter introduced the fundamental research concepts, the problems, questions and scope of the study. In the background section, a brief statement of the problem of ICT adoption and e-commerce in Saudi Arabia has been discussed, and explanation offered as to why it was necessary to do the study in Saudi Arabia. The basic concept of e-commerce and online shopping are presented. The aims, objectives and questions set the direction for the study. The motivation and significance established the necessity of the research as well as the boundaries, which determined the scope of the research. Finally, the organisation of the dissertation was outlined.

The chapter introduced the research as a whole; however, it is now necessary to detail these ideas and develop insight into the research problems, context, and models. To accomplish this, an extensive literature review of existing studies on e-commerce, technology adoption models and factors that impact e-commerce adoption was needed.

CHAPTER 2: COUNTRY PROFILE: THE KINGDOM OF SAUDI ARABIA IN THE CONTEXT OF E-COMMERCE

This chapter examines the context in which online shopping operates in the Kingdom of Saudi Arabia, since this will influence the level of its success.

Saudi Arabia is a major constituent of the geographic area understood as the 'Middle East 'and more particularly the Arabic Middle East. As a result, Saudi Arab is a political, and often religious leader of countries with Islam as their official religion (Cavendish, 2006). Economically, Saudi hosts much of the Arabic Middle East's crude oil producing, petrochemical and industrial infrastructure (U.S. Energy Information Administration, 2014). Saudi is also characterised by strong financial reserves that allow it to invest simultaneously in multiple dimensions of its society (International Monetary Fund, 2015)

Saudi, while very much a part of the Arabic and Islamic world, does exhibit various distinct cultural values and traditions, which in some circumstances may influence the adoption and ongoing use of the online space for retail commerce by Saudi businesses and consumers. E-commerce projects in the country have received considerable attention and support from senior levels of several ministries as well as the King in the past 10 years (Blanchard, 2015). Due to cultural traditions and values, the government has had to introduce the concept of e-commerce while exhibiting sensitivity to traditional cultural and religious values (Pearson Education, 2013)

This chapter is divided into two major sections. The first section is further sub-divided into five subsections. The first subsection is on culture, society and gender. The second is a country profile. The third is background on the political environment, and the last two sections relate to the judiciary and media respectively.

The second section of this chapter is divided into three subsections. The first subsection considers major government initiatives in support of the broad adoption of ICT and computer technology throughout Saudi society. Examples of such initiatives include the National Science, Technology and Innovation Plan (NSTIP) commenced in 200x and the National Communications and Information Technology Plan (NCITP) whose implementation commenced in 2007 (King Abdulaziz City for Science and Technology, 2002, MEP, 2010-2014). The second subsection

examines the present level of information technology in the kingdom with a particular emphasis on the current state of internet infrastructure and services.

The final subsection examines issues related to the broad acceptance of e-commerce as indicated by the shopping habits of the Saudi public. These issues are largely typical of the necessary and sufficient conditions for the widespread implementation and societal acceptance of e-commerce in all societies where e-commerce is becoming increasingly ubiquitous. The identified issues are:

- trust
- sufficient ICT infrastructure
- an effective and ubiquitous payment system
- and rapid, ubiquitous and effective systems of delivery.

2.1 Country profile: The Kingdom of Saudi Arabia

2.1.1 Founding

King Abdul-Aziz Al-Saud created the Kingdom of Saudi Arabia over 30 years ago and officially declared its establishment on 23 September 1932 six years prior to the discovery of crude oil in commercial quantities. Saudi Arabia, despite its wealth, is similar to other Middle Eastern states in that it is often categorised as a less developed country (LDC) or a developing country. Saudi Arabia is one of the five founding members of the Organization of the Petroleum Exporting Countries (OPEC) (OPEC, 1960 - 2015). OPEC states are often considered separately from other less developed countries due to the wealth available to the member states from their reserves of oil, particularly in times when OPEC has been able to exercise monopoly control on world oil markets (OPEC, 1960 - 2015). .

2.1.2 Oil wealth

Since oil revenues became a significant source of national income in the very late 1930s, Saudi Arabia has experienced rapid trade and industrial, demographic and social change (Wiseman, 2006). It can be argued that the pace of this change has increased in the last 45 years since the mid-1960s and that ICT and internet initiatives are driving that increase (Wiseman, 2006).

However, since 1938, Saudi Arabia has depended primarily on oil revenue for the bulk of its national and governmental income. As recently as 2003, it was considered that Saudi Arabia had

largely failed to diversify its economy (Infoplease, 2003). And, despite all efforts at economic diversification, in 2015, 90% of the national income was still derived from oil and petrochemical exports. Over the last 12 years there has been growth in income from petroleum product based sources.

2.1.3 Geographic location

The Kingdom of Saudi Arabia is at the crossways of Africa, Asia and Europe, geographically a potentially advantageous location for regional distribution hubs for e-commerce. Comprising four-fifths of the Arabian Peninsula, it is the most inhabited and largest of the six Gulf Cooperation Council states in the Middle East, with a size of almost 2,150,000 km square. It is bordered by Yemen to the south, Kuwait to the northeast, and Oman to the southeast. On the northern border are the countries of Iraq, Bahrain, Qatar, with the United Arab Emirates (UAE) to the east. Saudi Arabia is the only state to share equal amounts of Persian Bay and Red Ocean seashore, suggesting additional possible economic advantages for regional and, indeed, global distribution. From an e-commerce perspective the UAE is of particular interest as the UAE has the highest dollar volume of e-commerce at the retail level in the Middle East.

Considerably more than half of Saudi Arabia is covered by the Arabian Desert, which includes the *Rub'al-Khali* or *Empty Quarter*. The climate is hot and dry, but characterised by sudden drops in temperature at night. Saudi Arabia contains no freshwater lakes or rivers, and must rely on surface water or aquifers where feasible and on recycled water and on industrial scale de-salinisation elsewhere. It is of note that while energy-intensive to produce, Saudi Arabia is the world's largest producer of de-salinised water which provides over 70% of water for the Kingdom's cities and a large portion of industry's needs (Saudi Embassy Washington DC, 2006c) .

2.1.4 Demographic profile

2.1.4.1 Population

In 2012, Saudi Arabia had a total estimated population of 28.29 million (The World Bank Group, 2014b) (Table 2.1). Approximately 8 million were foreign workers with no permanent residency rights (Arab News, 2013). The growth rate of the total population between 2009 and 2012 was 5.56% and the population density was 13 people/sq km. Moreover, the gross enrolment rate in

primary education in 2012 reached 103%, including both over-age and under-age students (gross enrolment rate can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition) (The World Bank Group, 2012).

Table 2.1 Population size of Saudi Arabia, recorded by gender, 1985-2020

Year	Male	Female	Total
1985	7 281	5 993	13 274
1990	9 073	7 133	16 206
1995	10 377	8 191	18 567
2000	10 834	9 311	20 145
2005	13 762	10 928	24 690
2010	15 392	11 866	27 258
2015*	17 407	12 490	29 898
2020*	19 326	13 015	32 341

(Source: United Nations, World Population Prospects: the 2012 Revision, available on: http://esa.un.org/unpd/wpp/unpp/panel_indicators.htm)

*Projections (medium variant)

The overall population is not only increasing but there has also been considerable change in the ratio of rural to urban population in Saudi Arabia over the last several decades. Table 2.2 illustrates the ratio of urban to rural population over time. The growth of urban population indicates the people are more living in urban areas, where technologies are more accessible. E-commerce needed the internet facilities and these facilities are widely available in urban areas than rural areas (Visser and Lanzendorf, 2004) .

Table 2.2 Urban and rural population in Saudi Arabia, 1985-2020

Year	Rural population (thousands)	Urban population (thousands)	Total population (thousands)	Percentage urban (%)	Percentage rural (%)
1985	3 616	9 604	13 220	72.6	27.4
1990	3 779	12 360	16 139	76.6	23.4
1995	3 944	14 548	18 492	78.7	21.3
2000	4 040	16 006	20 045	79.8	20.2
2005	4 573	19 468	24 041	81.0	19.0
2010	4 918	22 530	27 448	82.1	17.9
2015*	5 157	25 381	30 538	83.1	16.9
2020*	5 346	28 189	33 535	84.1	15.9

(Source : United Nations, World Poppulation Prospects: the 2012 Revision, available on: http://esa.un.org/unup/unup/index_panel1.html)

*Projections (medium variant)

2.1.4.2 Age distribution

Saudi Arabia has a very high population under 25 years (47% of the population being under the age of 25), as demonstrated in Table 2.3 (Central Intelligence Agency [CIA], 2013), with a median age of 25.3 years (both for male and female). Thus, nearly half the population of Saudi Arabia is under the age of 25.

Table 2.3 The age structure of Saudi Arabia in 2013 (Central Intelligence Agency, 2013)

Age	Percent of population
Under 14	27.6%
15-24	19.3%
25-54	45.4%
55-64	4.5%
Over 65	3.2%

2.1.4.3 Gender distribution

The gender distribution in Saudi Arabia shows that males dominate the population (Table 2.4). From 1985 to 2010, the majority (more than half) of the total population was male, and the average male-female ratio was 1.21 in 2014. However, as shown in Table 2.4, the ratio of males to females will be higher in coming years.

Table 2.4 Saudi Arabia population size by gender, 1985-2020

Year	Male	Female	Total
1985	7 281	5 993	13 274
1990	9 073	7 133	16 206
1995	10 377	8 191	18 567
2000	10 834	9 311	20 145
2005	13 762	10 928	24 690
2010	15 392	11 866	27 258
2015*	17 407	12 490	29 898
2020*	19 326	13 015	32 341

(Basis: U.N, Worlds Population Scenarios: the Revision of 2012)
*Estimates (average variation)
Population Considered by Gender and Nationality Saudi Arabia 2015

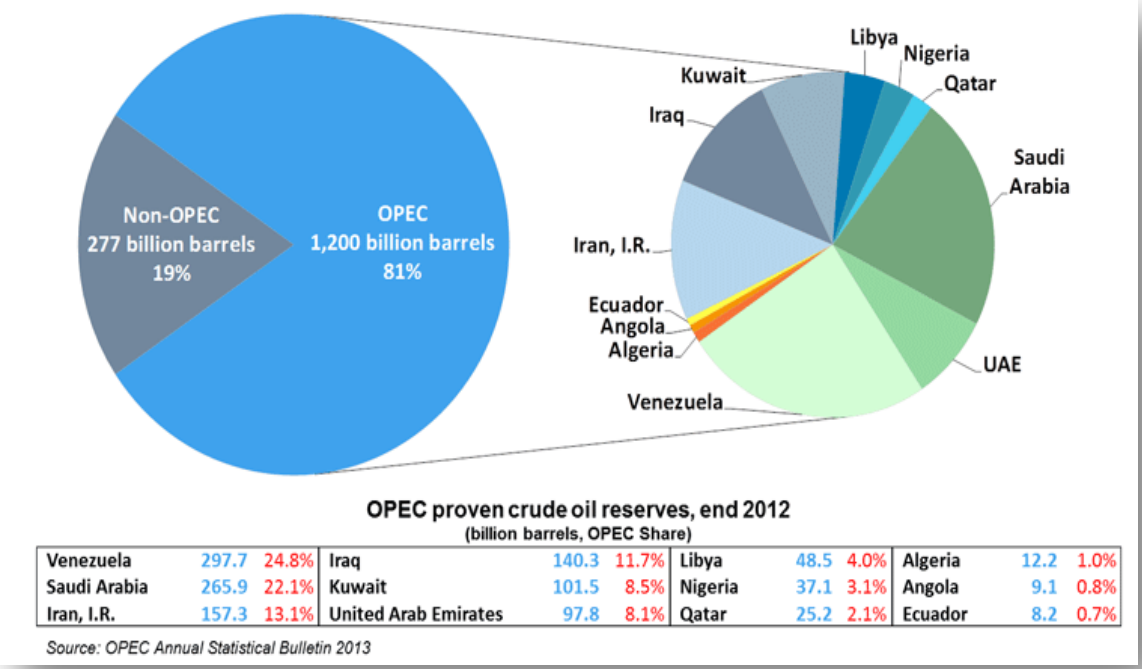
It is noteworthy in interpreting total population and gender statistics that in 2015 non-Saudi residents in Saudi Arabia consisted of 3,079,936 females and 6,643,278 males, whereas Saudi nationals amounted to 10,090,040 females and 10,181,018 males. Thus, the gender balance of the expatriate workers skew the overall gender population statistics (Sawa World, 2015). The bulk of these expatriate workers are of South Asian ancestry, being largely Indians, Pakistanis, and Bangladeshis (MEI, 2010).

With nearly all young children enrolled in primary education, more nuclear families, extensive education of females, and increasing numbers of women working outside the home, very slow but measurable political liberalisation for women has provided fuel for the acceptance of an e-shopping system. With a population in which nearly half the individuals are under the age of 25, and enjoy solid post-secondary education facilities, many basic cultural and population factors are aligned with positive outcomes for e-commerce uptake and adoption.

2.1.5 Economic profile

Saudi Arabia has an economy that has exhibited both stability and growth in the years in which the international price of oil has been relatively high, and has striven to maintain an environment conducive to commerce and business. The result has been sound economic growth, although at a slower pace after the international price of oil collapsed in 2014 (Callen et al., 2014). Due to Saudi Arabia‘s tremendous financial reserves, it has been able to continue both social programs and its many modernisation initiatives since the price collapse. This capacity has contributed greatly to continued stability and GDP growth, as well as to economic diversification (Callen et al., 2014).

Oil was first discovered in commercial quantities in 1938 in Dhahran, and the Saudi oilfields proved to be the largest crude oil reserves in the world for many decades and are still the world’s second largest (Figure 2.1). Large reserves of high quality crude and low costs of extraction, as well as very low domestic demand due to its small population, have allowed Saudi Arabia to enjoy the status of the world’s largest oil-exporting country most years and one of the 20 largest economies in the world. Saudi production capacity is between 10 million and 11 million barrels per day.



OPEC proven crude oil reserves, end 2012
(billion barrels, OPEC Share)

Venezuela	297.7	24.8%	Iraq	140.3	11.7%	Libya	48.5	4.0%	Algeria	12.2	1.0%
Saudi Arabia	265.9	22.1%	Kuwait	101.5	8.5%	Nigeria	37.1	3.1%	Angola	9.1	0.8%
Iran, I.R.	157.3	13.1%	United Arab Emirates	97.8	8.1%	Qatar	25.2	2.1%	Ecuador	8.2	0.7%

Source: OPEC Annual Statistical Bulletin 2013

Figure 2.1 OPEC proven crude oil reserves, end 2012

Saudi Arabia's high production capacity in times past often allowed the country to dominate OPEC and control oil prices on the market by being OPEC's swing producer. However, in late 2014 and continuing in 2015, the Kingdom abandoned its role of swing producer and has been pumping at high rates (Chen et al., 2015). This high production has been in an attempt to drive American hydraulic fracturing oil extraction companies out of the market in order to stabilise and ultimately raise prices (Follett, 2015).

To date this initiative has met with no success[1] and major analysts such as RBC are predicting international benchmark prices could hover in the mid-US$20 range in 2016 (RBC, 2014). As of 2015, nearly 75% of government revenues still depended on the export of oil, which formed more than 90% of the kingdom's exports (OPEC, 2013, Central Intelligence Agency, 2015).

[1] American 'fracking' companies are small, numerous and highly competitive. Much of this competition takes the form of initiatives to drive down exploration and especially production costs. Saudi actions have merely enhanced this phenomenon and fracking production costs declined 20% in 2014-15. As of late November 2015 there were 2 more productions rigs in operation in the US than the year prior despite price pressures. This also tends to suggest that cost structures in the US industry are continuing to evolve and the world may see a relatively prolonged period of low crude oil prices.

Saudi Arabia's largest industries revolve around the production and downstream processing of oil and include unrefined oil production, petroleum purifying, ammonia production, simple petrochemicals, sodium hydroxide (caustic soda), manufacturing gases, plastics, and fertiliser. Beyond petrochemical related production Saudi Arabia produces cement and metals. Major service industries are construction, commercial aircraft repair, and commercial ship repair. In light of the heavy concentration on oil production and the petrochemicals sector, Saudi rulers continue to attempt to diversify the economy (Allurentis Limited, 2014).

According to the World Bank, as recently as 2012, Saudi Arabia was the strongest of the Arab economies. Between 2010-2012, the country averaged a 7.6% growth in gross domestic product (GDP), continuing an upward trend in GDP growth, which increased again in 2013 by 1.5% to reach $745.3 billion GDP in the 2013 financial year (The World Bank Group, 2014a). GDP through 2013 and prior to the collapse in international oil prices was 5.13% per annum (Figure 2.2).

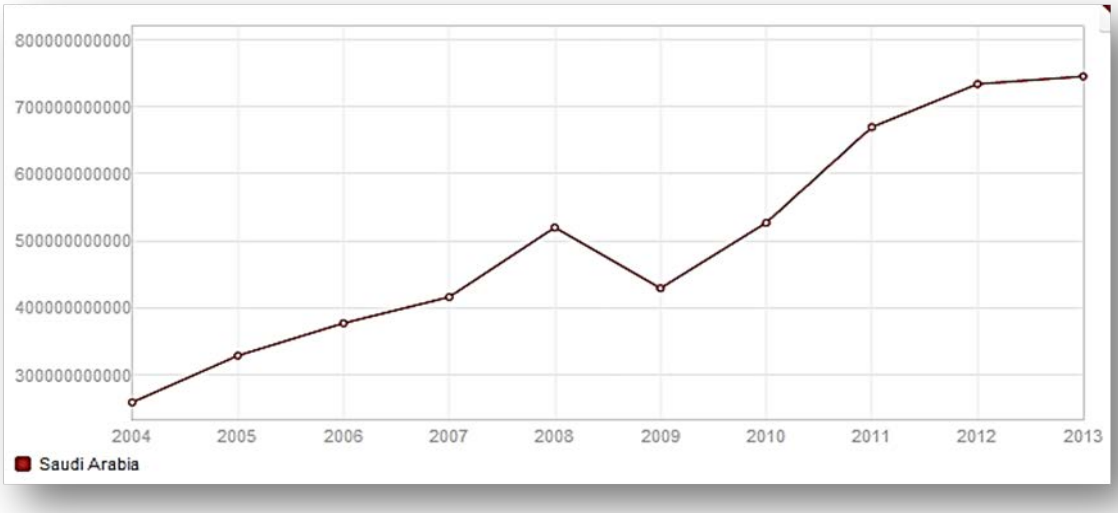


Figure 2.2 Graph of Saudi Arabia's GDP growth from 2004 to 2013

GDP growth fell to 3.6% overall in 2014 with intra-year quarter on quarter declines finishing with a fourth quarter at 2% (Reuters, 2015). In 2015 estimates suggest approximately 3.4% year over year GDP growth with solid performance in the non-oil sector. Available estimates for 2016 made in mid-2015 suggest an estimated 3% growth rate in 2016, however, substantial further softening of oil prices must make all current GDP estimates for Saudi out-years suspect and

potentially on the high side (SAMA, 2015). Overall GDP would surely have effect on investment decision in different sectors, among them investment on e-commerce development would also be related to GDP.

Therefore, traditionally, the Saudi government has been careful about investing the surplus revenue from oil production and from its economic growth and has had a long-term policy of attempting to both encourage the non-oil sector and to find an efficient balance between the oil and non-oil sectors of its economy (Waft et al., 2015).

2.2 Culture, society and gender

2.2.1 Cultural and ethnographic background

Unlike some Middle Eastern countries (e.g. Jordan or Lebanon), Saudi Arabia is culturally and ethnically very homogeneous. Native Saudis are Arab Semites. However, centuries of trade have brought genes from both the Indian sub-continent and Africa into the base population (Wilson, 1994). Divisions within Saudi society revolve around religious interpretation, Sunni versus Shi'a interpretations of Islam, and the tensions between the four major tribal regions that make up Saudi Arabia. Regardless of internal tensions, and in some cases because of them, the government has ensured that the whole country has benefited from its efforts to modernise and update the country's infrastructure and even household attitudes and practices related to computing and ICT.

2.2.2 Islamic religious culture

As the birthplace of Islam, the country contains two of the religion's holiest sites, Mecca and Medina. The government as the steward of the cradle of Islam, has utilised this stewardship as justification for a law that no religious practice with the exception of Islamic practice is allowed publicly. Law and jurisprudence are based on the *Shari'a* (Islamic law). Islamic religious practice in Saudi Arabia is austere and traditional within the context of Islam (Cavendish, 2006). Culturally, the country is based on tribal and Islamic values. Islam is the religion of nearly all Saudis, the vast majority of which are Sunni with a small minority *Shari'a* (approximately five to six hundred thousand in the mid-90s (Wilson, 1994).

Saudi Arabia faces a unique religious challenge to modernisation in terms of the religious concept of *bida*, which is one of the central tenets of the austere form of Islam practised by Saudis. *Bida* is a religious proscription against innovation and is a cultural and religious concept that creates social and political tension in Saudi Arabia's drive towards technical modernisation. Thus, religious customs create issues that the government must treat with great sensitivity if technological modernisation including internet use and e-commerce are to move forward. And the cultural concepts influencing the issues of technology adoption, such as trust in the technology or the perception of the benefits of using new technology, are widely challenged by religious tenets (Gibbs et al., 2003, Baker et al., 2007) .

2.2.3 Family

In Saudi society, family is of the utmost importance, and the family structure is strongly patriarchal and traditional. In practice this has meant that females received no formal education and that males controlled all aspects of a family's economic decisions, as well as the disbursement of all monies received. Relationships both within the family and in terms of legal responsibilities were and are defined by Shari'a (Cavendish, 2006).

Marriages have been traditionally arranged with no meeting between bride and groom prior to the wedding. This practice is changing slowly with parents doing the arranging of marriages in the background and potential spouses (usually still cousins) being allowed to meet prior to marriage. Many marriages now result in Western style nuclear families with a somewhat more even division of family tasks and responsibilities, and the education of women means there are now many women in Saudi Arabia with the education to be equal co-partners in family and modern life. Divorce rates are high as divorce is easy for men under Islamic law and the stresses of social change have taken a toll on the traditional patterns within the institution of marriage as understood in the Arabian Peninsula (Cavendish, 2006).

In terms of importance to e-commerce and e-shopping, six key factors stand out in relation to social and cultural .norms:

Even today women often do not have a real say in family expenditures and may or may not have a separate household budget to administer despite being kept in the home in most cases. This has implications for who will do the shopping online or if they will shop online.

Family structure is a feature of culture, it is the fact that many more women are living in nuclear families and the more even division of labour in such families mitigates towards them doing more of the shopping and buying as they are the family member most often at home. Furthermore, these women are legally unable to drive and must be accompanied by a male relative whenever they leave the home, so they are often isolated in the family home, encouraging them to use online facilities.

Women are far more educated than previous generations, giving them the basic intellectual skills to adapt to the internet and e-commerce as easily as men.

Women have found that the internet allows for much better communications both woman to woman and between women in various fora despite being at home. An excellent example of such a forum is Hawaa World with more than 1.34 million members as of December 2015 [hawaaworld.com]. This communication in turn means there is a social driver to get them online in the first place and implicit support in all-female fora for trying out online shopping.

Increasing numbers of women, particularly educated women are finding ways to work outside of the home and are exposed to modern technology in the workplace (Baker et al., 2007) .

2.2.4 Gender roles in Saudi society today

2.2.4.1 Males

As the head of the household, the male is responsible for nearly all duties that are generally found outside the home. Unlike in most of the world, this also means that men must escort female relatives, including wives, should they wish to go out for any reason (Cavendish, 2006). Essentially, legally, culturally- religiously even today men have nearly all the authority and rights in relationships

2.2.4.2 Females

Females under 45 years of age are very circumscribed legally and socially in what they are allowed to do. For example, they may need their guardian's (a father, husband, brother or son) permission to divorce, to marry, be employed, vote, travel, be educated or open a bank account. However, since 2008 women have been allowed to apply for their own civil identification cards, a first step towards having legal identities and rights separate from their (mandatory) male guardians and over-45 year old women have some additional, limited rights (Kelly and Breslin, 2010).

Examples of social restrictions that hamper women's mobility and which may encourage e-commerce adoption include the fact that women are technically forbidden to use public transport, have only partial accessibility to train and bus facilities, where they must use a separate entry and be seated in a section of a bus set aside only for females (Baki, 2004) and the fact of drivers licences for women are forbidden, an effective driving ban (Rajkhan, 2014).

Gender separation is strictly maintained in the community as witnessed by girls' schools, female universities, separation at shopping centres, at bank branches and in some hospital departments (Andersson and Togelius, 2011) .

The previous King, King Abdullah took the part of women in civil society seriously and he both appointed 30 women to his Shura Council, the country's top advisory council and changed the law such that women could vote in elections for the first time. It must be noted, however, that there have been only three elections in Saudi Arabia 's history. The most recent in December 2015 for municipal councils. The election was historic in that women were respectively both voters and candidates for the first time (BBC, 2015).

2.3 Political environment

2.3.1 House of ibn Saud

Saudi Arabia is a hereditary monarchy headed since its founding by a King. The King is also at the top of the judicial system, which is based on *Shari'ah* [Islamic law], and commander-in-chief of the military. Current Saudi Basic Law (decreed 1992) specifies that the king must be chosen from among the 45 sons of the first king, Abdul Aziz Al Saud, conceived during his reign from 14 August 1932 to 9 November 1953 (Koppel et al., 2015). Due to the advancing age of those

sons still alive, changes to this provision of the Basic Law may have to be made in coming years. In light of the young average age of many of Saudi Arabia's population and the prospect of moving to another, younger, generation of the House of ibn Saud as a pool of future candidates for King this must broadly be construed as a positive for online ventures and further technological and social change (Chatham House Organization, 2011).

2.3.2 The Council of Ministers

The Ministries Council is an appointive body consisting of 22 ministers with portfolios and seven ministers of state and the King. Ministers serve at the discretion of the King and advise him on issues that confront the country. The council meets weekly and is chaired by the King (Saudi Embassy Washington DC, 2006b).

2.3.3 The legislative branch

Royal decrees promulgated as regulations form the basis of the country's legislation as there is no written constitution. There is no distinction between church and state in the *Qur'an* and the *Qur'an* is authoritative. Hence, the *Qur'an* and the Sunnah (the Prophet Mohammed's (PBUH) traditions) by declaration in 1992, and in practice, may be regarded as Saudi Arabia's constitution. Both are open to interpretation by the *ulema* (ie Islamic religious scholars) and these interpretations are of considerable practical importance as, uniquely, Saudi Arabia is the only country in the world where *Shari'ah* law is not only in effect but has not been codified.

This lack of codification creates conditions of uncertainty as to the extent of the law and of legislation. A codification has been promised since 2010 but has not yet been announced. Law, or rather regulations, implemented by Royal decree govern most areas of jurisprudence that can be considered 'modern.' Thus, issues related to such modern areas of judicial concern as intellectual property law, corporate law are governed by regulations. The positive aspect of this is that regulations covering corporate governance and the internet are usually modern and progressive which is a positive for e-commerce. However, the susceptibility of the law to the unpredictable interpretation of religious scholars trained in medieval Islamic religious law creates an area of uncertainty and, hence, risk, for e-commerce and many other initiatives relying on technology in Saudi Arabia. (Saudi Embassy Washington DC, 2006a, Ansary, 2008)

2.3.4 The Consultative Assembly

The Consultative Assembly is also referred to as the Majlis as-Shura or Shura Council. It advises the king in relation to laws and amendments, and is able to put forward new draft laws for the King's consideration. The members of the assembly are appointed by the king for a term of four years (Majlis Al-Shura, 2014). The assembly consists of 150 members, who are divided into 12 committees (Majlis Al-Shura, 2014):

- Judicial and Islamic Affairs
- Youth, Family and Social Affairs
- Energy and Economic Affairs
- Safety Affairs
- Scientific Research and Educational Affairs
- Informational and Cultural Affairs
- Foreign Affairs
- Environmental and Health Affairs
- Economic Affairs
- Information Technology, Communications and Transportation
- Water and Public Services and Facilities
- Human Resources Administration
- Petitions and Human Rights

2.3.5 The judiciary

The judicial system in Saudi Arabia is founded upon the principles of Islam. Thus, it is based upon *Shari'ah* (Islamic Law) as provided in the *Qur'an*, secondarily in the Sunnah and thirdly as informed by the *Ijma'* and finally with reference to *Qias* or analogy. There is no distinction betweeen religious and secular matters and *Shari-ah* covers all aspects of life. Judges must not only be of proven good character but also trained in Islamic law. To ensure this, Saudi Arabia has established relevant *Shari'ah* colleges for legal professionals and a dedicated Judicial Academy to train judges. The court system is hierarchical, as in common law jurisprudence countries, and there are also specialist courts. In addition, there is a parallel system of administrative courts. The final court of appeal is the King (Ansary, 2008).

2.3.6 The regional structure of politics

In 1992, King Fahad introduced a new regional assembly structure that divided the country into 13 provinces for the purpose of territorial administration (Figure 2.3). Each province was to be administered by a governor, deputy governor and a council who would work together to govern and develop specific regions.

Figure 2.3 Diagram of 13 provinces of Saudi Arabia

2.4 Internet history and usage: Saudi Arabia

Despite the fact that *bida* (prohibition of innovation) is a provision of Islam as practised in Saudi Arabia and despite Saudi being a deeply religious country, it has adopted many modern information technology practices. The government, in order to further technological modernisation, has been sensitive to the religious dimension of change. As long ago as the early 2000s the government was working 'to reassure private and public groups that more ICT. would '.be beneficial to the kingdom and should be embraced' (Sait et al., 2003).

The internet was introduced in Saudi Arabia in 1997 (Alzoman, 2002) and initial availability was launched at Saudi Arabia's universities and select government agencies in February 1999 (Al-

Tawil, 2001). From its modest inception in Saudi Arabia, internet use has expanded dramatically. For example, the number of users has increased steadily, from one million (5% of the population) in 2001 to 16.5 million (55%) at the end of 2013 (CITC, 2013). The CITC has stated that this quick uptake of the internet in Saudi Arabia has been evidenced by the growth in broadband availability, increased public awareness, growth in the use of internet enabled handheld devices and decreasing costs of personal computers and laptops, increased consumer ICT literacy, growth in internet access, growth in availability of local content and the perception of the increasing value to individuals in the use of the internet, particularly as witnessed by the growth in e-services (internet banking, electronic commerce, and e-management) and Arabic language sites.

Government in Saudi Arabia is intensely authoritarian and ubiquitous. However, the country's development and economic growth has placed it among the richest countries in the world. Business Monitor International (BMI) states that government support will ensure that the kingdom remains the biggest market for information technology inside the Bay area (Business Monitor International, 2014). This; in turn suggests that the prospects are very good for the implementation of advanced, high internet bandwidth applications and further adoption of internet based technologies. This commitment also bodes well for the prospects of Saudi Arabia becoming a regional hub for internet based activities and distribution. All these would help to improve the e-commerce infrastructure and would make it more accessible to the whole population.

2.4.1 Government initiatives in support of computing, ICT and internet

The government of Saudi Arabia has been broadly in favour of massive modernisation programs for the Kingdom since the reign of King Faisal which started in 1964 (William. L. Ochsenwald, 2015). Science and technology initiatives in support of such modernisation are typified by the chartering of the King Abdulaziz City for Science and Technology in 1986 with a mandate to: 'propose a national policy for the development of science and technology and to devise on the strategy and plans necessary to implement them'.(King Abdulaziz City for Science and Technology, 2002).

In the three decades since the establishment of King Abdulaziz City it has become increasingly clear that any continuing plans to modernise the Kingdom must include strong support for ICT

infrastructure in order to support world class industries. This has resulted in various efforts on the part of Saudi Arabia to upgrade their ICT infrastructure. In 2001 a long-term (2001-2010) general strategy for technology and science was launched supported by the King Abdul-Aziz City for Technology and Science (KACST) in association with the Government of Economy and Planning.

In 2003, Saudi Arabia established a dedicated Ministry of Communications and Information Technology (MCIT) (CITC, 2005), and continued to take the internet increasingly seriously in the year following, launching, for example, an e-Government initiative in 2005. By 2014 that initiative was so successful that seven different government ministries won international awards for their online services (MCIT, 2014b). Other initiatives launched in the same era include a non-subscription based dial-up service, *EasyNet*, launched in 2005 to enhance internet access to an e-Awards program (CITC, 2005).

2.4.2 Innovation, national and science technology program.

One fundamental effort to rapidly transform Saudi society and enhance the mass adoption of both modern computing technologies in the home was the Home PC Initiative, which was launched in 2005 by the CITC. This program aimed to deliver one million PCs to Saudi homes over the span of four to five years at a monthly cost to the consumer of US$27 per computer. The goals of the project included fostering the transformation of the country into an information society, improving computer skills, increasing the number of internet users and reducing the social divide between ICT users non-users. The Home PC Initiative offered beginning PC users an economical set of hardware, software and online tools to help them develop both computer and online skills (Sindin, 2006). The set consisted of:

- an individual laptop or computer
- office applications, i.e. Excel and MS Word
- a software set aligned with domestic such as educational and Islamic religious materials.
- a program of training in the use of PC applications (offered at a small cost)
- option of paying for the PC package by instalment
- provision of a technical support number.

In 2007 the new MCIT gained Council of Ministers approval for a new National Communications and Information Technology Plan (*NCITP*) (MCIT, 2013). This was a 20 year meta-level plan for the ICT future of the whole Saudi Arabia. The overall plan relied on individual five year plans to move the overall vision forward (Figure 2.4).

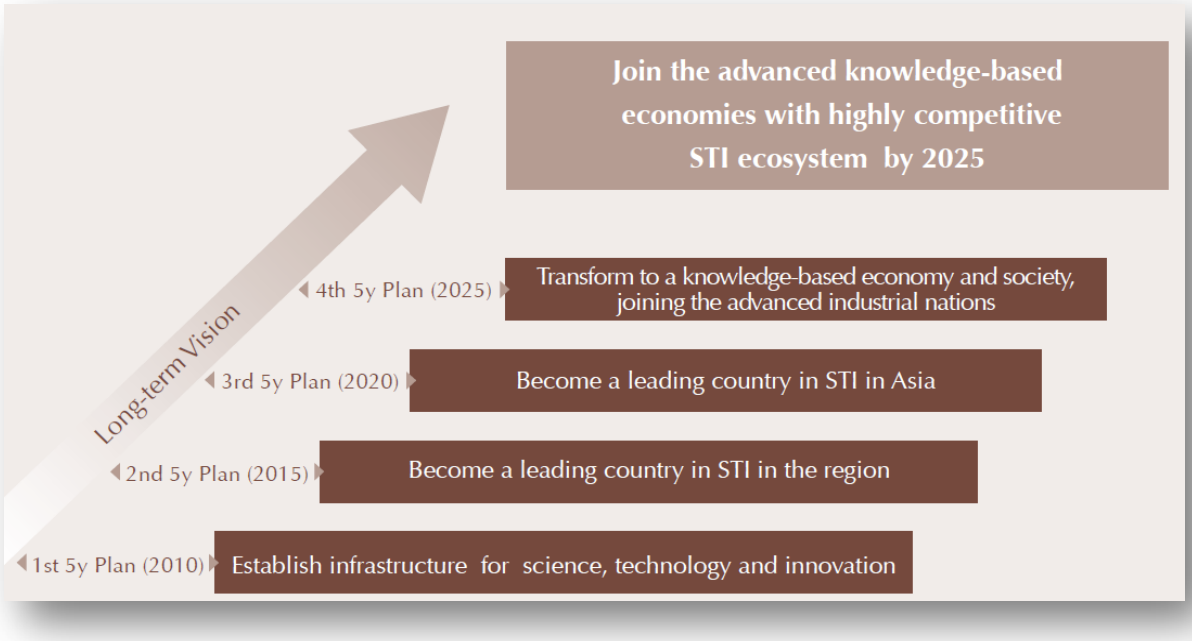


Figure 2.4 **Innovation, National and Science Technology Program in Saudi Arabia (King Abdulaziz City for Science and Technology, 2002)**

2.4.3 Technology, ICT - eInitiatives

There are still considerable gaps within and between developed and developing countries in terms of applying ICT, but there has been a widespread adoption of the internet and ready access to e-commerce for those who want to use it.

The gap between digital users and non-users has been referred to as the *digital divide*. In the Arab Middle East the United Arab Emirates (UAE) is one country that has clearly crossed that divide to first world status (see Table 2.5). LDC's, even those with high national incomes, such as Kuwait and Saudi Arabia, not only have lower levels of usage than places such as Singapore, Canada or the UAE but also show considerable differences between each other and less wealthy LDCs. Saudi Arabia has much higher e-commerce activity than very wealthy Kuwait. Egypt, a much less wealthy Middle Eastern Arabic country, did nearly as well on e-commerce by dollar volume in 2014 as Saudi Arabia. Other Middle Eastern countries tend to have little dollar volume in e-commerce sales.

Table 2.5 shows e-commerce results for Kuwait, Saudi Arabia and the United Arab Emirates in 2013. All three are Arabic Middle Eastern oil producers and all three are high-income countries by World Bank standards. The UAE stands out as broadly comparable to the first world comparison countries. Kuwait has the next most deployed ICT infrastructure per capita and Saudi Arabia comes third, in terms of ICT access and use. However, it must be noted that compact Kuwait is much less difficult to provision with high quality ICT infrastructure than sprawling Saudi Arabia (Table 2.5).

Table 2.5 Digital divide between developed and developing countries (The World Bank Group, 2013)

	Developing Countries					**Digital Divide**	**Developed Countries**		
	Bangla.	*India*	*Kuwait*	*UAE*	*Saudi*		*Can.*	*Aus.*	*USA*
Income group category	Low	Lower	High	High	High		High	High	High
Population (millions)	161.08	1205.07	2.64	8.26	26.53		34.3	22.01	313.8
Internet users (% population)	6.5	15.1	75.5	88	60.5		85.5	83.0	84.2
Secure internet servers	1	4	185	194	34		1,035	1,252	1,306
Personal computers per 100 population	6.5	15.1	75.5	88.0	60.5		85.8	83.0	84.2
Main telephone lines per 100 population	1	2	15	22	16		50	44	42
Fixed broadband internet subscribers per 100 people	0.63	1.16	1.40	11.11	7.33		33.28	25.01	28.54
Mobile cellular subscriptions per 100 population	67	71	190	172	176		78	107	96

2.4.4 Assessment of current ICT

The CITC 2015 annual report indicated that Saudi Arabia continued as the Middle East's largest ICT market place. Overall ICT spending in 2014 totalled SAR 111.98 billion (approximately US$30 billion) up from SAR 21 billion in 2002. Saudi Arabia's ICT expenditure for FY 2014 included SAR 17.83 billion (approximately US$ 4.81 billion) comprised of direct ICT investments. Communications equipment totalled SAR 4.86 billion or 27% of Saudi Arabia 's capital investment in ICT in 2014 (CITC, 2015). As a high-income economy, Saudi Arabia has demonstrated long-term consistent commitment to improving ICT infrastructure with double digit growth rates in expenditure year to year since 2002 (CITC, 2013b).

To date Saudi Arabia has remained committed to infrastructure growth and its long term ICT plan. While oil prices have suffered drastic decreases, Saudi Arabia has the financial reserves to execute its plans and also relies on the economic growth generated by infrastructure construction; therefore in the medium term the prospects continue to improve for steadily better ICT infrastructure support for the internet and e-commerce in Saudi Arabia. Infrastructure build-out also suggests that Saudi Arabia has the potential to participate in a much larger ICT regional market. E-commerce services offer considerable opportunities to government, businesses, citizens and foreign investors in Saudi Arabia.

2.5 E-commerce in Saudi Arabia

2.5.1 Emergence of e-commerce

E-commerce relies on the internet. The internet, in turn, relies on solid ICT infrastructure from the servers which connect the internet to the end consumer. The preceding requires a regulatory regime that is appropriate and stable and a political system that is welcoming. By the time Saudi Arabia started to think of implementing internet access it was already clear from experience in the West that the internet truly was going to drive yet another Schumpeterian revolution. Saudi Arabian planners already accustomed to thinking in terms of building infrastructure to put the country on a par with the best of the West were able to put their infrastructure planning knowledge to good use in terms of the requirements of layering the internet on top of the ICT infrastructure they were already building. Adding e-commerce on top of the internet was simply a logical additional step.

Electronic commerce in the kingdom commenced in the year 2001. A technical committee including commerce organisations, information and communication technologists with investment and support from Saudi Arabian Monetary Agency (SAMA) guided the establishment of the King Abdulaziz City for Science and Technology in which to locate e-commerce facilities (KACST) (Ministry of Commerce and Industry, 2001). In order to benefit from private sector input, an advisory team of experienced businessmen familiar with e-commerce offered guidance and created plans for supporting Saudi Arabia ‘s first e-commerce initiatives, with the intent of optimising the conditions needed to introduce and maintain e-commerce initiatives across both private and public sectors.

Issues that had to be addressed for e-commerce to be a success included ensuring adequate telecommunications connections to individual households, upgrading existing telecommunications infrastructure and changing thinking from analog to digital along with new ideas about speed and bandwidth. Beyond technical issues a system for providing proper addresses and delivering goods became urgent and a new regulatory framework had to be created and new bodies for oversight and to encourage adoption brought into being.

In2005, KACST relinquished responsibility for electronic commerce in the kingdom. Sense then it has been managed by the Organization of Information and Communications Technology (MCIT, 2003).

2.5.2 Means of delivery for e-commerce in Saudi Arabia

Fast and reliable delivery of online orders is a key factor for the success of e-commerce in any part of the world. In Saudi Arabia, Saudi Post is responsible for the delivery of mail items including parcels. However, there exists no adequate and efficient address system. Traditionally parcels and post were delivered private post office boxes, rather than the home. Saudi Arabian planners at Saudi Post realised that this would not be adequate for e-commerce, particularly in a society in which women could not leave the house without the escort of a male guardian.

As a result, in 2005, Saudi Post approved a project to deliver the five million mail items directly to customers' doorsteps instead of through private post office boxes. Although deliverers had a hard time finding the location of the recipients, Saudi Post's direct delivery experiment proved successful and Saudi Post gained valuable experience delivering post in a country with few addresses. The experience assisted the organisation in planning and implementing a larger scale roll-out of direct delivery. Issues included actually finding consumer addresses and handling quantities of cash in a country not accustomed to credit cards and unwilling to pay in advance for goods to be delivered.

In 2009, Saudi Post launched E-Mall 'to supply its consumers with goods of reliability and high quality, centred upon the communication value' (E-Mall). Online a person would now be able to buy from 70 stores in the E-Mall in either Arabic or English, which in 2013 provided over 5000 commodities (IORMA et al., 2013). According to the E-Mall website, they offer an integrated

online marketplace and ensure a complete delivery of the products to their users from different countries, professions, ages and cultures. The service has been integrating different online shop vendors and providing services from different geographical locations for various groups of people. In 2012, Saudi Arabian citizens spent SAR5 million (US$1.30 million on merchandise bought from E-Mall on the internet. While E-Mall touts the fact that it is the first e-mall in Saudi Arabia to sell in both Arabic and English, equally important has been the fact that it is giving a safe platform for smaller merchants while handling the still thorny issues of both payment and delivery.

In March 2013, the State Address Standard was established by Saudi Post to deliver clear, easy and customary addresses with the aim of supporting easy delivery to any given address without requiring knowledge of local landmarks or other less than reliable guides to location. In the new system the address will usually be a place determined by Saudi Post as appropriate for use by navigation technologies, which is obtainable online, and can be accessed by cars and telephones. The address-place is submitted to the geographical organisation structure, which will allow every region in the country to be coded and numbered and entire districts and cities recorded on maps with accompanying geographic facts (Saudi Post, 2014). Saudi Post is implementing the State Address Standard with a system of posting facilities and delivery service called WASEL using unique postal addresses provided through geographic information systems (GIS) (Saudi Post, 2014). When fully implemented e-commerce sellers will be able to deliver their orders to buyers directly, easily, and quickly. These and similar measures will support the establishment of an address verification system (AVS). This is of vital importance to e-commerce as AVS ensures that the billing address of the credit card being used for payment matches the address provided by the customer (Alfuraih, 2008).

2.5.3 E-commerce in Saudi Arabia today

The Arab Advisors Group (AAG), which advises on communications, media, technology and financial markets throughout the Arab World, conducted a survey at the end of 2013, targeting internet usage and e-commerce activities in Saudi Arabia. The study discovered that about 32% of adult users of the internet purchased goods and paid for facilities on the internet in that year (Arab Advisors Group, 2014a).

The group estimated that in 2013 the number of internet users in Saudi Arabia was about 3.70 million, or approximately 12% of the overall population. It was expected that they would purchase US$ 4.30 billion of goods and facilities (i.e. electricity and telephone bills) via electronic commerce (Arab Advisors Group, 2014b).

A possible bottleneck for the internet and e-commerce activities in Saudi Arabia is a lack of skilled human resources to build out and implement infrastructure and websites. However, this is being addressed. For example, the MENAP B2C e-Commerce Overview 2012 notes that Google has invested in the nation, concentrating on training designers, entrepreneurs and business leaders. Furthermore, the country has made great progress in putting e-services online and has developed a portal that authenticates the citizen's identity (numerical confirmation) and allows access to government services. Saudi management also provides open access to data, including reports and documents from government ministries, and collects community views via surveys, community blogs and consultations (IORMA et al., 2013).

2.5.4 E-commerce infrastructure

In the state of Saudi Arabia as elsewhere, the four most important components of e-commerce are: regulatory infrastructure, telecommunication network and internet infrastructure, payment mechanisms and delivery system(s)

2.5.4.1 Regulatory framework

Saudi Arabia has begun implementing proper e-commerce regulations. The Ministry of Commerce and Industry released a draft for a comprehensive e-commerce act in February 2015. This is the first e-commerce law in the region and another step towards becoming a regional e-commerce powerhouse (Payfort.com, 2015, MCI, 2015). The law brings Saudi Arabia into line with Western best practice and offers protection for consumers, registers merchants online, protects trademarks, clarifies allow content of advertisements, data security and adds protection for consumers related to deliveries. Fines for non-compliance can run up to SAR 1 million (US$270,000) (MCI, 2015).A further sign of the government's commitment to e-initiatives is the speed with which the government has gone online itself.

2.5.4.2 Telecommunication and internet networks

The telecommunications market in the Middle East has developed significantly in the last few years, and Saudi Arabia is outspending the rest of the region in deploying new ICT infrastructure. As a result of the robust economic growth in the last several years and the consequent ICT infrastructure expansion, as well as the increasing sophistication of consumers, Saudi Arabia is experiencing a rapid increase in the uptake of new technologies and adoption of new applications such as online shopping and e-commerce.

According to ICT indicator reports (MCIT, 2014a); the total number of mobile subscriptions reached around 50 million by the end of 2014, with a penetration rate of 165.1%. Prepaid subscriptions constitute the majority (over 86.5%) of all mobile subscriptions (Figure 2.5). However, in the Middle East most new online buyers are accessing the internet and hence, e-commerce sites from mobile devices. An examination of the mobile device numbers for Saudi Arabia, the Middle East leader in e-commerce volumes, in Table 2.5 illustrates the point neatly.

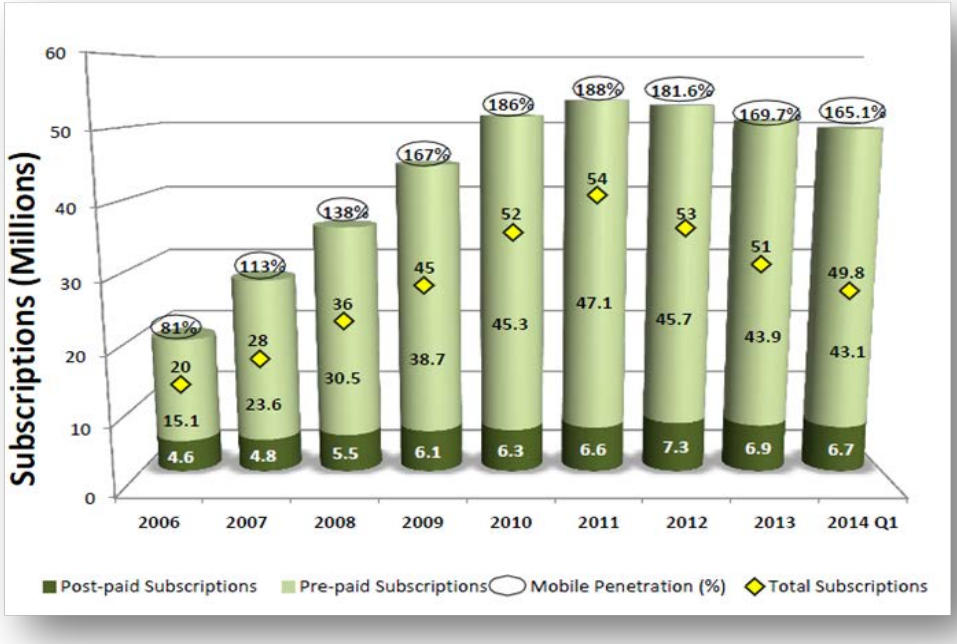


Figure 2.5 **Mobile service market growth, total subscriptions in Saudi Arabia (2006-March 2014) (MCIT, 2014a)**

Permanent phone lines reached 4.80 million at the end Mach of 2014, of which about 3.40 million or 71% remained domestic connections. The figures mean a household tele-density of about 64.80%. However, the number of individuals accessing personal phones is only 15.60% (Figure 2.6). This suggests that there is potential for further rapid growth in sales of mobile devices capable of accessing the internet.

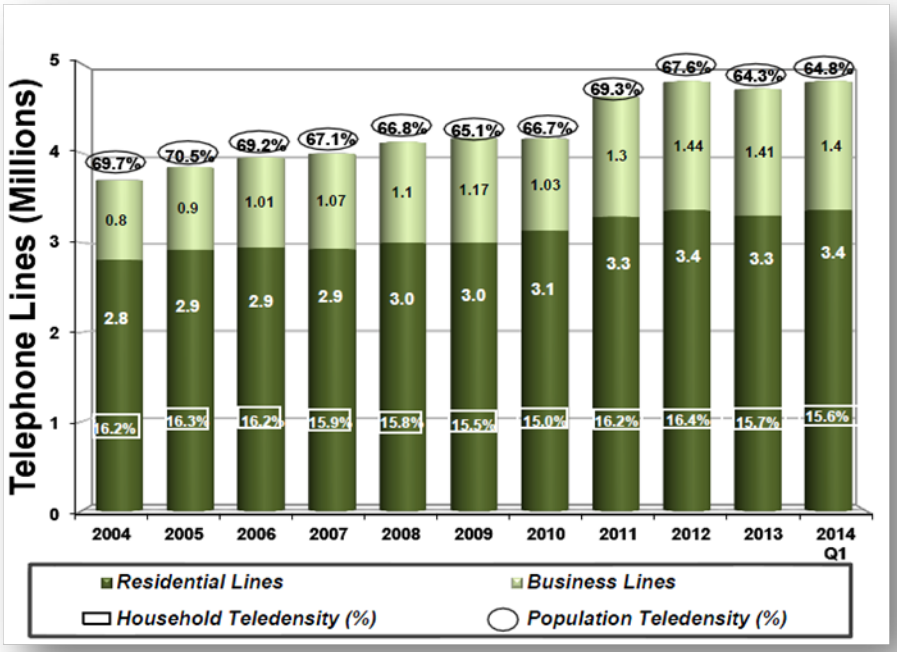


Figure 2.6 **Saudi Arabia Secure mobile marketplace development (2004-Mach 2014) (MCIT, 2014a)**

Subscriptions to permanent broadband containing fixed wireless (WiMax), DSL, FTTx and further stable connections had risen to 3.11 million by the end of March 2014. Around 46.30% of houses are now connected to the internet (Figure 2.7). This is a real achievement, as recently as 2005 the government announced EasyNet to get basic dial-up access to Saudi households. Only nine years later nearly half of households have broadband connections which provide the type of bandwidth that makes a modern e-commerce site feasible.

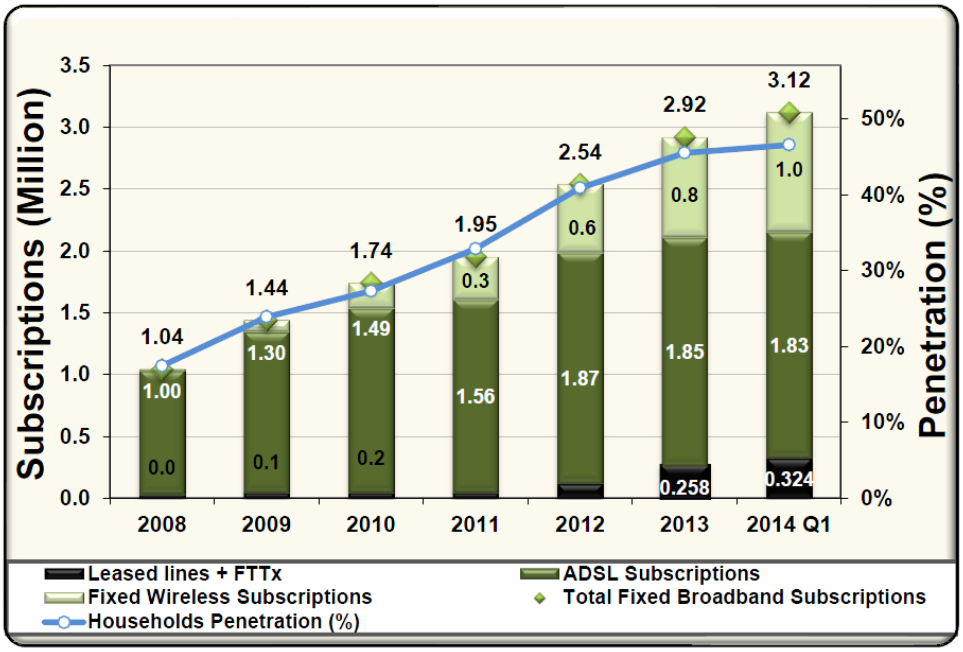


Figure 2.7 **Fixed broadband market evolution in Saudi Arabia (2008-Mach 2014) (MCIT, 2014a)**

The aggregate subscription figures of mobile phone and broadband connections continue to grow, and reached 20 million by the end of March 2014; signifying a broadband penetration of 66% (Figure 2.8). This rapid growth foreshadows rapid growth in the e-commerce market in 2015 and onwards. A broadband connection is required by a consumer in order to make e-commerce feasible.

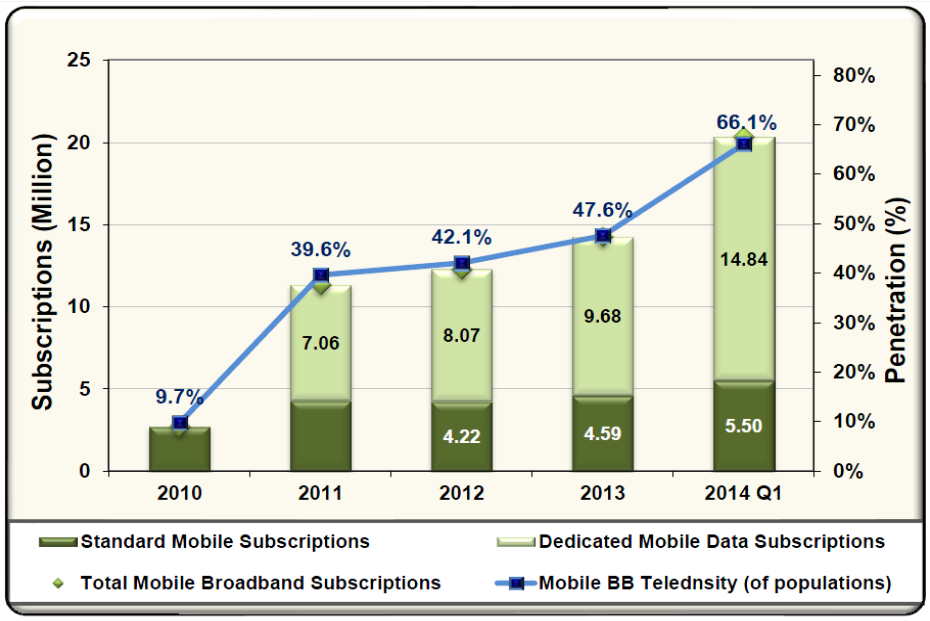


Figure 2.8 **Total mobile broadband subscriptions in Saudi Arabia (2010-Mach 2014) (MCIT, 2014a)**

The total number of users of the internet in Saudi Arabia continues to increase, reaching 18.10 million users at the end of March 2014, meaning that 58.8% (Figure 2.8) of Saudis use the internet. Given the rate of growth in infrastructure illustrated by the previous two tables and combined with internet penetration (Table 2.9), it is clear that further rapid growth is still possible in Saudi Arabia along with attendant increases in new first time buyers for e-commerce sites.

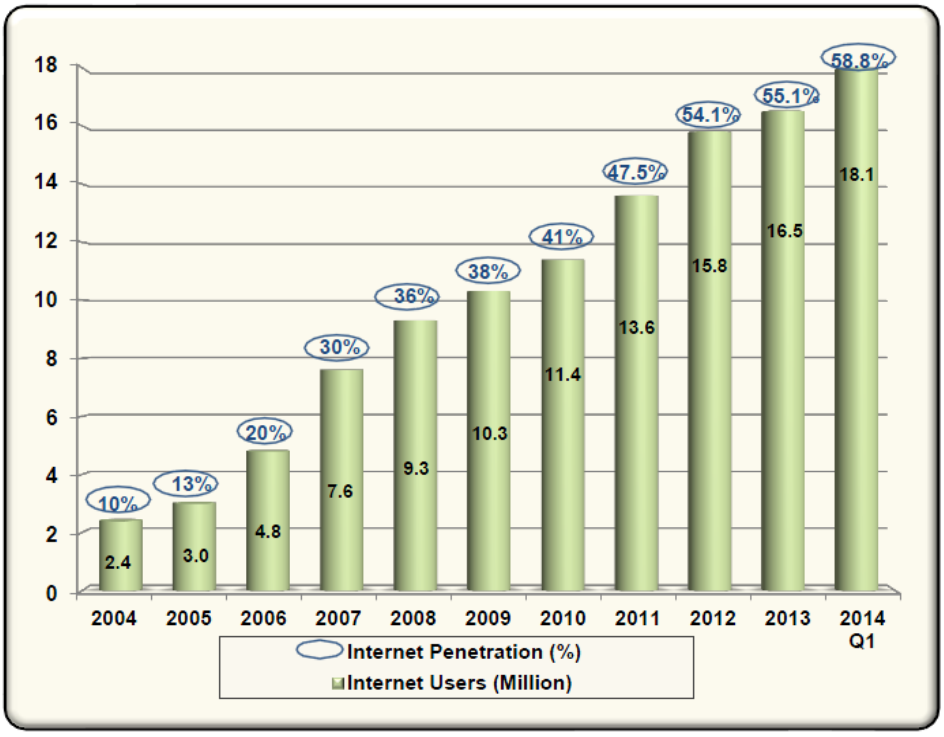


Figure 2.9 **Number of Internet users and internet penetration (2004 - March 2014) (MCIT, 2014a)**

Overall, the above indicators show that Saudi Arabia has considerable potential to benefit strongly from technological innovation and penetration, including e-commerce over the next several years. To illustrate this point, recent statistics show that e-commerce in Saudi Arabia grew in the first quarter of 2014 compared to the same period in 2013. It is noteworthy in light of the low base Saudi Arabia started from and the heavy investments in ICT particularly in the last 15 years that this rate was the highest rate for e-commerce uptake in the MENA region. The trend of internet users is upward expanding at an exponential rate. Expenditure in online transactions mostly went on commercial airlines, tourism organisations, fashion and retail and financial services, as well as general use in online shops (AMEinfo, 2014).

2.5.4.3 E-commerce payment mechanisms in Saudi Arabia

The ease of online payment plays a significant role in the development of e-commerce in any country (Kim et al., 2010). In 2004, SambaConnect (http://www.sambaconnect.com) was introduced as the first mechanism for online payment in Saudi Arabia (Alfuraih, 2008) by the Saudi American Bank (now Samba Financial Group). In the same year, the Saudi Arabian Monetary Agency (SAMA) established SADAD to provide a fundamental payment infrastructure for electronic transactions, bill presentment and collection to support the whole economy (all billers, payers and banks(Bank for International Settlements organisation, 2012).

This has been a significant development for the kingdom because it facilitates online commerce, including phone and online banking. Figure 2.10 shows how SADAD changed the payment system and links banks and other commercial sectors (Sadad Payment System).

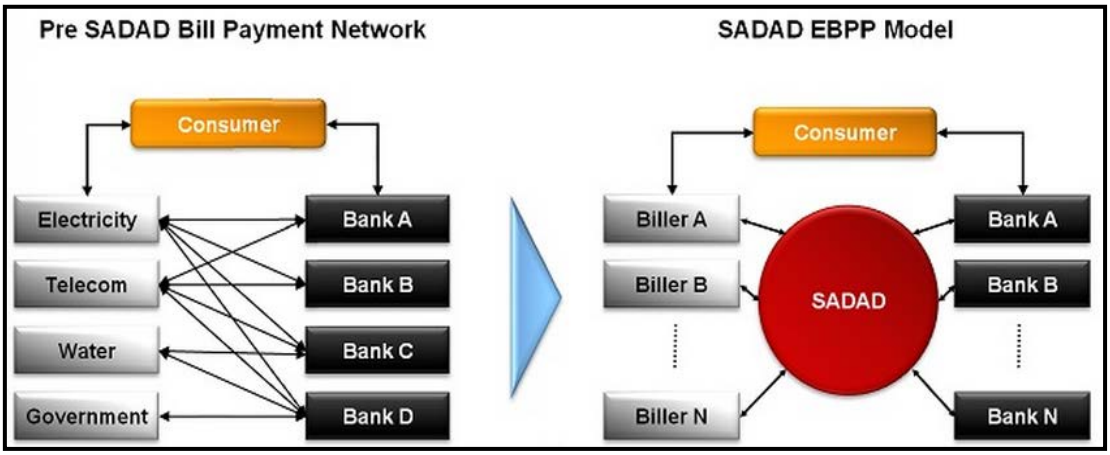


Figure 2.10 SADAD Payment System Model

In addition, from 2012, *PayPal* was launched in the Middle East by formal acceptance of a contract with Aramex, the largest courier company in the region, to support Aramex's online Ship and Shop portal and provide reliable shipping services into the Middle East and North Africa.

A report in *Arabian Business.com* quotes the regional managing director of *PayPal*, Elias Ghanem as saying: 'There are two major problems for people here who want to shop overseas; one is the credit card is not accepted and we've solved it by adding it to the PayPal account and the second problem is merchants around the world don't want to ship back to the Middle East. With this partnership consumers will have an address in the US where all of their goods can be

purchased and to which they can be shipped while Aramex ensures the goods are delivered to the purchaser in Saudi Arabia and the Middle East (Valdini, 2012).

PayPal's entry to the market is important to bring trust and credibility to payment systems with an international brand. Bélanger and Carter's (2008) study demonstrated that customer trust in online payments is extremely important for the successful adoption of e-commerce. It is anticipated that recent security measures and greater acceptability of online payments will increase public confidence in e-commerce in Saudi Arabia.

2.6 Summary

Chapter 2 described the context of the research; the Kingdom of Saudi Arabia. The chapter provided relevant background on religion, culture and gender in Saudi Arabian society today and provided insight into how e-commerce and the internet might be impacted positively or negatively by these key elements of the Saudi cultural matrix. The chapter also provided an overview of political and legal structures. In each section of this chapter specific note was taken of where existing social practices or institutions might support or hinder e-commerce.

The emergence of online technologies, their facilitation and uptake were examined, and it was found that e-commerce is being consistently encouraged by the government despite the presence of sensitive religious issues. Furthermore, specific issues such as deficits in ICT, computers and computer experience at the consumer level and internet connections to the home have all been the subject of government initiatives to address these identified constraints on internet and e-commerce growth. Incentives to implement e-commerce and to e-shop as well as barriers affecting e-commerce in Saudi Arabia were classified. These barriers were issues with trust and privacy, delivery and addressing issues, payment systems, ICT infrastructure and to some extent, culture.

Finally, Saudi Arabia based on its location, GDP and commitment to world class infrastructure may well develop the capacity to eventually become the main e-commerce centre in the Arab world.

The next chapter contains a review of the literature relevant to the research topic.

CHAPTER 3: LITERATURE REVIEW

This chapter contains a review of the literature relevant to the research topic. The chapter is divided into three main sections. The first section presents a definition of e-commerce and examines the state of e-commerce globally and specifically within the Middle East. The second main section identifies, compares, and contrasts main theories relevant to technology adoption. Theories relevant to internet technologies, information systems, and e-commerce are evaluated. The third and final section of this chapter identifies specific factors that affect technology adoption and discusses how those factors can influence technology adoption.

3.1 Understanding e-commerce

Ecommerce Foundation defined e-commerce as 'Any B2C contract regarding the sale of goods and/or services, fully or partly concluded by a technique for distance communication'(Fleischmann et al., 2014). In order to understand the scope and importance of e-commerce in today's global economy, it is first necessary to define e-commerce both from the perspective of general understanding within scholarly literature and also within the context of this research. Scholars have noted that many different definitions exist within the body of literature with regard to e-commerce (Abbasi, Sarlak, Ghorbani and Esfanjani, 2010). These definitions can encompass a wide range of activities, and an understanding of ecommerce can differ based on the perspective from which it is viewed. Kalakota and Whinston (1997) identified four different viewpoints from which e-commerce could be viewed, and these viewpoints in turn impact how e-commerce is defined.

- *Communicative viewpoint:*
  This viewpoint perceives e-commerce as a way to communicate and transfer information. From this perspective, e-commerce can be defined as the use of electronic devices to transfer products, services, information, or money.
- *Online viewpoint*:
  This viewpoint perceives e-commerce solely as commerce transactions occurring online. From this perspective e-commerce can be defined as the purchase or sale of products and services via the Internet.

- *Service viewpoint*:
  This viewpoint perceived e-commerce as a way to facilitate customer service. From this perspective, e-commerce can be defined as a method of decreasing costs and improving services to customers.
- *Commerce process viewpoint*:
  This viewpoint perceived e-commerce within the scope of business process management. From this perspective, e-commerce can be defined as a method to improve or optimise business processes.

While each viewpoint focuses on a unique and independent aspect of e-commerce, it may be more effective to view e-commerce from a more holistic standpoint. Berners-Lee et al. (1994) noted that e-commerce allows businesses to share information, undertake transactions across networks and computer platforms, and work together over geographic boundaries. This assessment of e-commerce encompasses all four of Kalakota and Whinston's (1997) viewpoints within the same definition. Additionally, Chaffey (2007) asserted that the concept of e-commerce should not be restricted to trading merchandise via the Internet, but should also include pre- and post-sale activities.

According to Abassi et al. (2010), the lack of consensus on a definition of e-commerce demonstrates that e-commerce should not be viewed from a strictly technical perspective. With this argument in mind, a more general definition of e-commerce has been chosen for the purpose of this research. Within this study, e-commerce has been generally defined as 'the use of the Internet to facilitate, execute, and process business transactions' (Delone and McLean, 2004).

Beyond establishing a definition of e-commerce, it is important to understand that numerous types of e-commerce exist. Types of e-commerce are categorised based on the parties involved in the transactions. Goel (2007) outlined five commonly recognised categories of e-commerce:

- business-to-consumer (B2C)
- business-to-business (B2B)
- commerce-to-administration (C2A)
- customer-to-customer (C2C)
- consumer-to-business (C2B)

While the literature review will examine studies on various e-commerce categories, it is important to note that this study is primarily concerned with the factors that influence adoption of B2C e-commerce.

3.1.1 Benefits of e-commerce

As with all major innovations, there are benefits, disadvantages, and limitations to the implementation of e-commerce on a global basis. E-commerce broadly understood improves accessibility to market information and access to goods, improves the ability to acquire information on goods and compare prices, saves time both during the act of shopping and travel time that would otherwise be incurred going to physical stores if they are available. It allows shopping to be time-shifted to time blocks more convenient to the consumer, products are available 24/7, and it allows ease of networking (DMS Retail, 2015). Overall, e-commerce offers many distinct and substantial advantages to customers, businesses, and society. Disadvantages can be related to the inability of consumers to touch or feel products, try clothes or other wearables on, and judge quality directly (DMS Retail, 2015). A further disadvantage, particularly in developing countries, is the need for a device capable of accessing the internet and internet access itself, although increasingly capable smart phones are rapidly addressing this issue even in the least developed countries (WTO, 2013).

The adoption of e-commerce has proved to be a major driver of change to traditional patterns of commerce. E-commerce has allowed consumers to go farther to buy products, and it has increased exchanges and sales of information, as well as of products (WTO, 2013). In the emerging global economy, it is responsible for increased trade and types of employment. B2C e-commerce is a strong catalyst for economic growth in the economies of countries with the infrastructure, both physical, legal and in terms of physical security, to support e-commerce activities. A good recent example of an emerging economy using e-commerce to leverage economic growth is the case of the Peoples Republic of China over the last ten years (McKinsey, 2013).

Goel (Goel, 2007) classifies e-commerce advantages to customers, businesses, and society as follows:

- *Benefits to customers.*

  E-commerce reduces prices by limiting the number of stages in the value chain, thereby decreasing the costs of products. Consumers can also buy products from anywhere in the world (global marketplace) 24 hours per day, seven days per week. It delivers purchasers an extensive variety of selections, and consumers can compare diverse brands to evaluate the best possible product efficiently. Most of online products, especially digitised products, can be delivered quickly. Consumers benefit from virtual auctions and dealing with other consumers (Kacen et al., 2013, Chiu et al., 2014, Wang et al., 2016)

- *Benefits to businesses.*

  A key benefit of e-commerce for businesses is that it may assist in increasing market share by enhancing the ability of a given business to access distant markets whether within a country or region or globally via the Internet. Advertising on the Internet is often inexpensive compared to the cost of traditional advertising in print or on television, and the global reach of the Internet ensures that new forms of Internet-only advertising, such as through social media, can reach consumers world-wide at marginal costs (Afshar Jahanshahi et al., 2013, Cui and Pan, 2015, Hanna, 2016).

  Another major benefit of e-commerce is that businesses that are primarily online, experience significantly decreased start-up costs compared to those incurred by more traditional bricks and mortar competitors. Frequently, online start-ups also experience fewer barriers to entry into a given market space. In terms of strategic benefits, e-commerce has often allowed for decreased labour costs, improved delivery times, streamlined supply chains with a greater choice of viable suppliers, and even significant tax advantages depending on the jurisdiction from which an online company may choose to operate (Afshar Jahanshahi et al., 2013, Anwar and Daniel, 2014, Berger and Hess, 2015).

  Beyond strategic benefits, there are a host of operational benefits. These include but are not limited to: reduced costs associated with the preparation of documents; easier correction, detection and reduction of errors; more efficient mail contacts with clients; easier financial reconciliation; improved and more automated data entry; and finally, reduction of telephone expenses, supervision expenses and overtime expenses associated with labour (Afshar Jahanshahi et al., 2013, Anwar and Daniel, 2014, Hande and Ghosh, 2015) .

- *Benefits to society.*

  E-commerce allows individuals in less developed countries and rural regions to access traditionally inaccessible services and products, enables the provision of social services at an

affordable cost to governments, and permits more people to work at home. Fewer people having to travel for shopping and for business also reduces road congestion and eases pressure on public infrastructure. In addition, many goods both tangible and intangible can be traded at lower cost, and businesses can sell more different items without having to maintain a complete inventory due to the ability to drop ship or direct ship from manufacturers and/or regional warehouses (Chiu et al., 2014, Yoo et al., 2013, Hussain et al., 2016).

The many benefits in terms of time and money saved, increased choice and efficiency that e-commerce brings to all participants in the supply chain from the initial manufacturer to final consumer makes e-commerce a compelling value proposition for all participants. The potential for both additional economic growth, as well as the reduction of pressure on public infrastructure that in some cases may eventuate, make e-commerce attractive to governments even beyond e-commerce capabilities, allowing those self-same governments to operate more efficiently and at less cost for services provided (McKinsey 2013).

3.1.2 E-commerce and online shopping

Online shopping is a form of B2C e-commerce (Nosrati, 2011; Nemat, 2011). While e-commerce encompasses business-to-consumer, business-to-business, commerce-to-administrations, customer-to-customer, and consumer-to-business (Goel, 2007), online shopping is more limited and exclusively describes the activity of selling and purchasing goods and services online via an e-store (Islam, 2012; Sharma, 2013). Xu (2012) noted that online shopping describes a single aspect of e-commerce; whereas e-commerce can represent any and all business activity conducted using an electronic medium (Ren, 2009).

3.1.2.1 State of retail e-commerce globally

E-commerce is gaining popularity all around the world and it may safely be stated that the state of e-commerce globally is robust (Besson and Bourdon, 2015). In 2013, majority of the consumers purchased goods and/or services online for a total amount of $1,242 bn. This represented an increase of 23.6% in comparison with 2012. In 2013, total B2C e-commerce sales were worth €335bn (Fleischmann et al., 2014). In 2014 global e-commerce sales increased at a rate greater than 20% per year (Shabat et al., 2015). The United States is still the clear leader in the world, but the emergence of second-ranked China is remarkable (Wong, 2003). Behind these two countries, UK (€114bn), Japan (€110bn) and Germany (€67bn) complete the top 5 countries

for e-commerce (Global B2C E-commerce Report, 2014). For the first time in 2014, Saudi Arabia's e-commerce space met A.T. Kearney *Global Retail E-Commerce* index's requirements to be ranked in the world's top 30 e-commerce markets. By contrast, India with its billion plus population and 27% e-commerce growth, remains out of the index's top 30 countries (Shabat et al., 2015).

Overall, four key themes emerged in 2014-15 that were of overarching importance to the ongoing growth of the global e-commerce market. The first was simply *internationalisation* (Gajendran et al., 2013). Globally, more online shoppers, more mobile Internet connected devices, and increased access to secure payment services are driving the virtual growth of large international e-tailers in overseas markets. A.T. Kearney also noted that in many emerging markets, the safest and fastest method of buying and taking delivery of international brand-name goods is via the Internet (Gajendran et al., 2013, Singh et al., 2005, Loane, 2005, Shabat et al., 2015).

The second key theme was the renewed *popularity of e-commerce IPOs* internationally. Investors are buying shares as the sector has proven robust and continually able to generate above average growth earnings. With many of the world's population yet to get Internet access, growth projections for international e-tailers look healthy for many years to come (Shabat et al., 2015).
The third key theme was the *rise of the continuously connected consumer*. In a 2014 Connected Consumer Study, A.T. Kearney found that among 10000 connected consumers (i.e. those who connected to the internet a minimum of once a week), over half of the group actually were 'continuously connected.' Continuously connected consumers are individuals who check the internet at least hourly while awake each day (Shabat et al., 2015).

The fourth and final trend A.T. Kearney identified as of key importance in their *On Solid Ground* research was the need for *omni-channel marketing due to consumers' ongoing desire to look, touch, and immerse themselves in brand experiences*. In the United States, over 90% of all retail sales occur in stores, and over 95% of sales go to retailers that have a bricks and mortar presence. Retailers as diverse as Amazon.com and Singapore's Zalora opened their first bricks and mortar stores in 2015. It is becoming clearer that while bricks and mortar stores must evolve and seamlessly merge with the online experience that the real world retail experience will continue to dominate in consumer sales (Shabat et al., 2015).

3.1.2.2 State of e-commerce in the Middle East

As part of a very robust global market space, the Middle East is also experiencing rapid growth in e-commerce. A sign of the times is that the 2016 E-commerce Show: Middle East (to be held in Dubai 31st May to 1st June 2016) is expecting over 3000 attendees (Ecommerce Show, 2016). In the wider Middle East, according to the *2014 MasterCard Online Shopping Behaviour Study*, 35% of Middle Easterners had access to the internet, up from 27% the year prior. Of those who reported to the study, 90% accessed the Internet from mobile devices, up from 74% over the past two years. The overall use of card payment is increasing in Middle East region (Rouibah, 2015, Makki and Chang, 2015).

Of those surveyed, 44% had made an online purchase in the preceding three months, 83% were satisfied with their experience, and a good sign for the future, 54% preferred to shop from local websites (MasterCard Online Shopping, 2014). Online sales in the Middle East hit US$7 billion in 2014, the largest single share being in the UAE at $2.3 billion, followed by Saudi Arabia at $1.5 billion, and Egypt at $1.4 billion. The balance went in smaller shares to other Middle Eastern nations. Men continue to outnumber women online, with the UAE having 59% of its shopping online done by males, and Egypt, with the largest gender gap seeing 77% of sales going to males. Overall, about half of all sales went to the 18 to 35 age groups (Payfort, 2014).

3.1.2.3 Challenges for both global and online retailers in the Middle East and KSA

There are some issues that are particular challenges for e-commerce companies in the Middle East. According to Ulugbek Yuldashev, CEO of UAE-based Awok.com, a Middle Eastern online retail specialist, the biggest issue is 'fear from users on loss of control' (*The Economic Times*, 2015). Another issue that causes concern to many Middle Eastern online retailers is the Middle East-wide habit of wishing to pay cash on delivery (C.O.D.), with about 60% of transactions being C.O.D. and all the attendant problems of high returns and negative impacts on cash-flow this engenders (PayPal, 2013; Makki and Chang, 2015). A final issue is the unwillingness or inability of women in places such as Saudi Arabia to answer the door to unrelated male delivery men. This final issue is being addressed by start-ups such as Fetchr who deploy teams of related male drivers and female package handlers. The male relative drives the delivery vehicle, and the female knocks on the door and handles the transaction (Quartz, 2015).

3.1.2.4 State of e-commerce in Saudi Arabia

There is limited literature available that directly addresses the Saudi e-commerce experience. Due to the paucity of academic studies, while e-commerce has grown rapidly in Saudi Arabia the last five years, more than tripling in dollar volume in that time span, much of that growth has to be inferred from primary sources such as government statistics and industry research conducted by such major global players as *PayPal*, *VISA*, *MasterCard*, and *PayFort* operating in the e-commerce online space, and these are mostly focused after year 2010. However, rapid growth in Middle Eastern e-commerce and the attention it is attracting both internationally and regionally suggests that it is reasonable to speculate that a number of academic, as well as direct government sponsored studies, are likely in the pipeline and will become available in 2016-17(Japan External Trade Organization, 2015).

Studies before year 2010 showed that Saudi Arabia has great potential for e-commerce and e-banking, and the number of internet users is growing (Sait et al., 2004; Alfuraih, 2008). Due to the potential of e-commerce in Saudi Arabia, several international organizations have been encouraged to expand e-commerce facilities since 2000, and internet users, despite having difficulties using internet services, exhibit a positive attitude toward the use of online services (Sait et al., 2004). In addition to these studies, Al-Otaibi and Al-Zahrani (2003) explored the design of Saudi websites, which they found were not e-commerce-oriented and had poor marketing facilities, human interaction methods and knowledge support facilities. Because of such poor examples of local websites, users were not becoming familiar with e-commerce in Saudi Arabia.

However, the scenario started to change from year 2010. A study in the first half of 2010 examined both the level of e-commerce adoption in Saudi Arabia at the time and attempted to identify factors that affected the adoption of e-commerce in the Kingdom (Al-Hudhair & Alkubeyyer, 2011).Despite the study being less than five years old, it must be treated more as a historical document than relevant to current experience in Saudi Arabia. At the time the researchers found that 51% of respondents to their survey had already institutionalised e-commerce and 42% were initial adopters with 72% of respondents being large enterprises. The authors of the study concluded that in 2010, initial adoption of e-commerce as a marketing strategy was still at the point of demonstrating an online presence as opposed to generating serious revenue from that presence.

The authors further concluded that as organisations already committed to an online e-commerce presence wished to expand and deepen that presence, the key factors required to do so were internal organisational factors, particularly technology resources. It is clear in retrospect that the nearly half of respondents who were initial adopters of e-commerce initiatives as reported to the authors of the study must have represented solid and committed efforts to build effective online presences. The efforts of the early adopters are illustrated by the fact that while a year after the study was conducted (FY 2011), total online sales in Saudi Arabia were approximately US$520 million; just four years later, e-commerce sales had trebled to US$1.5 billion (Orloff Consulting Group, 2012; PayFort, 2015).

A study of determinants of e-commerce customer satisfaction, trust, and loyalty in Saudi Arabia was conducted by Eid in 2011. Its strength was that many survey respondents were university students and already local online e-commerce users. The study's weakness was that it was heavily weighted to university students (the balance being other Saudis in the Eastern Provinces) who might not be representative of the overall Saudi e-commerce experience in 2011.

The study found that Saudi online consumers had similar trust and loyalty responses to online consumers in Canada, illustrating that Saudi consumer response were analogous to those in developed countries. Saudi consumers correlated trustworthiness with the quality of the e-commerce site interface. However, while satisfaction was correlated with the quality of information presented, trustworthiness was not. Customer trust was strongly correlated with 'both perceived security risk and perceived privacy (Eid, 2011).Unfortunately, for sites perceived as trustworthy, the fact they were perceived by consumers as trustworthy only correlated weakly with customer loyalty. However, overall, it was apparent that the quality of the design of online websites was a driver both of trust and of loyalty, and sites that were reliable and well conceived and which demonstrated the perceived quality of integrity gained consumers' confidence most easily.

3.2 Theoretical framework of the research

In order to study the factors impacting the growth of e-commerce in Saudi Arabia, it is first necessary to understand how individuals react to innovation and what factors impact the adoption of new technologies, specifically ICT. Several theories related to innovation and technology adoption were used to create a framework for the development of this study's theoretical model.

This research drew on theories that fell into two main categories, theories related to innovation and theories related to technology adoption. Elements from the various theories were selected to construct a model that comprehensively addressed the diverse factors that influence e-commerce adoption in Saudi Arabia. The following sections review each individual theory from which elements were taken.

3.2.1 Innovation diffusion

The use of the Internet to transact business constitutes an innovation within the field of commerce. As with other types of innovations, there is an interest on the part of scholars and practitioners to better understand how the innovation of e-commerce is received and adopted by users. A wide range of theories have been developed to explain human behaviour in relation to innovation. However, within the scope of this research, the most applicable innovation theory was the *diffusion of innovation theory* outlined by Rogers (1995). Rogers's diffusion of innovation theory sought to explain how, why, and at what rate new ideas and technology spread through cultures. The diffusion of innovation theory is also closely aligned with innovation adoption, the acceptance or widespread implementation of new ideas and technologies (Damanpour, 1991).

According to the diffusion of innovation theory, four key factors influence the spread and adoption of a given innovation. These factors include:

- the nature of the innovation
- communication channels
- time
- social systems. (Rogers, 1995, Rogers, 2003)

The nature of the innovation refers to the form the innovation takes. Innovations can be ideas, practices, objects, or other units of adoption (Rogers, 1995, Rogers, 2003). Some types of innovations can spread more quickly than others. Communication channels refer to the ways in which information about the innovation is spread between individuals (Rogers, 1995, Rogers, 2003). When there are effective or efficient communication channels, innovations can spread more quickly and become more widely adopted. Time was a relevant factor to both the innovation-decision period and the rate of adoption of an innovation. The innovation-decision period refers to how long it takes to complete the innovation-decision process, and the rate of adoption refers to the relative speed with which an innovation is adopted by members of a social

system (Rogers, 1995, Rogers, 2003). Rogers (1995, 2003) defined social systems as interrelated units that work together to solve problems or accomplish common goals. If there is resistance to an innovation from a social system, the innovation will not be spread as quickly or be adopted as widely.

Overall, the diffusion of innovation theory is well respected by scholars and practitioners as an innovation adoption process model, and its constructs have been used extensively in ICT and information systems research (Bélanger and Carter, 2008, Bradford and Florin, 2003, Premkumar et al., 1994, Thong, 1999, Lee and Cheung, 2004, Pérez et al., 2004, Chwelos et al., 2001, Mustonen-Ollila and Lyytinen, 2003, Beatty et al., 2001, Agarwal and Prasad, 1997, Mehrtens et al., 2001, Zhu and Kraemer, 2005, Tan and Teo, 2000, Eder and Igbaria, 2001, Pease and Rowe, 2007, Yu-hui, 2008). It is important to note, however, that diffusion of innovation theory is not a single, well-defined, unified, or comprehensive theory. The diffusion of innovation theory draws on a large number of other sub-theories from a variety of disciplines, each focusing on different elements of the innovation process. These various sub-theories combine to create a meta-theory of diffusion, allowing constructs and ideas to be applied and adapted in various ways. Four relevant sub-theories that contribute to the diffusion of innovation theory and this study's statistical model are:

- innovation-decision process theory
- individual innovativeness theory
- rate of adoption theory
- theory of perceived attributes

3.2.1.1 Innovation-decision process theory

The first sub-theory that contributes to a better understanding of diffusion of innovation theory is the innovation-decision process theory. According to Rogers's (2003) innovation-decision process theory, diffusion is a process that occurs over time in five distinct stages. The first stage in the innovation-decision process involves gaining knowledge about the innovation. An individual discovers that the innovation exists and attempts to explore the purpose of the innovation as well as how it functions (Rogers, 2003).

The second step in the innovation-decision process is labelled persuasion. In this stage, the individual or decision making entity forms an opinion about the innovation based on their

acquired knowledge. Rogers (2003) cautioned, however, that merely forming an opinion of the innovation (whether favourable or unfavourable) does not necessarily result in acceptance or rejection of the innovation.

The third step of the innovation-decision process is labelled decision. At this stage in the process, the individual or decision making entity chooses to adopt or reject the innovation. Rogers (2003) defined adoption as the 'full use of an innovation as the best course of action available,' and rejection as the decision 'not to adopt an innovation' (p. 177).

The fourth step of the innovation decision process is referred to as implementation. At this stage, the innovation is put into practice or use. There may be some level of uncertainty about the implementation of the innovation, and this can potentially cause problems with diffusion (Rogers, 2003).

The fifth and final step of the innovation decision process is confirmation. While the decision about the innovation has already been made by this point, this stage allows the individual to support the decision with empirical evidence. Rogers (2003) noted that conflicting messages can lead individuals to reverse their decisions to adopt or reject innovations; however, individuals tend to seek supportive messages that confirm their initial decisions. In the case of reversals, later adoption or discontinuance occurs at this stage. Figure 3.1 illustrates the five steps of the innovation-decision process theory. Figure 3.1 also contains elements of the central diffusion of innovation theory, such as the nature of the innovation in the form of perceived characteristics, communication channels connecting each of the five steps, time demonstrated by the opportunity for later adoption or discontinuance, and social systems in the form of characteristics of the decision-making unit.

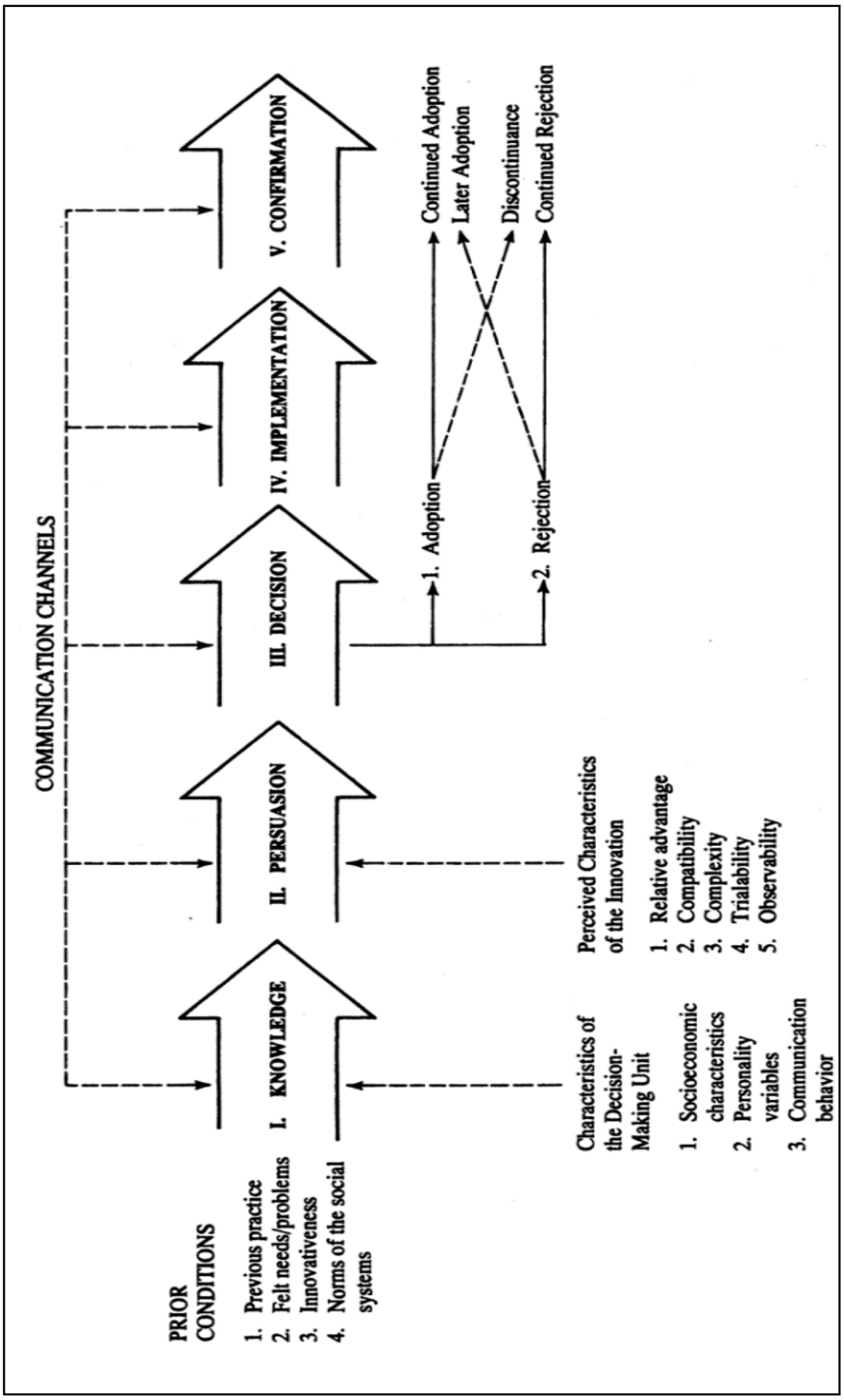


Figure 3.1 **Model of five stages in innovation decision process theory (Rogers, 2003, p.163)**

3.2.1.2 Individual innovativeness theory

The second sub-theory that contributes to a better understanding of the diffusion of innovation theory is the individual innovativeness theory. According to the individual innovativeness theory (Rogers, 2003), individuals with a predisposition for innovativeness adopt innovations earlier than those who are less predisposed. A necessary assumption of this theory is that individuals vary in their willingness to adopt innovations. Figure 3.2 illustrates the distribution of individuals among five categories (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards.

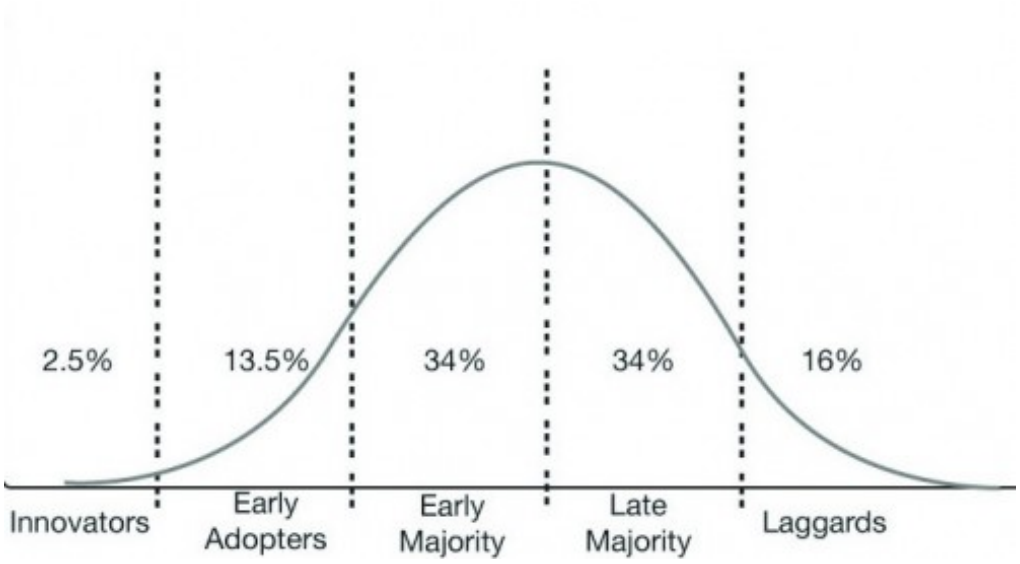


Figure 3.2 Types of adopters (Rogers, 2003, p.247)

Within the individual innovativeness theory, innovators are characterised as pioneers and risk takers who enjoy being agents of change within their social group. Early adopters are characterised as adventurous and in search of dramatic competitive advantage when viewed within a business context. Individuals in the early majority category adopt innovations after a period of exposure. Early majority individuals are more cautious than both innovators and early adopters. Individuals in the late majority category are characterised as sceptical and more closely tied to tradition. They tend to wait to see the results of earlier adopters. Laggards are the final group to adopt an innovation. They tend to be very sceptical of technology. In addition to assuming that individuals vary in their willingness to adopt innovations, this theory also assumes that individuals are fairly normally distributed throughout the five categories, with the majority of people falling in the categories of early and late majority.

3.2.1.3 Rate of adoption theory

The third sub-theory that contributes to a better understanding of the diffusion of innovation theory is the rate of adoption theory. According to Rogers (2003), 'rate of adoption theory states that innovations are diffused over time in a pattern that resembles an s-shaped curve' (p. 204). An initial period of slow, gradual growth is followed by a period of rapid and dramatic growth (Figure 3.3)

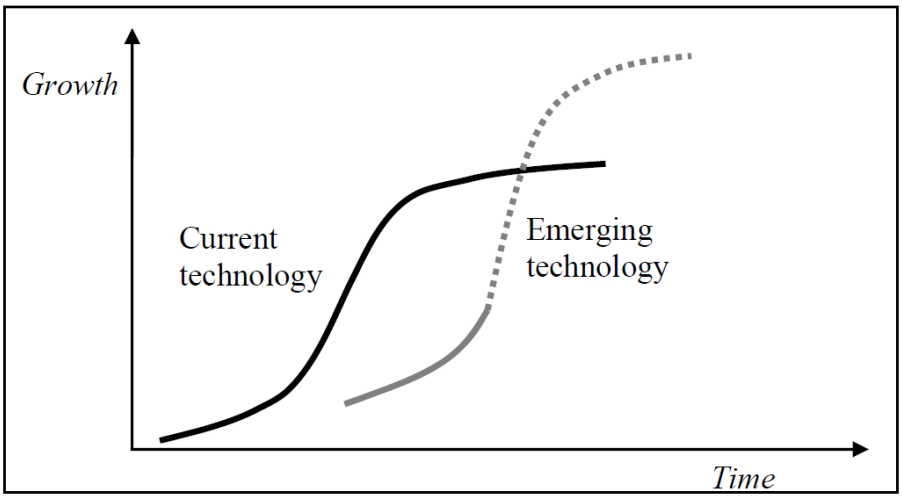


Figure 3.3 Rate of adoption of technology (Rogers, 2003)

Following the period of rapid growth, an innovation's rate of adoption gradually stabilises. Eventually the rate of adoption will even decline. As previously noted, theories related to diffusion of innovations are not always comprehensive. Rogers (2003) acknowledged that rate of adoption can also be influenced by perceived attributes, which leads to the discussion of the final sub-theory contributing to innovation diffusion, theory of perceived attributes.

3.2.1.4 Theory of perceived attributes

According to the theory of perceived attributes, individuals judge innovations based on their perceptions of five critical attributes:

- relative advantage
- compatibility
- complexity
- observability
- trialability. (Rogers, 2003)

Relative advantage refers to the potential benefits an innovation can offer in comparison to the status quo. Compatibility refers to whether an innovation is believed to be aligned with the existing needs and values of adopters. Complexity refers to an innovation's level of difficulty with regard to use. Observability refers to how apparent the benefits of the innovation are to individuals. Trialability refers to how easy it is for individuals to experiment with an innovation. These five concepts were used in this study's statistical model to better understand e-commerce adoption in Saudi Arabia.

When combined within the overarching diffusion of innovation theory, these sub-theories provide a comprehensive approach to understanding how innovations are adopted and what factors may influence the success or failure of a specific innovation. Using diffusion of innovation theory as a framework for qualitative research, AlGhamdi, Drew, and Alkhalaf (2011) examined issues that influence online retailers in Saudi Arabia. AlGhamdi et al. found that several factors identified by the diffusion of innovation theories acted as influencers of e-commerce growth. For example, pre-existing buying and selling habits discouraged adoption of e-commerce by both buyers and sellers. Trialability was low for many consumers due to the lack of private mailboxes and limited number of online retailers. However, the largest issue identified by AlGhamdi et al was the lack of support from the social system, Saudi Arabia's government.

These factors were all identified through semi-structured interviews with a total of 32 participants. The participants were all citizens of Saudi Arabia; 16 participants were described as decision-makers at retail organisations and 16 participants were private citizens and designated as consumers. Of the participants who were considered consumers, 50% were male and 50% were female. While the sample size was small, and the generalisability of the research is limited, the findings did demonstrate that there are specific factors unique to Saudi Arabia that influence the diffusion of innovation with regard to e-commerce. In an attempt to refine the model used in this research, theories directly related to the adoption of innovative technologies were also consulted. The following sections review those theories.

3.2.2 Technology adoption theories

Theories of innovation diffusion can be applied to innovations of all types, such as the diffusion of ideas about evolution, climate change, or the uptake of traffic lights and reinforced masonry. It is of great interest to academics, marketers, businesses, and governments to understand why and how people access the Internet, and many of the theories initially designed to address how individuals behave in relation to innovation have in turn been further refined and modified to specifically focus on the adoption and use of technology and e-commerce. These theories and models comprise the second category of theories used to develop the statistical model of this research.

This study drew concepts from several of the most common technology adoption models and theories in an attempt to address that gap in the body of knowledge on e-commerce adoption in Saudi Arabia. Because of their specific focus on technology adoption, the theories in the following sections were grouped and reviewed separately from the theories on innovation. The primary theories related to technology adoption used to create this study's model included:

- theory of reasoned action (TRA) (Ajzen and Fishbein, 1980)
- theory of planned behaviour (TPB) (Ajzen, 1991)
- the decomposed theory of planned behaviour (DTPB) (Taylor and Todd, 1995)
- technology acceptance model (TAM, TAM 2, TAM3) (Davis, 1989)
- unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003)

3.2.2.1 Theory of reasoned action (TRA)

The theory of reasoned action was developed to allow researchers to predict specific behaviours using links between individuals' beliefs, evaluations, motivations, attitudes, subjective norms, intentions, and behaviours (Ajzen and Fishbein, 1980, Fishbein and Ajzen, 1975). According to the theory of reasoned action, an individual's behaviour or performance is driven by behavioural intentions, which are guided in turn by subjective norms and individual attitudes (Figure 3.4). As illustrated by the figure, individual attitudes are the result of personal beliefs and evaluations of behaviour, whereas subjective norms are a combination of perceptions of behaviours that are socially acceptable and a desire to operate within the bounds of those perceptions.

According to Ajzen and Fishbein (1980) the theory of reasoned action relies on the assumption that individuals are rational and objective in the way they process information. The theory also assumes that individuals consider the implications of their actions before engaging in specific behaviours. Based on the theory, a person's intention and resulting behaviour are driven by their attitudes and perceptions of subjective norms.

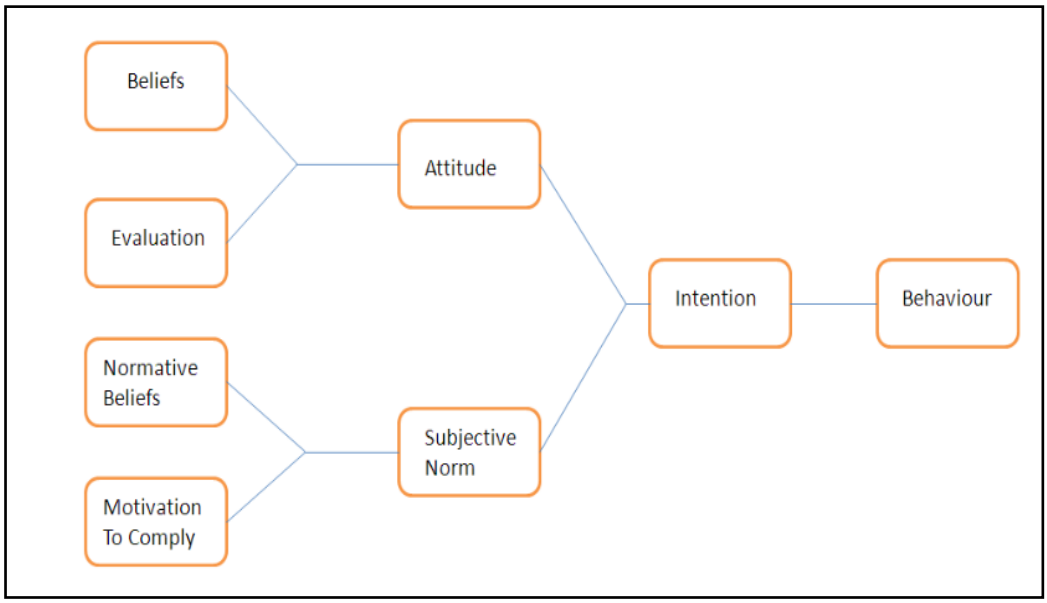


Figure 3.4 **Theory of reasoned action presented by Ajzon and Fishbein (Ajzen and Fishbein, 1980)**

However, Miller (2005) cautioned that individual factors can produce differing effects on behaviour. As a result, different factors are often weighted within the theory in order to improve the predictive model. Examples related to online shopping can be used to demonstrate the how the factors in the theory are weighed and considered.

- Attitudes are cumulative beliefs about specific behaviours, and by evaluating the individual beliefs, attitudes are formed. For example, an individual might hold positive beliefs that online shopping is good; the service saves time; anything can be bought at any time. However, the same individual might also hold negative beliefs about online shopping; money transactions may not be trustworthy; the quality of purchases cannot be checked in advance. In some cases, lack of trust may be weighted more heavily than time savings and increased availability. Conversely, at other times the ability to purchase a hard to find item may outweigh fears about trustworthiness.

- Subjective norms, which address the power of individuals' social environments over their behavioural intentions, must also be weighed against one another when using the theory to predict behaviour. Again, using online shopping as an example, this can be illustrated. An individual who has friends and colleagues that provide for the majority of their needs online and are encouraged continually to do the same may have a favourable perception of the level of social acceptance for the behaviour. However, the same individual may have a spouse that disagrees and still prefers traditional shopping. The individual must weigh the importance they attribute to each of the opinions, and those perceptions and beliefs will influence behavioural intentions to some degree.
- Behavioural intentions result from a combination of attitudes and subjective norms. Continuing with the previous example, by weighing the individual's positive attitudes about the convenience of online shopping against the perceived risks and then factoring in the influence of the level of social acceptance that results from balancing the experiences and attitudes of the friends and spouse, the individual will eventually develop an intention (whether or not to shop online), and this intention will lead to an actual behaviour. As noted in the diffusion of innovation theories, time is a factor that can lead to behavioural change over time if attitudes, beliefs, and subjective norms shift or change.

The theory of reasoned action has been used as a theoretical foundation in studies on B2C e-commerce in the context of peer-based recommendations (Li and Karahanna, 2012); the connections between repeat purchase intentions and B2C e-commerce (Chiu, Wang, Fang and Huang, 2014); and mobile commerce (m-commerce) adoption in Egypt (Fawzy and Salam, 2015). Internet technology adoption is highly influenced by beliefs people form about technology and its effectiveness, and these studies demonstrate that the theory of reasoned action is applicable to e-commerce and commonly used as a foundational model for predictive behaviour regarding technology adoption. Within this research, the statistical model drew the concepts of attitude toward behaviour, subjective norms, and behavioural intentions from the theory of reasoned action.

It should be noted, however, that attitudes and norms can sometimes be interchangeable, and this does create some difficulty when distinguishing between influencing factors within a given predictive model (Ajzen, 1985). The theory of reasoned action is also limited by the fact that it does not account for external limitations. However, those are accounted for in the following theory, the theory of planned behaviour.

3.2.2.2 Theory of planned behaviour (TPB).

- While the theory of reasoned action asserts that behaviour is volitional and that an individual has control over his or her actions, the theory of planned behaviour accounts for external influences that are beyond the control of the individual. In response to this limitation of the theory of reasoned action, Ajzen (1985; 1991) developed the theory of planned behaviours as a predictive model when individuals did not have complete volitional control over their behavioural choices (Figure 3.5).

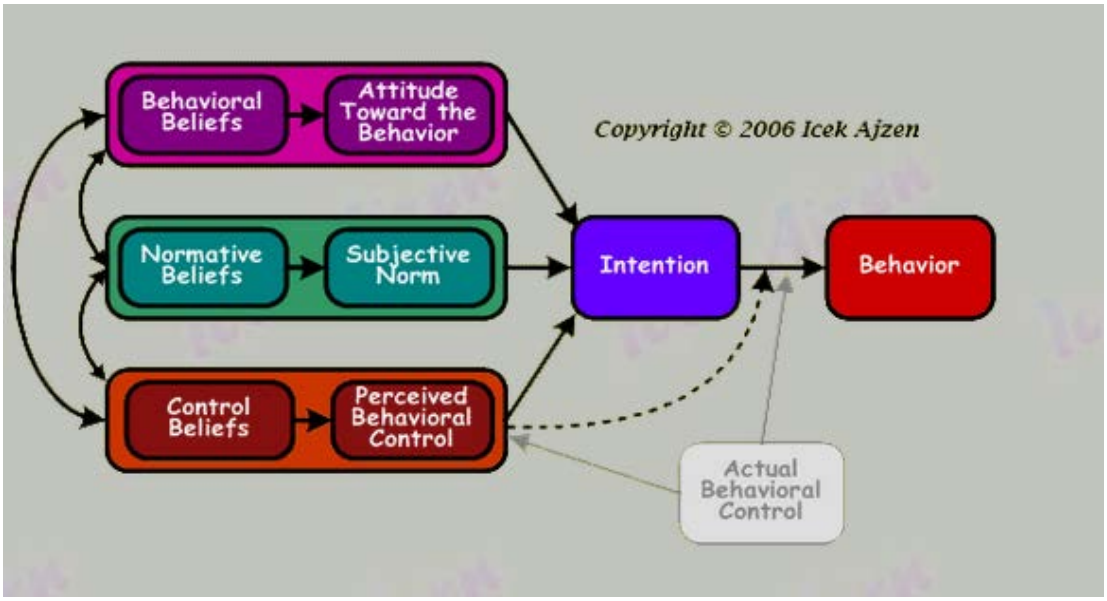


Figure 3.5 Theory of planned Behaviour (Ajzen, 2002)

As in the theory of reasoned action, within the theory of planned behaviour both attitudes and subjective norms are influencers of behavioural intentions. However, the theory was expanded to include external factors that could influence behaviour. These were labelled control beliefs (Ajzen, 2002a). Additionally, Ajzen modified the theory of planned behaviour to account for the role of an individual's beliefs about behaviours, subjective norms, and perceived control. Behavioural beliefs referred to an individual's 'beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes' (Ajzen, 2006, p. 1). Normative beliefs referred to 'expectations of others and motivation to comply with these expectations' (p. 1). Control beliefs were defined by Ajzen as 'beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors' (p.1). It should be noted that in order to address situations where individuals do not have complete volitional control of

external factors, the theory differentiates between actual control over a behavioural intentions and perceived control over behavioural intentions.

Ajzen expressed the theory of planned behaviour as the following mathematical function:

$$BI = (W_1)AB[(b) + (e)] + (W_2)SN[(n) + (m)] + (W_3)PBC[(c) + (p)]$$

BI:	behavioural intention
AB:	attitude toward behaviour
(b):	the strength of each belief
(e):	the evaluation of the outcome or attribute
SN:	subjective norms
(n):	the strength of each normative belief
(m):	the motivation to comply with the referent
PBC:	perceived behavioural control
(c):	the strength of each control belief
(p):	the perceived power of the control factor
W_i	empirically derived weight/coefficient

The theory of planned behaviour makes several assumptions. For example, if attitudes toward behaviour and subjective norms regarding that behaviour are positive, an individual is more likely to form an intention to perform the behaviour. Similarly, if an individual's control over behaviour is perceived to be strong, the individual will be more likely to perform the behaviour. The theory also assumes that when an individual can exert enough actual control within a given situation, they are likely to fulfil their behavioural intentions.

The theory of planned behaviour is one of the models most frequently used in the literature to explore pro-environmental behaviour, including the acceptance of e-banking (Pikkarainen et al., 2004), mobile banking (Luo et al., 2010), e-government services (Kanat and Özkan, 2009), electronic services (Hsu and Chiu, 2004), websites (Riemenschneidera et al., 2003) and e-commerce services (Herrero Crespo and Bosque, 2008, Riemenschneider and McKinney, 2001, Pavlou and Fygenson, 2006, Herrero Crespo and Rodriguez del Bosque, 2010, Hsu et al., 2006). The theory of planned behaviour was central to this research.

A universally accepted predictive theory specific to the adoption of e-commerce in Saudi Arabia has not been established to date; however, within Saudi culture, control beliefs are crucial to understanding behavioural intentions of potential and/or established e-commerce users (Al-

Ghaith et al., 2010). Drawing from the theory of planned behaviour, this research utilised the concept of perceived behavioural control when developing the statistical model.

3.2.2.3 Decomposed theory of planned behaviour (DTPB).

The theory of planned behaviour was modified by Taylor and Todd (1995) to create the decomposed theory of planned behaviour. The main difference between the two theories is that the decomposed theory of planned behaviour identifies specific influences that affect the formation of attitudes, subjective norms, and perceived behavioural control (Figure 3.6). Taylor and Todd decomposed these concepts into individualised belief dimensions.

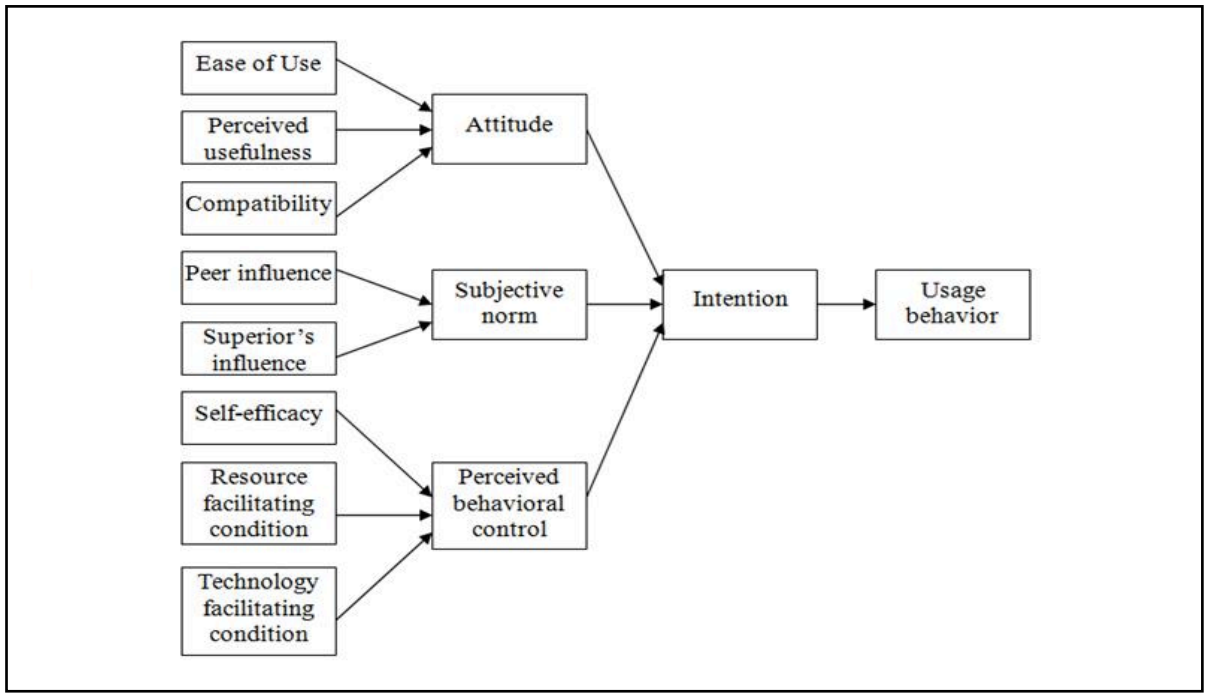


Figure 3.6 **Decomposed theory of planned behaviour presented by Todd and Taylor (Taylor and Todd, 1995b, p.162)**

As illustrated by Figure 3.6, attitudes are the result of beliefs about a technology's ease of use, perceived usefulness, and compatibility. Subjective norms result from the influences of an individual's peers and superiors. Finally, perceived control is a combination of the individual's self-efficacy and conditions facilitating resources and the technology itself.

Several researchers have used the decomposed theory of planned behaviour with regard to e-commerce adoption. Cheng, Tsai, Hung and Chen (2015) used the theory to examine how mobile application use was influenced by various belief dimensions. They found that attitudes, subjective

norms, and perceived behaviours all significantly affected mobile application downloading. However, according to Cheng et al., the belief dimensions of compatibility and self-efficacy were not significant influencers of use based on their findings.

Alalwan, Dwivedi, Rana, Lal and Williams (2015) used the decomposed theory of planned behaviour to examine how motivation, habit, trust, and self-efficacy influenced the adoption of Internet banking in Jordan. Alalwan et al. found that motivation and self-efficacy were strong predictors of trust, and motivation, habit, trust, and self-efficacy significantly influenced Jordanian consumers' behavioural intentions in regard to the adoption of online banking.

Both the study by Cheng et al. (2015) and the study by Alalwan et al. (2015) demonstrate that the decomposed theory of planned behaviour is an effective theory when examining technology adoption in relation to e-commerce. The value of the decomposed theory of planned behaviour within this research was that it identified influencing factors that may contribute to the adoption of e-commerce in Saudi Arabia. Peer influence, superior's influence, self-efficacy, resource facilitating conditions, and technology facilitating conditions were concepts drawn from the decomposed theory of planned behaviour and used in the statistical model of this study.

3.2.2.4 Technology acceptance model (TAM)

The technology acceptance model, introduced by Davis (1985) was developed based on the theory of reasoned action, and the model is used to explain and predict behaviour related to technology adoption and use. Like the decomposed theory of planned behaviour, the technology acceptance model seeks to explain how external factors impact an individual's personal beliefs, attitudes, intentions, and actions. External factors are an important element within the model, and one of the model's advantages is that it accounts for constraints such as time and ability limitations that can adversely impact an individual's freedom to act (Bagozzi et al., 1992). The basic elements of the technology acceptance model are presented in Figure 3.7.

Davis proposed the technology acceptance model in three foundational papers (Davis, 1985, 1989; Davis et al., 1989). In addition to addressing the influence of external factors, the technology acceptance model introduced two new concepts that determined behaviour. These two concepts were perceptions about new technology that were believed to influence behaviour in relation to the new technology: perceived usefulness and perceived ease-of-use. Perceived

usefulness refers to the ability of the new technology to improve efficiency or effectiveness in the workplace, and perceived ease-of-use refers to the level of difficulty associated with learning and using the new technology.

When constructing the model, Davis et al. (1989) concluded that it was unclear whether subjective norms significantly affected intentions, and as a result, the concept of subjective norms, present in other technology adoption theories, was deleted from the model. According to Davis et al. (1989), the perceived usefulness of a technology positively impacts an individual's attitude toward using that technology and increases the likelihood that the technology will be used by the individual.

The model assumes that individuals will behave in ways that increase their performance, and perceived usefulness will influence behavioural intentions regardless of whether attitudes toward adopting the new technology are positive or negative.

Since its introduction, the technology acceptance model has been used extensively by researchers in the field of information technology (Adams et al., 1992; Koufaris, 2002; Lee et al., 2003; Lederer et al., 2000; Li et al., 1999; Lucas and Spitler, 1999; Straub, 1994; Venkatesh and Davis, 2000; Venkatesh et al., 2011; Waarts et al., 2002). More recently, Ashraf, Thongpapanl, and Auh (2014) tested the model by using it to examine online shopping adoption across different cultural contexts. Ashraf et al. noted that the model was validated and held true when used to predict behaviours despite cultural differences. Ashraf et al.'s findings supported previous research by Rose and Straub (1998) that tested and confirmed the model's predictive power with regard to technology adoption in Jordan, Egypt, Lebanon, the UAE, and the KSA. These findings, along with the recommendation of Al-Somali (2012) that the technology adoption model should be used to examine e-commerce within the region, specifically support the use of the model's elements within this research.

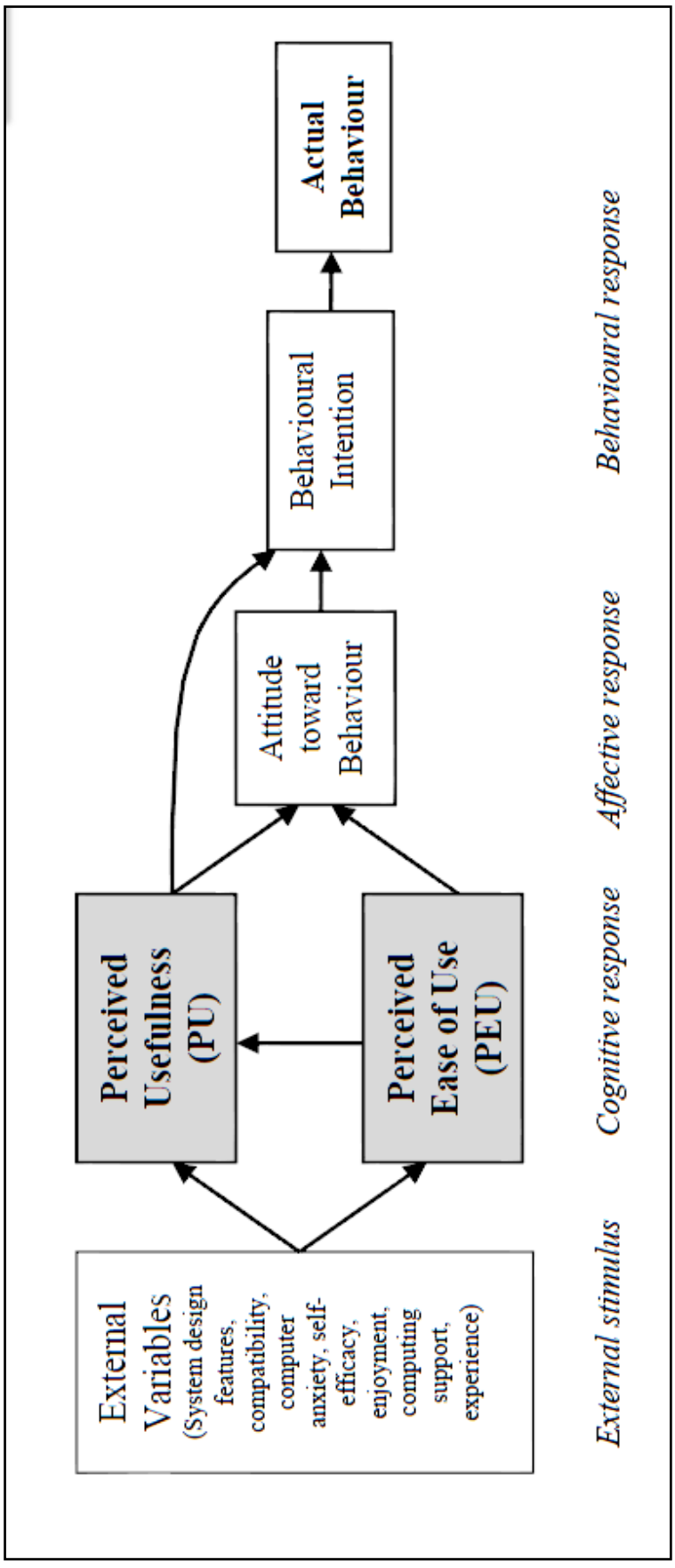


Figure 3.7 **User acceptance of ICT suggested by TAM (Davis et al., 1989, p.985)**

Perhaps because of the widespread use of the technology acceptance model, a good deal of attention has been paid to potential limitation or weaknesses of the model. Lee et al. (2003) criticised the model for being too simplistic with regard to definitions of usefulness and ease-of-use. The model has also been criticised for eliminating social norms as a contributing factor to behavioural intentions. Susanto (2012) argued that social norms may exist in some cases where there is strong public opinion related to specific technology use, and in those cases, they should be considered.

López-Nicolása et al. (2008) asserted that the model had limited predictive power, and suggested that additional constructs be included to better explain individuals' intentions to use technology.

Due to the extensive use and attention the technology acceptance model has received, the model has been refined and modified several times. In 2000, Venkatesh and Davis developed the technology acceptance model 2 (TAM2). This modification of the model can be seen in Figure 3.8.

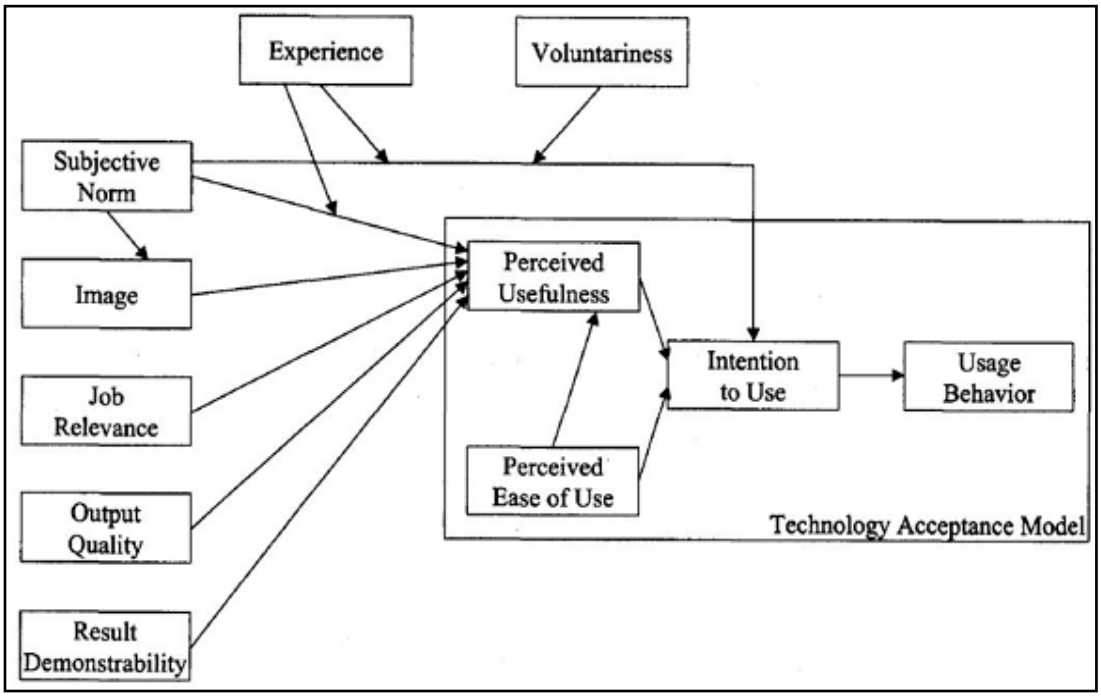


Figure 3.8 **The extended technology acceptance model (TAM2) (Venkatesh and Davis, 2000, p. 186-204)**

TAM2 is more complex than the original technology acceptance model. In TAM2, subjective norms are re-inserted and other factors such as experience and whether actions are voluntary impact an individual's intention to use a technology. TAM2 also identifies specific external factors that influence a technology's perceived usefulness such as image, job relevance, output quality, and result demonstrability.

Despite the expansion of the original technology acceptance model with TAM2, some scholars did not think the model clearly defined factors that influenced a technology's perceived ease-of-use. To address this deficiency in the TAM2 model, Venkatesh and Bala (2008) developed a third version of the model, TAM3, which aided researchers in understanding how factors influenced technology users' perceptions of a technology's usability. Figure 3.9 presents the TAM3 model.

The biggest difference between TAM2 and TAM3 is the inclusion in the later model of anchors and adjustments. Anchors reference pre-existing personal beliefs regarding computer and technology usage. Adjustments refer to system characteristics that can change over time depending on the experience of an individual. As the technology acceptance models evolved, they became more complex in an attempt to identify and weigh the behavioural predictors. Within this study, several concepts were drawn from TAM, TAM2, and TAM3 to build the statistical model including perceived usefulness, perceived ease-of-use, subjective norms, image, job relevance, output quality, result demonstrability, computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability.

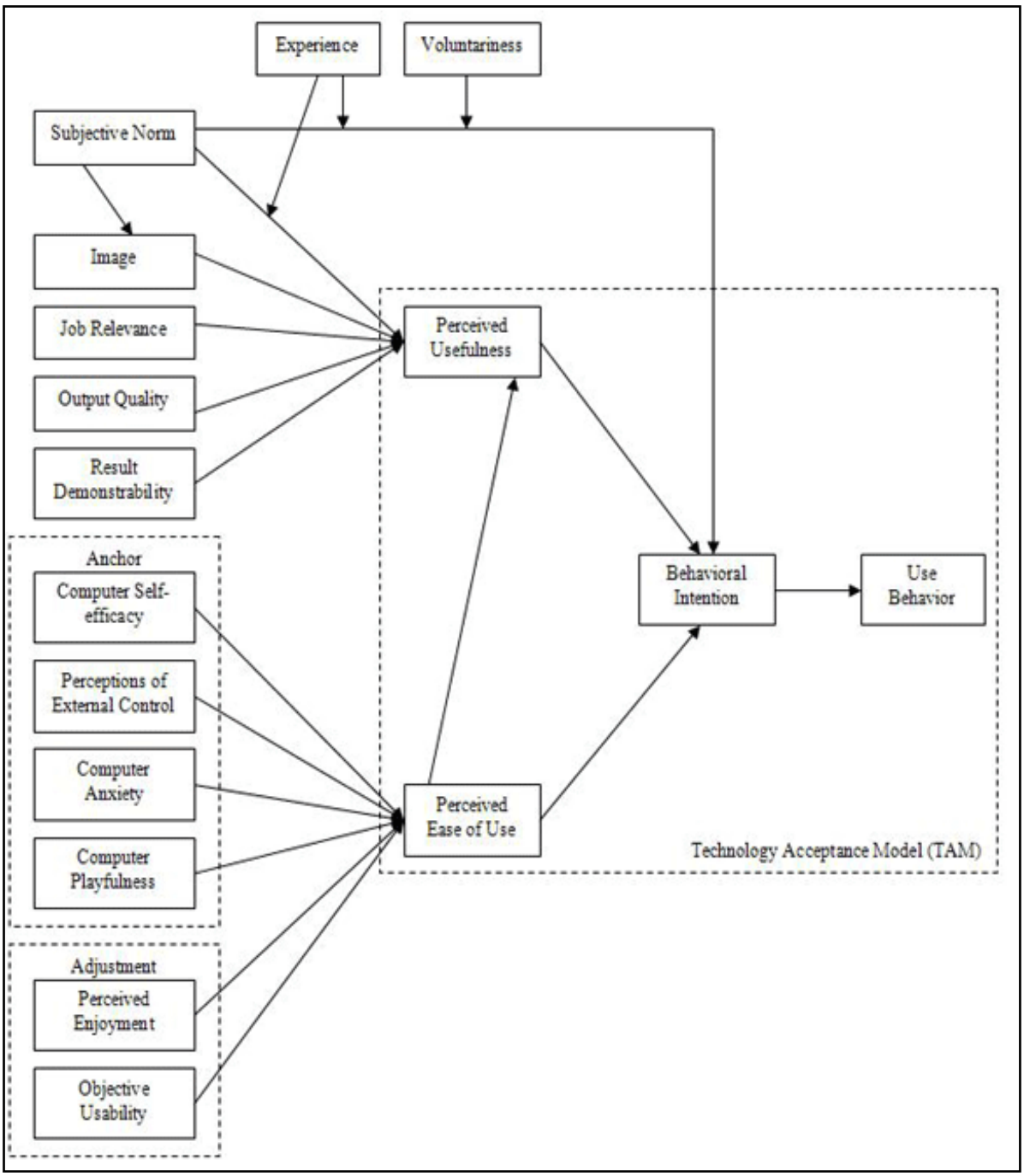


Figure 3.9 Technology acceptance model 3 (Venkatesh and Bala, 2013)

3.2.2.5 Unified theory of acceptance and use of technology (UTAUT)

The unified theory of acceptance and use of technology model (UTAUT) was developed in an attempt to consolidate and unify numerous technology adoption models. The UTAUT incorporates elements from eight major models:

- theory of reasoned action (TRA)
- the theory of planned behaviour (TPB)

- the technology acceptance model (TAM)
- the model combining the technology acceptance model and the theory of planned behaviour (C-TAM-TPB)
- the model of PC utilisation
- social cognitive model (Venkatesh et al., 2003).

Figure 3.10 identifies the individual elements of the UTAUT model and demonstrates their directional interaction with one another. Because of the incorporation of several other models within the field, the UTAUT is the most divergent of the five technology adoption theories\models used to develop this study's statistical model. Unlike the previously discussed models, the UTAUT incorporates factors such as age and gender that may be of specific interest within the context of Saudi Arabia.

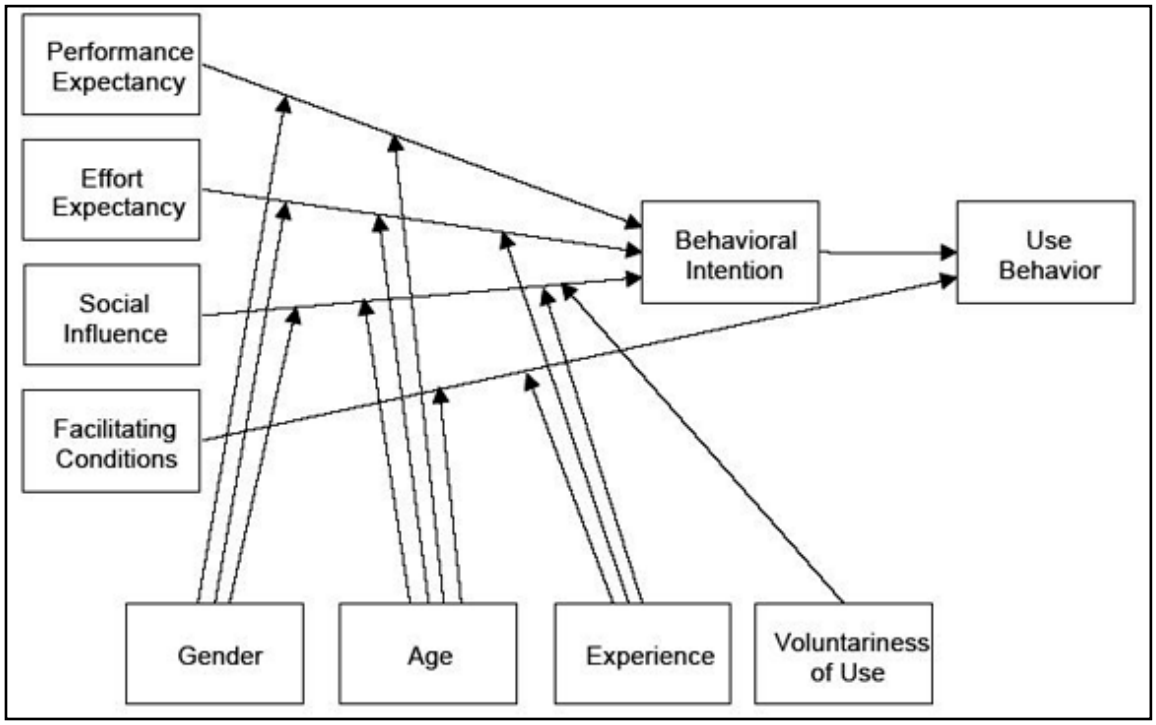


Figure 3.10 **Unified theory of acceptance and use of technology model (Venkatesh et al., 2003, p.447)**

As illustrated in Figure 3.10, elements of the model such as social influences and personal expectancies related to performance and effort are believed to directly impact behavioural intentions, while facilitating conditions are believed to directly influence use behaviour. Gender, age, experience, and whether use is voluntary have mediating affects on the primary influencers.

Vankatesh et al. (2003) incorporated gender and age into the UTAUT model based on evidence in the literature that suggested effort expectancy was a greater influencer of behavioural intentions in women and older workers.

Abubakar and Ahmad (2013) noted that studies using the UTAUT model have resulted in conflicting findings; however, the model incorporated additional elements that were of value to this research. Several concepts were drawn from the unified theory of acceptance and use of technology to build the statistical model of this study. These concepts included performance expectancy, effort expectancy, social influence, and facilitating conditions.

Table 3.1 Summary of constructs from different models

	relative advantage	**the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003)**
Diffusion of innovation (DOI) theory or Innovation diffusion theory (IDT) (Rogers, 2003)	compatibility	the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experience of potential adaptors (Rogers, 2003)
	complexity	the degree to which an innovation is perceived as difficult to understand and use (Rogers, 2003)
	trialability	the degree to which an innovation may be experimented with on a limited basis (Rogers, 2003)
	observability	the degree to which the results of an innovation are visible to others (Rogers, 2003)
Theory of reasoned action (TRA) (Fishbein and Ajzen, 1975, Ajzen and Fishbein, 1980)	attitude toward behaviour (A)	an individual's positive or negative feelings (evaluative affect) about performing the target behaviour (Fishbein and Ajzen, 1975), p. 216)
	subjective norm (SN)	'the person's perception that most people who are important to him think he should or should not perform the behaviour in question' (Fishbein and Ajzen, 1975), p. 302).
	behavioural intention (BI)	BI is a measure of the strength of one's intention to perform a specified behaviour (Fishbein and Ajzen, 1975) p. 288).
Technology acceptance model (TAM) (Davis, 1989)	perceived usefulness	the degree to which a person believes that using a particular system would enhance their job performance (Davis, 1989)
	perceived ease-of-use	the degree to which a person believes that using a particular system would be free of effort (Davis, 1989)
	attitude toward behaviour	adopted from TRA
	behavioural intention to use	adopted from TRA
Theory of planned behaviour (TPB)	attitude toward behaviour	adopted from TRA
	subjective norm	adopted from TRA
	perceived behavioural control	adopted from TRA
Decomposed theory of planned behaviour	attitude toward behaviour	adopted from TRA

	relative advantage	**the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003)**
(DTPB) (Taylor and Todd, 1995b)	subjective norms	adopted from TRA
	perceived behavioural control	adopted from TPB
	perceived usefulness	adopted from TAM
	perceived ease-of-use	adopted from TAM
	compatibility	adopted from DOI
	peer influence	the degree to which a person perceives that their peers think they should or should not use the technology (Taylor and Todd, 1995b)
	superior's influence	the degree to which a person perceives that their superiors think they should or should not use the technology (Taylor and Todd, 1995b)
	self-efficiency	perceived ability to use the technology (Bandura, 1997)
	resource facilitating conditions	the degree to which an individual believes that resources for using technology (such as time and money) are available for him/her (Taylor and Todd, 1995b)
	technology facilitating conditions	the degree to which an individual believes that technology or infrastructure for using technology (such as time and money) are available for him/her (Taylor and Todd, 1995b)
Technology acceptance model 2 (TAM 2) (Venkatesh and Davis, 2000)	perceived usefulness	adopted from TAM
	perceived ease-of-use	adopted from TAM
	subjective norms	adopted from TRA
	image	'The degree to which use of an innovation is perceived to enhance one's image or status in one's social system' (Moore and Benbst, 1991)
	job relevance	The degree to which the target system is applicable to their job (Venkatesh and Davis, 2000)
	output quality	the degree to which an individual believes how well the system performs their tasks (Venkatesh and Davis, 2000)
	result demonstrability	the tangibility of the results of using the innovation (Moore and Benbst, 1991)

	relative advantage	**the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003)**
Unified theory of acceptance and use of Technology (UTAUT) (Venkatesh et al., 2003)	performance expectancy	the degree to which an individual believes that using the system will help him/her to attain gains in job performance' (Venkatesh et al., 2003) (adopted from perceived usefulness in TAM)
	effort expectancy	'the degree of ease associated with the use of the systems'(Venkatesh et al., 2003) (adopted from perceived ease-of-use in TAM)
	social influence	'the degree to which an individual perceives that important others believe he or she should use the new system'(Venkatesh et al., 2003) (adopted from social norm in TRA)
	facilitating conditions	'the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system' (Venkatesh et al., 2003) (adopted from perceived behavioural control in TPB and DTPB)
Technology acceptance model 3 (TAM 3)	perceived usefulness	Adopted from TAM
	perceived ease-of-use	Adopted from TAM
	subjective norms	Adopted from TRA
	image	Adopted from TAM 2
	job relevance	Adopted from TAM 2
	output quality	Adopted from TAM 2
	result demonstrability	Adopted from TAM 2
	computer self-efficacy	the degree to which an individual believes that he or she has the ability to perform a specific task/job using the computer (adopted from (Compeau and Higgins, 1995a, Compeau and Higgins, 1995b))
	perception of external control	the degree to which an individual believes that organisational and technical resources exist to support the use of the system (adopted from (Venkatesh et al., 2003))
	computer anxiety	the degree of 'an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers' ((Venkatesh, 2000), p. 349)

	relative advantage	**the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003)**
	computer playfulness	'.the degree of cognitive spontaneity in microcomputer interactions' (adopted from (Webster and Martocchio, 1992))
	perceived enjoyment	the extent to which 'the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use ((Venkatesh, 2000), p. 351)
	objective usability	a 'comparison of systems based on the actual level (rather than perceptions) of effort required to completing specific tasks' ((Venkatesh, 2000), pp. 350-351).

3.3 Individual factors affecting technology adoption

As evidenced by the numerous models addressing diffusion of innovation and the adoption of technology, many different factors can potentially influence the adoption of e-commerce technologies among consumers. The vast majority of research into technology diffusion and adoption with regard to e-commerce has been conducted in the US and other advance Western nations. However, it is possible that culture and geographic location may play significant roles in the thorough understanding of technology adoption, and for that reason, this research focused exclusively on Saudi Arabia.

This study sought to build a statistical model that would help develop a better understanding of the factors involved in e-commerce adoption in Saudi Arabia. The following sections examine the constructs specifically identified from the previously outlined theories that were selected for use in this study's statistical models. These constructs fall into three broad categories: perceived characteristics of innovation, normative beliefs and motivation to comply and control beliefs and perceived facilitation. It is the premise of this research that these three groups of independent variables impact levels of e-commerce usability and adoption levels within Saudi Arabia.

3.3.1 Perceived characteristics of innovation

Within this study, perceived characteristics of innovation are examined within the context of four specific sub-dimensions:

- payment security and convenience
- e-commerce infrastructure
- delivery system efficiency
- product availability.

The impact of payment security and convenience was determined by measuring perceptions of the reliability and ease of use of payment systems and the guarantee secure payment transactions. In qualitative research examining slow e-commerce growth in Saudi Arabia, AlGhamdi et al. (2012) noted that problems with online payment systems negatively impact both the retailers' and consumers' adoption of e-commerce. Perceptions of risk related to the security of online payments can lead to reduced motivation to adopt online shopping practices.

The development of this construct within this research model was based on research by Ajzen (1991), Al-Ghaith et al. (2010), Gibbs and Kraemer (2004), Hua (2009), Lee (2009), Rogers (2003), Taylor and Todd (1995), and Venkatesh et al. (2003). The impact of e-commerce infrastructure was determined by measuring perceptions of websites, mobile phone applications, internet facilities, access facilities, and overall ease of use.

Recent research has identified weak e-commerce infrastructure in Saudi Arabia (AlGhamdi et al., 2010). In similar research on e-commerce in Egypt, Zaied (2012) noted that weak infrastructure is often a barrier to e-commerce adoption in developing countries. In order to promote e-commerce adoption, potential shoppers must have adequate internet facilities, vendors must have easy to use websites and mobile applications and consumers must positively perceive the systems' usability. The e-commerce infrastructure sub-dimension was developed based on research by Al-Ghaith et al. (2010), Gibbs and Kraemer (2004), Rogers (2003), and Venkatesh et al. (2003).

The impact of delivery system efficiency was determined by measuring perceptions of delivery facilities, timeliness, cost of delivery, effectiveness of the delivery system, and delivery availability based on geographic location. In addition to weak ICT infrastructure, online shoppers in Saudi Arabia also face a more traditional infrastructure obstacle in relation to delivery of online purchases. The lack of private mailboxes hinders or prevents the facilitation of delivery services and limits the practicality of online shopping for many potential customers (AlGhamdi et al., 2012). This is a significant concern that is unique to Saudi Arabia and as a result, e-commerce adoption rates have been negatively impacted (AlGhamdi et al., 2012). Support for the development of this sub-dimension was drawn from research by Bayles and Bhatia (2000), Hawk (2004), Kshetri (2008), Rogers (2003), Rutter and Southerton (2000), and Taylor and Todd (1995).

The impact of product availability was determined by measuring perceptions about product diversity, availability, and storage facilities. When conducting qualitative research on the slow adoption of e-commerce in Saudi Arabia, AlGhamdi et al. (2012) found that consumers complained of a lack of online retailers providing highly necessary or desired products. Lack of product availability can severely discourage the adoption of online shopping by limiting the

trialability of the innovation. Consumers must be motivated by the perceived usefulness of the innovation, or adoption is less likely (Davis et al., 1989). This sub-dimension was developed using additional research from Cox and Dale (2001), da Silveira (2003), and Schoenbachler and Gordon (2002).

3.3.2 Normative beliefs and motivation to comply

Within this study, normative beliefs and motivation to comply were examined within the context of two main sub-dimensions:

- trust
- perceived enjoyment

Trust is a crucial objective in e-commerce (Purani and Sahadev, 2015a). It is one of the most important concepts in the relationship marketing paradigm related to the development of B2C e-commerce (Corbitt et al., 2003). The impact of trust on e-commerce adoption was determined by measuring the level of trust for online vendors, trust in the delivery channels and transaction mediums, trust that online security and privacy were guaranteed, and how apparent the system's benefits are to users (observability).

Corbitt, Thanasankit, & Yi (2003) identified a number of key factors related to trust in the B2C context and propose a framework based on a series of underpinning relationships among these factors. The findings in this research suggest that people are more likely to purchase from the web if they perceive a higher degree of trust in e-commerce and have more experience in using the web. Gefen et al. (Gefen et al., 2003a) compared the degree and relative importance of customer trust in an e-vendor between new customers and experienced ones, and they found that usefulness and trust influenced experienced customers' intention, while potential customers were influenced solely by their trust in the online retailer.

Chiu et al. (2012) found that higher perceived risk based on previous shopping experiences negatively impacts shoppers' behavioural intentions. They also found that the benefits of the online shopping system (observability), in the form of utilitarian and hedonic values, were greater influences on shopping behaviour. These findings support the ideas that trust in online vendors and systems is important to the promotion of e-commerce adoption, but observability is perhaps

of greater significance when examining motivation. Fang et al. (2014) found that perceived effectiveness of e-commerce institutional mechanisms positively moderates the relationship between customer satisfaction and trust as it enhances the customer's reliance on past transaction experience with the vendor to re-evaluate trust in the vendor. Purani and Sahadev (2015) found in their research that people with a high level of technology readiness use the internet more, become more familiar with the technology and find it more beneficial. Again, the more they become familiar with technology the more they develop trust for online shopping. This sub-dimension was developed based on research by Al-Ghaith et al. (2010), Belkhamaz and Wafa (2009), Kim et al. (2008), Palvia (2009), Siddiqui (2008), and Trocchia and Janda (2003).

The impact of perceived enjoyment on e-commerce adoption was determined by measuring the degree of pleasure individuals felt when using e-commerce websites, their motivation for shopping online, and the overall attractiveness of e-commerce. According to Chiu et al. (2012) there are many sources of potential enjoyment that can be identified in relation to online shopping, including feelings of enjoyment, gratification, social community, and value. However, regardless of the source of enjoyment, when consumers perceive that the online shopping experience is pleasurable, they are more likely to engage in future shopping sessions. In this way, perceived enjoyment becomes a vital component of e-commerce adoption. The perceived enjoyment sub-dimension was developed based on research by Davis et al. (1992), Cheng et al. (2006), Moon and Kim (2001), Park and Kim (2003), Rouibah (2008), To et al. (2007), Turle et al. (2007), and Venkatesh (2000).

3.3.3 Control beliefs and perceived facilitation

In this study, control beliefs and perceived facilitation were examined within the context of two sub-dimensions:

- prior experience
- e-commerce service quality

The impact of prior experience on e-commerce adoption was determined by measuring individuals' familiarity with e-store websites, experience using products from e-stores, previous trust and service quality experiences, and overall perceptions of the experience of shopping online.

Familiarity with websites can have a positive impact on e-commerce adoption behaviours, as consumers who are familiar with the online shopping process experience less stress and cognitive load. Deck and Jahedi (2015) noted that greater levels of cognitive load are associated with more risk adverse behaviour. Within an e-commerce context, this means that users who have less experience and familiarity with the online shopping process may be less likely to adopt the technology, whereas users with positive prior experiences shopping online would be more likely to embrace e-commerce more fully. Positive prior experiences also help build trust in the online shopping experience (Chiu et al., 2012). This sub-dimension was developed based on these findings as well as previous research by Al-Ghaith et al. (2010), Gefen (2000), Hernández et al. (2010), Liaw and Huang (2006), Luhmann (2000), and Rogers (2003).

The impact of e-commerce service quality was determined by measuring perceptions of services delivered through online providers, the ease-of-use of services features on websites, and the quality of satisfaction and trust between vendors and consumers. Multiple studies have shown that overall website quality has been correlated with trust, a factor shown to positively influence individuals' motivation to adopt and use e-commerce (Chiu et al., 2012; Eidt, 2011).

Research by Chiu et al. (2012) also demonstrated that website quality was positively correlated with repeat purchasing behaviour. Perceived website quality, expressed as layout design and reputation, were identified as important when motivating online customers to make an initial purchase; however, ease-of-use and overall utility were found to be more influential in driving repeat purchases. Chiu et al.'s research suggested that e-commerce service quality can be seen in terms of two necessary and vital dimensions: the qualities that attract an online purchaser and drive a first purchase and the qualities that drive repeat purchases. Foundational research from Delone and McLean (2004), Flick (2009), Ha and Stoel (2009), Molla and Licker (2001), and Parasuraman (2002) was used when developing this sub-dimension within the present statistical model.

3.4 Summary

This chapter has reviewed literature relevant to the factors influencing e-commerce adoption in Saudi Arabia. Firstly, the chapter provided a context for understanding e-commerce within this study by defining e-commerce and discussing e-commerce within both a global and also a

Middle Eastern context. The literature found the rise of e-commerce in the Saudi region is slow and yet has potential. Issues of reliability, trust and facing new technologies remain issues in this region. However, several models predict the use of e-commerce in this region, and there is no established model for e-commerce adoption in Saudi Arabia; thus a new model would be required. Next, the chapter identified the main theories related to innovation and technology adoption that helped form a foundation for the development of this study's statistical model, a new conceptual model for the research. The model would combine several constructs from the model studied in this chapter. Finally, the chapter identified and explored literature relevant to the specific factors influencing technology adoption as laid out in the study's model.

In the next chapter significant elements of e-commerce adoption by individuals will be examined in light of technology acceptance models and theories.

CHAPTER 4: RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

Chapter 4 presents the research hypotheses and the conceptual model for this study. The chapter begins by discussing the development of hypotheses related to the cultural context of Saudi Arabia. These include hypotheses related to demographic characteristics such as age and gender and cultural issues such as ICT proficiency within Saudi Arabia. Next, the chapter presents material related to factors identified in the literature review on innovation diffusion and technology adoption and introduces the remaining hypotheses developed to address those factors. The final section of Chapter 4 presents the research model incorporating all the hypotheses. An illustration to identify interaction among the variables in relation to specific hypotheses is used to aid this process. Chapter 4 provides a foundation for the following chapters, which present the methodology of the study, provide details of the quantitative and qualitative analyses, discuss the research findings, and draw conclusions based on the research results.

4.1 Cultural context and related hypotheses

As discussed in Chapter 3, culture in Saudi Arabia is tightly bound by Islamic belief and norms, and there are strict rules and regulations governing behaviour for different groups of people based on age and gender. To ensure that this study adequately addressed these cultural considerations, the researcher acknowledged that factors such as age, gender, and internet proficiency might influence the adoption of e-commerce. Thus hypotheses to specifically examine the interaction of these factors were developed. These factors and related hypotheses are discussed in the following sections.

4.1.1 Demographic characteristics

Buyers' demographics are among the most frequently studied factors in B2C e-commerce research. The effects of the gender, age, income and education of buyers on their B2C e-commerce behaviour have been examined since the late 1990s (Bellman et al., 1999, Li et al., 1999). Almost all of the quantitative research in the field of IT innovation adoption has examined the influence of demographic factors. However, there are two different points of view on how to apply these factors in the research model. Some researchers have suggested using demographics as moderating variables within a research model. Another approach involves addressing

demographic variables through the use of additional independent hypotheses (Mittal and Kamakura, 2001). This research addressed the potential influences of demographic and cultural factors by developing individual hypotheses as opposed to incorporating them as moderating variables within the model.

Age. The first demographic factor examined in this research was age. Age has proved to be an important variable in individuals' adoption of e-commerce in the form of online shopping. Younger individuals demonstrate positive attitudes towards online activity, whereas older individuals perceive online activity as lacking behavioural control (Morris and Venkatesh, 2000). Because age has been shown to impact online activity, the following hypothesis was developed to investigate the impact of age on different types of e-commerce user groups.

H1: ***There will be a significant difference between e-commerce user groups (high volume, moderate and low usage) in terms of age.***

Gender. Gender is also likely to play an important role in the adoption and use of the online services, especially in developing countries. A number of research studies have shown that gender influences the acceptance of technology, especially in gender-based societies like that of Saudi Arabia (Baker et al., 2007, Sait et al., 2007, Hu et al., 2010). As noted in the previous chapter, sex segregation is a part of culture in Saudi Arabia, and usually males are viewed as responsible for the welfare and behaviour of their female relatives. Consequently, the impact of gender on online shopping adoption in Saudi Arabia is worth investigation.

Previous studies have indicated that females are less likely to purchase online than men (Gefen and Straub, 1997, Alzahrani, 2011, Al-Gahtani et al., 2007, Venkatesh et al., 2000, Venkatesh et al., 2003, Venkatesh and Morris, 2000). Taking these findings into account, the researcher developed the following hypothesis to explore the impact of gender on e-commerce adoption in Saudi Arabia.

H2: ***There will be a significant difference between online shopping user groups (high volume, moderate and low usage) in terms of gender (male and female).***

4.1.2 ICT proficiency

ICT proficiency greatly depends on cultural perception (Dyson, 2004, Heemskerk et al., 2005, Arokiasamy et al., 2014). A society's approach to teaching people about the use of the internet varies from country to country, as does how freely content can be uploaded and accessed. In Saudi Arabia, there are strict rules related to the use of the internet, and the government monitors, as well as restricts, many websites.

In general, however, ICT proficiency is necessary for anyone wanting to complete any task online, from shopping to checking the weather. And it is interesting that when inexperienced and experienced e-customers are surveyed, as long as the customer is ICT literate, the internet itself has little impact on their experiences (unless it fails to connect) (Hernández et al., 2010).

General ICT literacy enables access to both B2C and B2B e-commerce, therefore, and it is the actual process of conducting the purchase, as well as demographic factors, such as age and gender that exert the greatest influence on e-customers' response to their experiences. In Saudi Arabia, access to online shopping tools and, more importantly, the customer's confidence in using them, could influence the adoption of e-commerce.

Without reference to specific restrictions, the researcher developed the following hypothesis to investigate the impact of e-commerce users' actual ability to shop online on overall e-commerce adoption in Saudi Arabia.

H3: ***There will be a significant difference between e-commerce user groups (high volume, moderate and low usage) in terms of their ability to shop online.***

4.2 Hypotheses related to e-commerce diffusion and adoption in Saudi Arabia

In addition to demographic and cultural factors, established theories on innovation diffusion and technology adoption have identified several factors that may impact e-commerce adoption within Saudi Arabia (Rogers, 2003; Al-Ghaith et al., 2010; Flick, 2009; Liaw and Huang, 2006). For example, previous research suggests that e-commerce users (online shoppers) pass through several stages to full usage or assimilation of new technology (Rogers, 2003). The major purpose of this study was to explore the attributes of the innovations that either encourage or inhibit e-commerce adoption in the form of online shopping practices in Saudi Arabia.

Based on this premise, several research hypotheses were formulated, and a model was developed to explain the influence and interaction of a number of variables. The proposed model examined specific variables identified in scholarly literature as having influence on B2C e-commerce adoption. Consequently, the model was expected to provide a clearer view of the factors contributing to slow e-commerce adoption within Saudi Arabia that need attention and intervention. In fact, the specific constructs of interest to this study were chosen because of their relative importance in other studies and articles that discuss the potential benefits of web adoption and because of their pertinence to the characteristics of both ICT innovation adoption in general and internet technologies in particular (AlGhamdi et al., 2011c, Brown and Jayakody, 2008).

4.2.1 Constructing hypotheses for a model

Literature about innovation diffusion has identified factors that tend to influence the adoption of technologies and new ways of doing things, including those that facilitate e-commerce. However, little evaluation has been conducted on the impact of an individual's stage of ICT maturity on the adoption of e-commerce. To the researcher's best knowledge, no prior study in the field of e-commerce has investigated online shopping adoption in Saudi Arabia from the viewpoint of consumers. Nor has any single study examined B2C e-commerce in order to investigate the process as a whole within the context of a developing country like Saudi Arabia.

Research has indicated that some factors have more effect on an individual's intention to use and adopt B2C e-commerce in the form of online shopping (Harris and Goode, 2004; Kshetri, 2008; Pavlou and Fygenson, 2006). In developing the hypotheses and proposed model, the researcher combined the most relevant constructs from different models of new technology adoption, and the most important dimensions of e-commerce adoption. As a result, three broad dimensions of technology adoption were the focus of this study's model:

- ***perceived characteristics of innovation***
  obtained from attitudinal or behavioural beliefs, used in DOI, TAM, TPB, and UTAUT (Ajzen, 1991; Rogers, 2003; Taylor and Todd, 1995; Venkatesh et. al., 2003)
- ***normative beliefs and motivation to comply***
  used in TPB, DTPB, and TAM (Ajzen, 1991; Rogers, 2003; Taylor and Todd, 1995)

- ***control belief and perceived facilitation***
  used in TPB, DTPB, TAM, and UTAUT (Ajzen, 1991; Rogers, 2003; Taylor & Todd, 1995; Venkatesh et. al., 2003).

Within each of these broad dimensions, there were sub variables that were of specific interest when developing the study's hypotheses. Within the context of this study, perceived characteristics of innovation were tested by examining the impact of infrastructure, payment system, delivery system and product availability on individuals' adoption of e-commerce. Normative beliefs and motivation to comply were tested by examining how trust (specifically in regard to privacy) and enjoyment impacted individuals' adoption of e-commerce. Finally, control beliefs and perceived facilitation were tested by examining the impact of prior experience and service quality on individuals' adoption of e-commerce. A discussion of these individual constructs and their related hypotheses are discussed in greater detail in the following sections to help illustrate the development of the model.

4.2.1.1 Perceived characteristics of innovation

Innovations require certain features to attract attention and uptake. If the innovation is simply an idea, the attention of social media may be enough to encourage diffusion. However, if the innovation depends on new technologies as well as new ideas, a variety of support features is generally required. These support features include infrastructure, payment systems, delivery systems and product availability.

- ***Infrastructure.***

E-commerce, like any other ICT innovation, needs the proper infrastructure to be successful. Lack of access to electronic devices like computers, mobile phones, or tablets or the slowness of the internet have a direct impact on e-commerce adoption. Slow diffusion of technology and limited use of the internet in developing countries can be attributed to market and infrastructural factors (Kshetri, 2008). In Saudi Arabia, for instance, a lack of electrical supply, a low tele-density and a lack of purchasing power result in a low rural internet usage (Al-Ghaith et al., 2010). Moreover, manufacturers of ICT products generally rely on large distributors to promote initiatives, and these distributors are often located in developed countries. Considering all these factors, the researcher developed following hypothesis related to e-commerce service infrastructure:

H4: ***There is a direct and positive relationship between well-established e-commerce infrastructure and the level of users' online shopping adoption in Saudi Arabia.***

- ***Payment systems.***

As mentioned in Chapter 2, one of the main barriers to e-commerce adoption, especially in developing countries, is the lack of the sophisticated payment systems required for online transactions. For example, the unavailability of credit cards is a major barrier to e-commerce adoption (Al-Ghaith et al., 2010, Gibbs and Kraemer, 2004). This barrier has been removed in the adoption of e-commerce in developed and western countries because of widespread public access to credit cards.

Although studies have noted payment problems with B2C e-commerce in Malaysia, Ukraine, and Turkey (Jennex and Amoroso, 2002, Opaloğlu, 2012, Harn et al., 2006), payment systems are most inefficient in developing countries such as Saudi Arabia. Even where infrastructure is in place, customers' perceptions of the safety and trustworthiness of online transactions may affect their acceptance and adoption of e-commerce (Eid, 2011). It should be noted that, overall, payment facilities and attitudes to the use of money have a greater impact on the usage and continued usage of online shopping than the intention to use:

H5: ***Inefficient financial systems and reduced payment safety have a significant direct and negative influence on the adoption of e-commerce.***

- ***Delivery systems.***

A system for delivering goods bought online is critical to the adoption of e-commerce. This issue is significant in developing countries like Saudi Arabia where there are difficulties providing delivery services to home addresses. Unfortunately, there is not a national posting standard within Saudi Arabia, and the public have to give a mailbox address or work address when placing online orders. It is also difficult for small developing countries to attract FedEx and UPS to provide delivery services (Kshetri, 2008). Therefore, assuming such conditions, the following hypothesis was formulated:

H6: ***Poor delivery systems have a significant negative effect on the adoption of e-commerce.***

- ***Product availability.***

One of the main advantages of online shopping is access to a larger global market. There is, therefore, a strong negative impact if products are unavailable. This factor has been investigated in many studies that indicate that a lack of product may be due to local bans or poor stock management (Khalil, 2014, Almousa, 2013, Kuo et al., 2011). For example, in some religious countries like Saudi Arabia, local bans of certain commodities are recognised as problematic by researchers.

Additionally, a customer is more likely to buy a product they know is in stock. Product unavailability is likely to result in unhappy customers who are less likely to return to a specific vendor whether in the real world or online. Consequently, product availability is becoming an important competitive advantage when promoting e-commerce. These observations lead to the following hypothesis:

H7: Product availability has a significant positive effect on the adoption of e-commerce.

4.2.1.2 Normative beliefs and motivation to comply

A number of researchers have examined the influence of behavioural and psychological characteristics on adoption of ICT innovations in the form of normative beliefs and behavioural motivations (Eid, 2011, Aleid et al., 2010b). This study was interested in exploring the characteristics of innovation adoption that affect the psychological aspects of an individual. These factors are particularly important within a voluntary environment like the internet, and internet-associated activities like e-commerce, in the form of online shopping are especially susceptible to individuals' behavioural and psychological characteristics. Normative beliefs and behavioural motivations were included within the research model because of their relative importance in other studies (Agarwal and Prasad, 1997, Tan and Teo, 2000). The two specific sub-dimensions examined by this research were trust and enjoyment.

- ***Trust.***

Trust is essential for any relationship, whether interpersonal or business-related. In e-commerce trust is a crucial objective and one of the most important concepts in the relationship marketing paradigm (Corbitt et al., 2003, Purani and Sahadev, 2015b). In traditional commerce, trust is based on personal or business relationships and interactions between the seller and buyer at an

individual or a firm level. Trust in e-commerce systems is based on the consumer's confidence in the processes. Due to the separation of seller and buyer in online shopping and the dependence on information technologies and systems, consumers always experience some level of risk. In these uncertain situations, when consumers have to act, trust comes into play as a solution for the specific problems of risk. Many scholars have argued that trust is a prerequisite for successful e-commerce and in particular for online shopping (Jarvenpaa et al., 1999, Kim et al., 2005, Urban et al., 2000, Pavlou and Fygenson, 2006).

In prior research, trust has been viewed from different perspectives: 1) trust in the online retailer and 2) trust in the technological process. Gefen (Gefen, 2002) defined trust of an online vendor as the 'willingness to make oneself vulnerable to actions taken by the trusted party based on the feeling of confidence and assurance' (p.30). This means that customers would like to be sure that the vendor has nothing to gain by cheating. This fact mandates that online sellers create an environment in which a consumer can be relaxed and confident about any prospective transactions.

A precise definition of trust has been provided by Bishop (Bishop, 2003):

> *In the field of computer technology containing hard- and software implementations trust is a belief or desire that a computer entity will do what it should to protect resources and be safe from attack. (p. 477)*

In an e-commerce context, trust includes the consumers' belief that there are safe and secure mechanisms built into the shopping website and that sellers will provide goods or services as described. Researches regarding the external factors that affect consumers' trust formation processes have shown that trust is indeed a multidimensional concept. Major concerns associated with lack of trust include fraud, security risks, and illegal access to personal and financial information (Hoffman et al., 1999, Yousafzai et al., 2003, Kim et al., 2008). However, web experiences, personal levels of innovativeness, and website quality can positively influence customers' trust (McKnight et al., 2002, Gefen et al., 2003b).

Despite the importance of trust as a multidimensional concept, there are few studies that scrutinise the influence of trust in e-commerce adoption in Saudi Arabia. Issues of trust were examined using the following hypothesis:

H8: ***Trust in online shopping service providers has a significant direct and positive relationship with e-commerce adoption.***

- ***Enjoyment.***

Enjoyment is an important motivation for shopping in all forms. It is motivated by both *hedonic* and *utilitarian* reasons. In the utilitarian view, consumers purchase products in an efficient and timely manner to achieve their goals with a minimum of irritation (Childers et al., 2002). Utilitarian shopping is task-related and rational and related closely to accomplishing a mission (Arnold and Reynolds, 2003). Hedonic shopping consists of finding pleasure in the shopping experience (Babin et al., 1994). To et al. (To et al., 2007) explained that hedonic motivation refers to consumption behaviours in search of the emotions of happiness, enjoyment, awakening, sensuality, and fantasy.

In the context of e-commerce, Vakentash argued that enjoyment depends on the degree to which the consumer perceives a certain technology as pleasant (Venkatesh, 2000). Moon and Kim (Moon and Kim, 2001) defined enjoyment in the context of online services as 'the extent to which the individual perceived that his or her attention is focused on the interaction with the World Wide Web' (p. 219). In fact, the pleasure of shopping online is what motivates many consumers to choose a virtual store for their purchases. With the right infrastructure in place, e-commerce allows consumers to shop from the convenience of their home, anytime and anywhere in the world. Whatever factor provides the enjoyment, pleasure or fun, a hypothesis for enjoyment of online shopping was developed as follows:

H9: ***Enjoyment or a sense of pleasure has a significant direct and positive relationship with e-commerce adoption.***

4.2.1.3 Control beliefs and perceived facilitation.

Human beings like to feel that they are in control of themselves and situations in which they find themselves. E-commerce allows users to have this experience (Olivero and Lunt, 2004, Benlian et al., 2012, Alnemr et al., 2010). For this reason, control beliefs and perceived facilitation were included in the present model as an area of investigation. Two sub-dimensions were included in this examination: prior experience and service quality.

- ***Prior experience.***

Research has indicated that prior experience influences individuals' future behaviour. Prior experience and familiarity with technology reduces anxiety and provides confidence ***(Fuller et al., 2006)***. Prior experience, in context of e-commerce, refers to consumers' degree of acquaintance with e-commerce innovation, which includes knowledge of online shopping and an understanding of its relevant procedures, such as searching for products and information and ordering through purchasing interfaces on various websites. Previous positive experience exerts both direct and indirect influence on the intention to use the ***internet*** for purchasing. Findings also confirm those of other studies demonstrating the impact of previous similar shopping experiences on future shopping behaviour toward non-store retail formats. Considering the importance of prior experience, the following hypothesis was formulated:

H10: Prior experience has a significant direct and positive relationship with e-commerce adoption.

- ***Service quality.***

Service quality (or support and service in (Molla and Licker, 2001) is defined as the overall support delivered by the online shopping service providers (Delone and Mclean, 2004). Service quality is an essential strategy which is increasingly recognized as an important aspect of for e-commerce adaptation by customers possibly more important than low price and Web presence (Zeithaml et al., 2002, Santos, 2003) .

Service quality is the key determinant for successful e-commerce because the online comparison of the technical features of products is essentially costless, feasible, and easier than comparisons of products through traditional channels (Santos, 2003).

Molla and Licker (Molla and Licker, 2001) postulated that e-commerce satisfaction is affected by the level of service quality provided by the e-vendor, in case of online shopping, the e-vendors. Santos (2003) proposed that e-service quality has incubative (ease of use, appearance, linkage, structure and layout, and content) and active (reliability, efficiency, support, communication, security, and incentives) dimensions for increasing hit rates, stickiness, and customer retention. DeLone and McLean (Delone and Mclean, 2004) also included this relationship in their updated model of information system success. They further indicated that service quality

influences intentions to use a system, which may equally apply to intentions to continue using a system. Additionally, Harris and Goode (Harris and Goode, 2004) found that service quality plays an important role, not only in enhancing user satisfaction, but as an influence on trust and perceived usefulness. Lee and Lin (2005) concluded that the dimensions of web site design, reliability, responsiveness, and trust affect overall service quality and customer satisfaction. Kassim and Asiah Abdullah (2010) found that perceived service quality was found to have a significant impact on customer satisfaction. Purani and Sahadev (2015b) focused on four different dimensions of e-service quality – efficiency, fulfilment, systems availability and privacy, and found that technology readiness has a positive moderating role as proposed across all the four dimensions of e-service quality.

Based on the findings from previous research, it is clear that service quality plays a significant role in the continued use of e-commerce. This research assumed that it would also impact e-commerce adoption. These observations resulted in the following hypothesis:

H11: Service quality has a significant direct and positive relationship with e-commerce adoption.

4.2.2 Interaction among different variables

It was assumed that the various elements of an innovation do not operate in isolation; instead they were expected to interact and influence one another. Therefore, interactions between factors were a prime consideration within this study. The research model was developed to measure potential critical interactions, and hypotheses were formulated to test those interactions along with the model as a whole.

4.2.2.1 Delivery system and product availability

Product delivery is a prime factor in the adoption of e-commerce (Choi and Lee, 2003, Wolfinbarger and Gilly, 2001, Laudon et al., 2007). E-consumers expect products to be delivered on time, with proper compliance, and at low cost. An efficient delivery system not only increases trust, but it also has a significant impact on the perception of product availability from the consumer's point of view. It was assumed that these perceptions were key to maintaining interest in and a willingness to use e-commerce facilities. This resulted in the following hypothesis:

H12: There is a significant direct and positive relationship between delivery system and product availability.

4.2.2.2 Trust and payment system

The importance of trust for commerce of all sorts cannot be overestimated. Trust is one of the most important variables that defines attitudes in any commercial relationship, and it is of paramount importance in online shopping and the adoption of e-commerce (Corbitt et al., 2003, Purani and Sahadev, 2015b) .

Good security improves trust and customers' perceptions of the security of e-payment systems have become a major factor in the evolution of e-commerce in markets, consequently the perception of good security and trust ultimately increases the use of e-commerce (Kim et al., 2010) . Lack of standard technologies for secure payment discourages consumers for e-commerce (Hoffman et al., 1999) . So, not only must an online payment system be trustworthy, but so must the information used to sell the product or service. Fraud can be observed throughout the virtual marketplace, just as it is in the physical marketplace. In addition to trust, providing payment information and personal details online require consumers to weigh the risks and the benefits and decide how much a specific online vendor or payment system can be trusted (Özgüven, 2011). This indicates a direct and positive relationship between trust and payment systems (Kim et al., 2010, Yoon, 2002, Meskaran et al., 2013, Özgüven, 2011). As a result, the following hypothesis was developed:

H13: There is a significant direct and positive relationship between trust and payment system.

4.2.2.3 Service quality and prior experience

Efficient and reliable service quality is important to online shopping, and it increases the customer base and loyalty for e-commerce businesses (Gefen, 2002, Singh, 2002). Better service quality helps to improve the perceptions and meet the expectations of online shoppers. This in turn increases the level of trust, and the pleasure associated with adopting e-commerce. Positive experiences with online service reinforce the use of online entities, while poor quality of service increases dissatisfaction (Kassim and Asiah Abdullah, 2010). Prior experience can therefore be either negative or positive, with both influencing the uptake of e-commerce. Thus, the present

research assumed that the higher the service quality was during individuals' prior online shopping attempts, the more positive those prior e-commerce experiences would be. Based on this assumption, the researcher developed the following hypothesis:

H14: There is a significant direct and positive relationship between prior experience of service quality and the use of e-commerce.

4.2.3 Proposed research model

The proposed research model was based on the relationships of the hypotheses to be tested. The relationships between the various factors are illustrated in Figure 4.1. As discussed when introducing the hypotheses, the three broad dimensions examined were:

- perceived characteristics of innovation
- normative beliefs and motivation to comply
- control beliefs and perceived facilitation.

Each of these broad areas contained sub-dimensions. These constructs are extracted from the models developed in Chapter 2. Payment security, delivery system, infrastructure and product availability adopted from TAM, UTAUT and TPB are related to the theory of diffusion innovation. In addition to these, trust, and perceived enjoyment were taken from TPB, DTPB and TAM. Moreover, prior experience and service quality constructs were based on TAM, UTAUT, TPB and DTPB. The sub-dimensions were defined and tested through the hypotheses, and the research model tested the interactions between individual sub-dimensions. The sub-dimensions and their use within this research are outlined in Table 4.1. These sub-dimension constructs were extracted to predict e-commerce adoption in the form of online shopping uptake in Saudi Arabia. The constructs described in the table act as the independent variables within the model. As such, they define the level of acceptance of online shopping. Prior to this study, no comprehensive model of e-commerce adoption sought to measure the impact of these specific independent variables in the context of Saudi Arabia.

Table 4.1 Independent constructs of the research model

Broad area	Origin Model	Sub-dimension/ contrasts	Defining aspects	Adopted from
Perceived characteristics of innovation	TPB, TAM, UTAUT	Payment security and convenience	Payment system available for online shopping and e-commerce transaction, their reliability and easiness for safe and secure transactions.	Ajzen, 1991; Rogers, 2003; Taylor and Todd, 1995; Venkatesh et. al., 2003; Hua, 2009; Al-Ghaith et al., (2010); Lee, (2009); Gibbs & Kraemer, (2004)
		E-commerce infrastructure	The website, cell phone application, internet facilities, access facilities and ease of use.	Rogers, 2003; Venkatesh et. al., 2003; Al-Ghaith et al., (2010); Gibbs and Kraemer, (2004)
		Delivery system efficiency	Product delivery facility, maintaining schedule, cost of delivery, effectiveness of delivery system, delivery geographic coverage.	Kshetri, (2008); Hawk, (2004); Bayles & Bhatia, (2000); Rutter & Southerton, (2000); Rogers, 2003; Taylor and Todd, 1995
		Product availability	Divers type products, need based products, availability and storing facilities.	Schoenbachler & Gordon, (2002); Cox & Dale, (2001); da Silveira, (2003)
Normative beliefs and motivation to comply	TPB, DTPB, TAM	Trust	Trust on the online vendor, trust on delivery channel, having observability, trust on transaction medium, trust on online security and privacy.	Al-Ghaith et al., (2010); Siddiqui, (2008); Belkhamaz & Wafa, (2009); Palvia, (2009); Kim et al., (2008); Trocchia & Janda, (2003)
		Perceived enjoyment	Degree of pleasure when using online shopping websites, Motivation for online shopping, attractiveness of e-commerce	Park & Kim, (2003); Venkatesh, (2000); To et al., (2007); Moon & Kim, (2001); Davis et. al., 1992; Cheng et al., (2006); Turle et al., (2007); Rouibah, (2008)
Control belief and perceived facilitation	TPB, DTPB, TAM, and UTAUT	Prior experience	Familiarity with e-store website, Experience in using products from e-store, previous trust and service quality experience, overall experience of using online shopping.	Luhmann (2000); Gefen (2000); Hernández et al., (2010); Al-Ghaith et al., (2010); Rogers, (2003); Liaw & Huang, (2006)
		E-commerce service quality	Service delivered through online service providers, Easy service features on website, quality for satisfaction and trust.	Flick (2009); Ha and Stoel, (2009); Molla, and Licker, (2001); Delone & Mclean, (2004); Parasuraman, (2002)

As previously discussed, all the independent constructs of the proposed model are related to models developed and practised at present. The new model is thus comprehensive and consistent. However, specific characteristics of innovation related to the perceived usefulness and perceived ease of use are explained in TAM and UTAUT. These perceived characteristics would influence the behavioral belief discussed in TPB to form an attitude towards the technology. Normative beliefs and motivation to comply constructs have shown relevance to the TPB and DTPB model. Normative beliefs influence the use of any technology, and as per TAM these work as external variables that influence the perceived characteristics.

In addition to independent constructs, dependent variables within the model have also considered with relevance to other studies, the researcher developed a construct to reveal the level of e-commerce adoption. This dependent variable provided the details of the actual online shopping adoption level. Table 4.2 outlines the defining aspect of this construct, along with its sources.

Table 4.2 Dependent/ exogenous constructs of the model

Exogenous construct (independent construct of the model)		
Construct	*Defining aspects*	*Adopted from*
online shopping usability or e-commerce adoption level	Access to e-commerce (online shopping) infrastructure and facilities, level of usage for internet and online stores, time and money spent for on e-commerce, knowledge of using e-commerce, concerns for online security.	Limayem et al., (2000); Perea y Monsuwé et al., (2004); Li et al., (1999); Swinyard & Smith (2003); Klopping & McKinney, (2004); Zhou et al., (2007); Eroglu et al., (2001); Hongyoun & Kim, (2009); Kim and Park, (2005); Karim et al., (2009); Bakerman, (2014)

As presented in Table 4.2, the level of e-commerce adoption explores consumers' intended approach, as well as their actual exhibited behaviour. The dependent variable constructs of the model were very complex, but were pursued in order to make a comprehensive model for determining the level of e-commerce adoption in Saudi Arabia. Furthermore, the direct and indirect, as well as interrelated relationships of the independent and dependent variables provided a whole model that could be tested to answer the research hypotheses and address the research problems. The proposed relationships of the endogenous and exogenous constructs are illustrated in Figure 4.1.

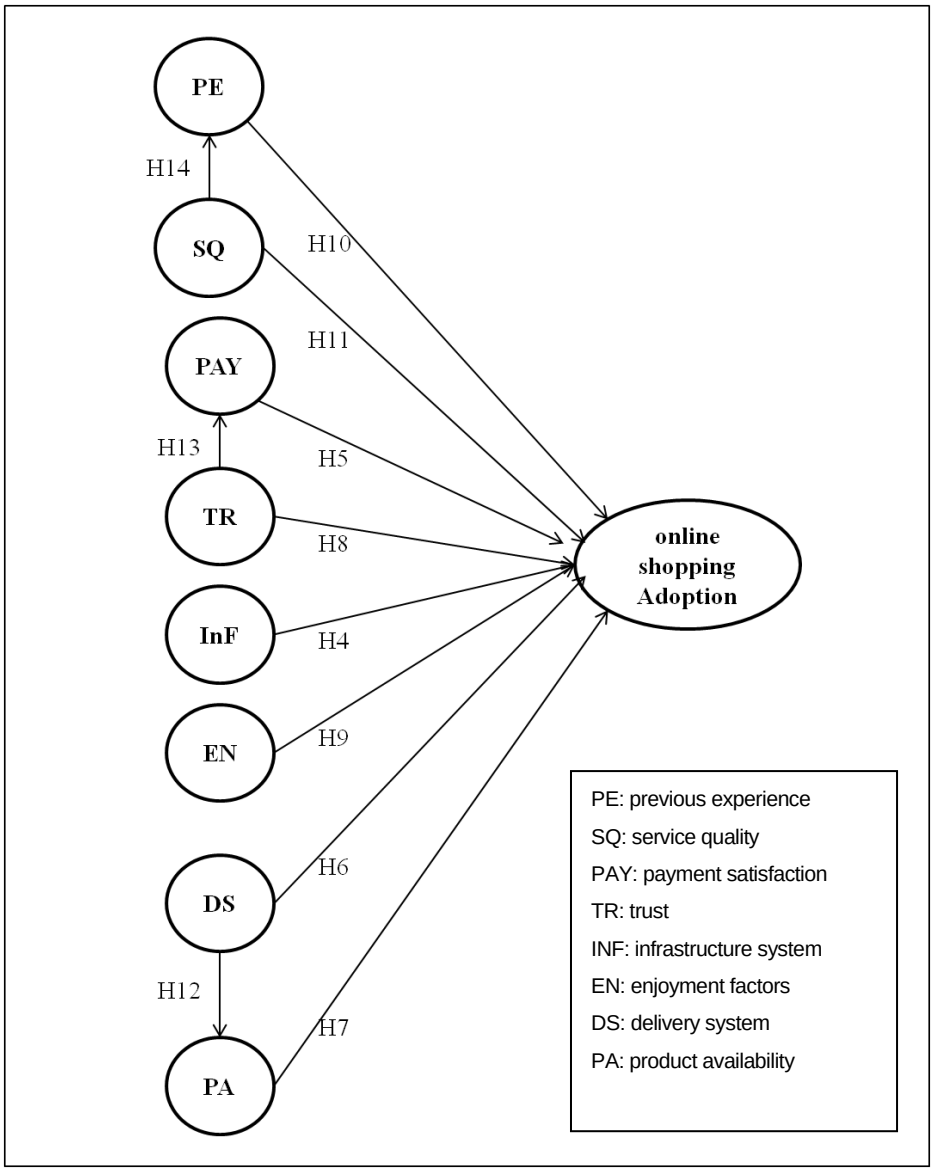


Figure 4.1 **Proposed conceptual model developed for this research (developed by the researcher)**

This empirical research model (Figure 4.1) was used to shed light upon the factors that explain individual adoption of online shopping services. Additionally, the relationships between the independent and dependent variables were explored using this model. As illustrated in Figure 4.1, each of the sub-dimensions directly impacts the adoption of e-commerce in the form of online shopping. In addition to their individual influences on e-commerce adoption, several of the sub-dimensions also influence one another. The quality of delivery systems is expected to also impact product availability (H12). Trust in the effectiveness and privacy provided by payment systems is expected to positively impact e-commerce adoption (H13). Finally, better service quality is expected to positively impact consumers' prior experiences and in turn increase adoption of e-commerce (H14).

4.3 Summary

This chapter illustrated how the hypotheses were formulated in relation to both a cultural context within Saudi Arabia and also to theoretical contexts grounded in scholarly literature. The chapter also introduced the conceptual model. The model proposed relationships between the independent and dependent variables related to e-commerce adoption (in the form of online shopping) in Saudi Arabia. All the hypothetical relationships are explained and their importance is discussed in Chapter 5.

Chapter 5 outlines the questionnaire development, data collection, use of statistical tests and empirical model verification and provides insight into the factors influencing adoption of e-commerce in Saudi Arabia.

CHAPTER 5: METHODOLOGY OF THE STUDY

In Chapter 4, theories relating to the adoption of innovations, such as the internet and e-commerce, were discussed, and a model for the adoption of ICT and e-commerce innovation was presented. In addition, various theories of diffusion and adoption were described and hypotheses relating to the diffusion and adoption of innovation in Saudi Arabia were developed. In this chapter, the research methodology, design and methods employed to investigate the model relationships and to answer the research questions are outlined.

5.1 Research methodology

This research was conducted using both quantitative and qualitative methods. *Mixed methods research* generally assumes a conceptual framework that incorporates both *positivist* and *interpretivist* philosophies. *Positivism* as a framework for research depends on quantifiable observations that lend themselves to statistical analysis. The researcher is removed from the study, and a deductive approach is usually adopted (Trochim, 2005).

On the other hand, *interpretivism* involves the researcher getting more involved in the research in the belief that the only way to get meaningful data is to look for the human story because reality is a social or human construct to be accessed through social instruments, such as language and shared meaning. Smith (1989) has stated that interpretivism is:

> *based on a constant process of interpretation and reinterpretation of the intentional, meaningful behavior of people – including researchers. (Smith, 1989, p.85)*

Positivism and interpretivism actually make research comprehensive, considering they bridge the gap of knowledge accrued from one method to another. Additionally, they link both qualitative ideas and quantitative results to get the complete scenario, as well as research outcome, in more valid and multidimensional ways (Lin, 1998, Rolfe, 2006, Nudzor, 2009) .

5.1.1 Mixed methods research

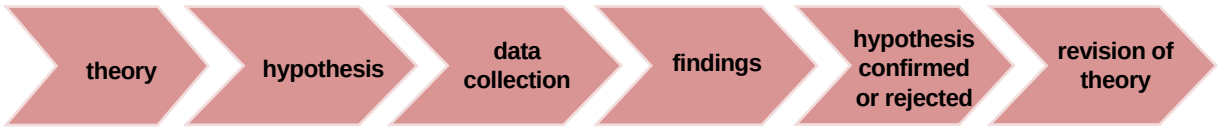
This study simultaneously used both quantitative and qualitative methods in order to collect the most comprehensive data regarding the research questions. A mixed method study involves the collection, analysis, and integration of qualitative and quantitative data in a single or multiphase study (Hanson et al., 2005). In general, the most common justification for selecting a mixed research approach is that this process includes the strengths and abilities of both qualitative and quantitative processes, while eliminating some of the weaknesses of each (Mingers, 2003). Using combined positivist and interpretivist methods enables the researcher to consider the research question from a number of different perspectives and get more well-rounded results (Mingers, 2003).

Furthermore, using a mixed approach enables **triangulation**. Triangulation is considered highly desirable in research because it allows the researcher to cross-validate the research findings using data from both qualitative and quantitative methods (Wisker, 2007). If the research questions have answers that coincide for both qualitative and quantitative methods, it can be reasoned that the research findings have more validity and consistency

5.1.2 Deductive approach

For this research, based on theories, general ideas and literature, a deductive approach was adopted for formulating research problems, questions and hypotheses. It is an approach that can be used to test different theories. Additionally, the deductive process was important in the formulation of a theoretical model to be tested (Ali and Birley, 1999).

The main objective of the deductive approach is to reach a conclusion. It calls for the collection of premises, which, if validated, will contribute to forming a conclusion (Bloomberg et al., 2008). The approach is in general used for testing a theory or hypothesis and is associated with the positivist paradigm (Crowther and Lancaster, 2009). In this context, online shopping behaviour patterns, the factors and the constructs have been identified from the literature. On the basis of these previous theories, observations, and literature, hypotheses were formulated for testing, and quantitative methods (i.e. mathematical, statistical, and computational techniques) used for analysis. Figure 5.1 depicts the top-down deduction process (Figure 5.1). Data were gathered from the e-commerce users of the Saudi market to test the developed hypotheses.



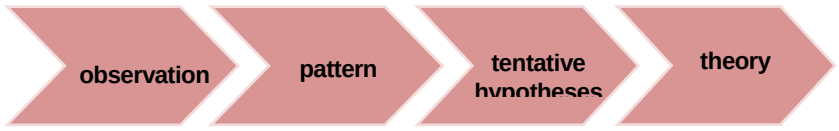
deductive

Figure 5.1: Deductive approach of the study (Trochim, 2005)

5.1.3 Inductive approach

The inductive approach collects evidence about a topic and gathers facts that may or may not support gradually forming hypotheses about the data (Bloomberg et al., 2008). For this research, information was sourced from online web-portals and a small number of users. Based on the collected information, patterns of online shopping preferences and consumer behaviour were identified, from which some tentative ideas regarding online shopping in Saudi Arabia were drawn.

Inductive research is a bottom-up approach in which a researcher attempts to interpret evidence as and after it is gathered (Figure 5.2). From the accumulated evidence, patterns and meaning implicit in the foregoing will in turn support the creation of a hypothesis that both explains the results and is consistent with an interpretivism model (Crowther and Lancaster, 2009). Using the inductive, observational approach, qualitative methods are utilised (i.e. in-depth interviews, focus group discussion) to attempt to gain a deeper understanding of the research and the patterns underlying adoption of e-commerce in Saudi society.



inductive

Figure 5.2 Inductive approach of the study (Trochim, 2005)

5.2 Research design

‘The function of a research design is to ensure that, the evidence obtained has enabled us to answer the initial question as unambiguously as possible’ (De Vaus and de Vaus, 2001, p.9). Good research design allows for the collection of data and its analysis in such a way that the goals and targets of the research can be realised, and the research problem addressed. The research design is focused on the ultimate result of the research process and the strategies to achieve the desired results. Thus, Yin (1994 -2013) explained research design as, ‘the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusion’(Yin, 1994 -2013,p. 19). This indicates that the research design consists of sequential steps that enable the researcher to elaborate and expand the findings of one method with another method (Creswell, 2013).

The steps of research design and work have been presented in Figure 5.3 (over page), in which the whole of the research is summarised in three phases.

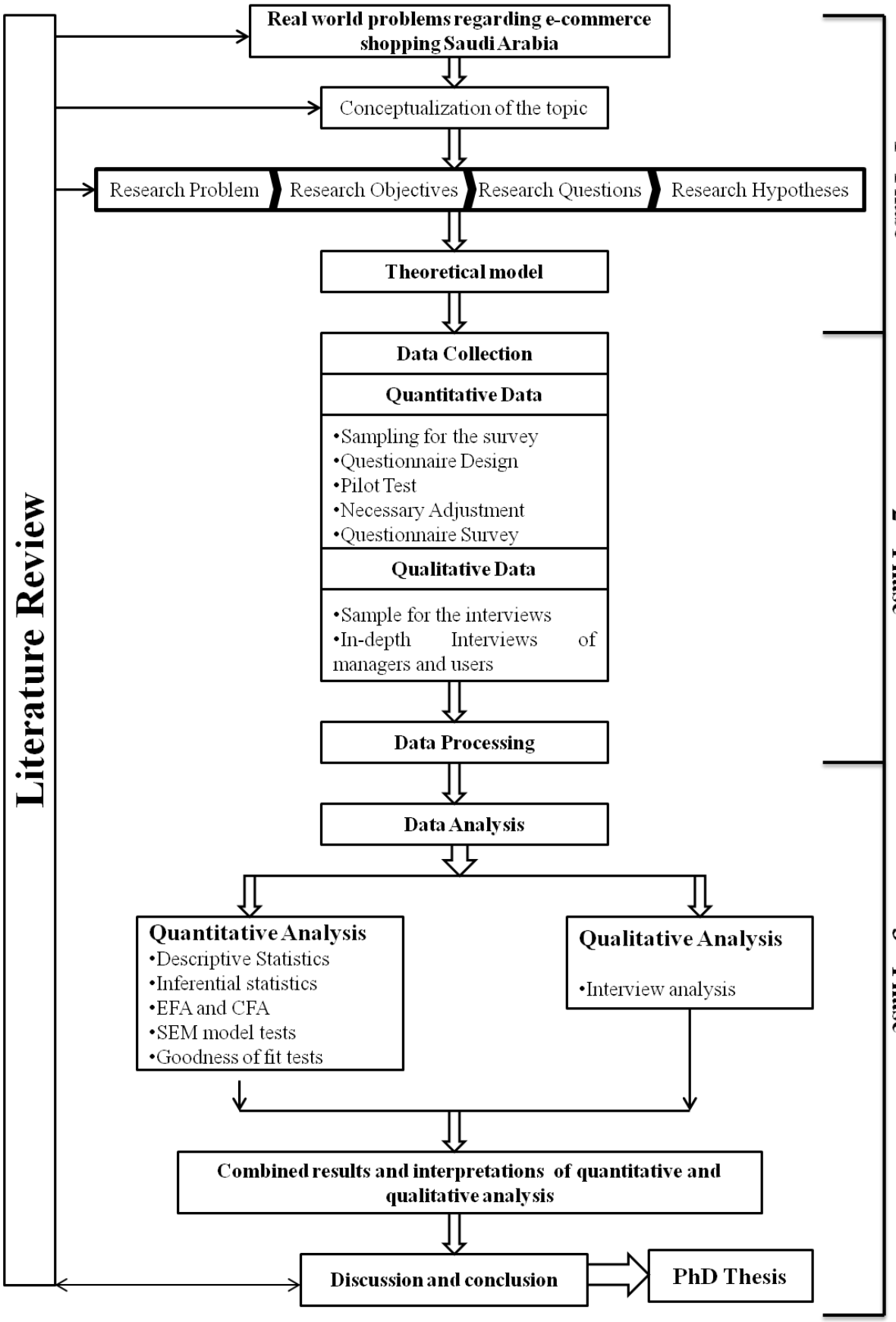


Figure 5.3 **Research design (developed for this research)**

5.2.1 Ethics approval

Approval was obtained for this study from the Social and Behavioural Research Ethics Committee of Flinders University (Approval No. 6043; see Appendix A) before data collection was initiated. The purpose and aims of the research were explained to the study population in a cover sheet. Participants were informed that their participation was voluntary and that their responses were anonymous. Once the study concluded, all data would be stored for five years at the School of Computer Science, Engineering and Mathematics (CSEM), Flinders University.

5.2.2 Phase 1 of the research (framework development)

At the beginning of the first phase, the idea of e-commerce in the Saudi Arabian context was considered and the research topic conceptualised. Firstly, literature related to the subject was collected and evaluated. The literature review enabled the researcher to identify the important issues related to e-commerce both globally and with a specific focus on Saudi Arabia.

By combining the research concepts developed from the literature review and real world observation, the research problems were identified, and the research questions formulated. Additionally, to answer the research questions in a legitimate and logical manner, corresponding research hypotheses were developed from the initial literature investigation. By summarising the ideas found in the literature, research questions and hypotheses, a theoretical (hypothetical) model was developed for this research, that would be analysed and investigated to assess the hypotheses and answer the questions. At the same time, the major objectives of the research were formulated. All these processes are discussed from chapter one to chapter four in this dissertation.

5.2.3 Phase 2 of the research (data collection and processing)

To answer the research questions and achieve the research objectives designed in the first phase of the study, the need for current data pertaining to Saudi Arabian e-commerce users was identified. Therefore, the second phase of the research started with this data collection process. There were two stages of data collection in this study, one quantitative and the other qualitative. The quantitative data collection involved sampling the population, designing a questionnaire based on the variables and constructs identified in the research, conducting a pilot test of the questionnaire, adjusting the questionnaire, ensuring the validity of the questionnaire and using it for the primary survey.

After the quantitative data collection, for the qualitative data collection, a sample population for interviews was selected. The interviews were conducted face-to-face. Data processing marked the end of the second phase.

5.2.4 Phase 3 of the research (data analysis and reporting)

The third phase of the research started with the analysis of the processed data. In this regard, descriptive statistics, inferential statistics (hypothesis testing), conformity factor analysis, structural equating modelling, and goodness of fit tests were used for quantitative analysis. Qualitative analysis techniques (i.e. hermeneutic analysis) were applied to the results of the interviews. By combining the results from the quantitative and qualitative analysis, interpretation and understanding of the research outcome were demonstrated.

The results of the qualitative and quantitative analyses allowed the application of triangulation to the data. Triangulation facilitated the validation of the data by allowing cross-validation. The triangulated analyses provided answers to the research hypotheses and questions, as well as insight into the motivations and underlying behaviour of e-commerce adopters. Furthermore, the research allowed for a greater understanding of both negative and positive forces acting on online shopping in Saudi Arabia. Finally, as a by-product of the study many general details about e-commerce in Saudi Arabia emerged. Combining these results allowed the development of the discussion of the study.

5.3 Selecting the participant sample

Studying the entire population of Saudi Arabia was not feasible, therefore a sample of the population was selected to represent the whole (Cooper et al., 2006). Selection of an appropriate sample is very important in doing academic research and is largely dependent on the number of variables and most importantly the level of statistical accuracy required by the researcher (Cooper et al., 2006, Zikmund et al., 2012).

In this context, Bryman and Cramer (1990) stated:

> *Researchers should strive to create as accurately as possible a representative sample of the general population or case of study, and that such a sample if planned precisely will highly increase the external validity of the research. (p.99)*

The selection of a sample varies from research topic to research topic, and is designed for different accuracy levels. All sample design processes involve the identification of a population, a sampling method, sample size and sample selection (Zikmund et al., 2012). The following sections discuss the sampling process used in this research.

The target population matched specific characteristics, such as age, gender, income or geographic region. Additionally, the events, or the matters of interest to the researcher, can form a source of data for a study (Sekaran, 2000, Churchill and Iacobucci, 1987). For the current research, the target populations consisted of e-commerce users and providers in the Kingdom of Saudi Arabia. The sample was carefully selected to represent the Saudi population as a whole with very high statistical accuracy and significance.

5.3.1 Sample for quantitative data collection

Sample size is crucial for quantitative data collection and analysis, and many researchers have suggested different sample sizes based on the types of research and statistical methods to be used. A sample size of at least 300 is generally regarded as reliable for factor analysis methods and statistical modeling (Tabachnick and Fidell, 2001). However, a sample size of 200–500 persons is considered sufficient for data analysis (Hair, 2010).

For the current research, and using Cochran's formula, for a 95% confidence interval, a total of 384 participants was considered to be adequate (Kotrlik and Higgins, 2001, Tabachnick and Fidell, 2001, Hair, 2010). In light of both factor and data analysis needs, it was determined that this study would be based on responses from a minimum of 500 persons, sufficient to ensure the accuracy of the results.

The online survey participants were selected randomly from the target group, which consisted of online shoppers. Personal shoppers were excluded from the survey. Online stores in Saudi Arabia mostly record the email ID of their customers and also note their IP addresses. In order to access the desired participant group, therefore, the managers or owners of 15 online stores were contacted with information about the research program, and a request that the store assist in the study by emailing their top 200 customers with an explanation of the study, along with a link to the study questionnaire on *SurveyMonkey*. Materials were provided in both English and Arabic

(Appendix B; Appendix C). From the 3000 emails sent, 1256 responses were received. After screening and processing the complete surveys, 904 surveys were found to have complete responses with no missing values or illogical responses. This sample was greater than the desired sample size of 500 respondents. All of them were used in the data analysis.

5.3.2 Sample for qualitative data collection

In addition, 100 surveys were conducted face-to-face after individuals were contacted with the assistance of the online store administrators. Materials were provided in both English and Arabic (Appendix D; Appendix E; Appendix F). The interviews were conducted to provide a comparison with the online surveys and to add depth to the online responses to the questionnaire. The sample selection and scrutiny were very thorough (i.e. proper selection of target group), and ensured a well-populated database whose data was statistically representative of online shoppers in Saudi Arabia as a whole.

The sample population for the qualitative data collection was selected from online store managers and users. The selection criteria and the process were rigorous and involved several steps.

Firstly, an online site based in the Saudi Arabia, was identified that listed online stores it were identified as reliable and trusted by the community. This site states on its website that:

> *These stores have been evaluated using tools, policies and voluntary proprietary standards to confirm the credibility and transparency of their dealings with the community, all under the supervision of specialists in the field of technology and e-commerce. (Mothoq.com)*

All online stores listed on *Mothoq.com* are tested for the quality of their after-sales service and customer relations, and assure the community that certain stores have been given a certificate of confidence and support to trade, and that the users may deal with them without fear of being defrauded.

In addition to *Mothoq.com*, another website called *Sea Group (ecommercesea.com)*, also lists e-commerce sites to ensure the quality and integrity of the sites to users all around Saudi Arabia. To ensure the participation of only the most reliable and trusted online store managers in the interview process, e-stores were selected from these sites. These managers were considered to be amongst the most experienced individuals in the field of e-commerce development, its ongoing

processes and possible future development prospects in the Saudi Arabia. Nineteen online store managers were selected and interviewed. They also provided in depth information about online shoppers and their characteristics, and a further 15 e-commerce users were recruited for interviews.

- ***Gender.***

An almost equal number of male and female participants were invited to participate.

- ***Geographical location.***

It was important that the participants in the study were not all concentrated in the central area of Saudi Arabia (i.e. Riyadh). For both quantitative and qualitative data collection, participants from all areas of Saudi Arabia (i.e. South-Jazan, North, East-Dammam, and West-Jeddah) were included.

- ***Sample size.***

Sample size for interviews differs based on the research context. The sample becomes saturated as the data become repetitive and nothing more can be identified by attracting more respondents (Macnee and McCabe, 2008). The saturated sample can range from four to 40 respondents, while for some studies a sample size of less than 10 participants can be saturated (Holloway and Wheeler, 2013). In this research, considering issues both of diversity and saturation, 15 e-commerce users and 19 online store managers were selected as a sample for interviews, a total of 34 interviewees. The samples achieved saturation during the qualitative data collection.

5.4 Collecting the data

Collection of appropriate and valid data is important in conducting research. Data collection is the process by which opinions and information are collected from the study participants, then organised and categorised in accordance to their social and economic characteristics (Churchill and Iacobucci, 2010). Face-to-face interviews, telephone interviews, emails of questionnaires, and online surveys (via *SurveyMonkey*, for example) can all be used to collect data.

For qualitative data collection, in-depth interviews, focus group discussions and case studies are commonly used methods. However, for quantitative data collection, questionnaire surveys are the most widely used method of discovery (Creswell et al., 2013, Neuman, 2005).

5.4.1 Qualitative data collection

As noted previously, there were two groups of participants from whom data was sought in face-to-face meetings – online shop managers and online shop users. Shop managers are from the supply side of the online market, while online users are from the demand side. In order to understand the details and to achieve an in-depth understanding of ideas, data from both of these groups were necessary. Therefore, data was collected from these two groups using different sets of questions.

5.4.1.1 In-depth interview

In-depth interviewing is a qualitative, interpretive research technique. It involves conducting rigorous individual interviews with a small number of respondents to discover their perspectives on a particular idea, program or situation (Boyce and Neale, 2006). Thus, in this study, in-depth interviews of selected online store managers and users were conducted to explore the behaviour, mindset, and perceptions of the online shopping community and general acceptability of the trend to shop online.

The interviews were complementary to the quantitative analysis, helping to develop insight about e-commerce in Saudi Arabia and a detailed understanding of attitudes toward and the experience of online shopping, and they enabled the triangulation process that would confirm the validity of the research findings (Wolff et al., 1993, Kaplowitz, 2000, Yoshikawa et al., 2013, Hussein, 2015).

5.4.1.2 Structure of the interview

Semi-structured interviews were used to obtain the in-depth ideas of online managers and shoppers in Saudi Arabia. The interview subjects were free to use their preferred media. Each interview was one half to one hour long, on average. All interviews were conducted in Arabic and were transcribed and translated into English before analysis. Such translation can result in either missing or over emphasising the nuance of differences of meaning between the languages (Brown and Al-khayal, 2006, MacLeod and Fraser, 2010). In order to overcome this problem, linguistic specialists were consulted during the translation, and the specialists have reviewed the translations and made necessary modifications to ensure the translations convey the real messages.

Each interview was structured in such wise fashion as to elicit the most in-depth viewpoints of the interviewees. The managers were first asked to introduce themselves and then the interview moved forward to focus on their business. They were asked about their customer base, their understanding of the customers, different aspects of e-commerce (i.e. online shopping, e-governance), their facilities, and their operational methods, along with other related features of their occupations.

Online shoppers were asked about their preferences, conception of online shopping, their concerns with shopping online, and issues of trust, delivery, and payment. Later on, the interviewees were asked to explain their thoughts about the problems they perceived with current online shopping practice and their views on the future prospects of e-commerce in the Saudi Arabia. The questions for the interviews are included in Appendix E (English) and Appendix F (Arabic).

All the interviews were recorded with the permission of the interviewee. This permission process was followed for all the interviews, and it was confirmed that their personal information would not be disclosed and the interviews would only be used for academic purposes.

5.4.2 Quantitative data collection

Questionnaire surveys (structured questionnaire) are widely used and the most popular method for quantitative data collection (Frechtling, 2002, Johnson and Turner, 2003). Survey methods are most commonly used when it is necessary to collect data from large groups of respondents, and standardisation is essential for overall data collection. This type of data collection involves two major sections, questions and responses (Frechtling, 2002).

In the case of a survey, the researcher should know exactly what is required and how to measure the variables. The data can be collected quickly and surveys allow quick insight into the thoughts of the participants. In addition, there are several methods of conducting questionnaire surveys, such as, administering them personally, distributing them electronically by email, using an online survey tool (i.e. *SurveyMonkey*; *Qualtrics statistics; Google Survey*), or even distributing them in hard copy. All these methods have their own advantages and disadvantages. Research scope, cost, response rate, target group, and computer literacy are all factors that influence what methods or combinations of methods are chosen by any given researcher (Sekaran and Hoboken, 2003).

In the current research, the target group (i.e. online shop users) were geographically diffuse; the geographical distribution of samples was very large (covering major parts of Saudi Arabia). Therefore, a face-to-face survey or even a telephone survey was neither a time-efficient nor economical process. Considering this, as stated earlier, the electronic questionnaire (*SurveyMonkey* link) was emailed to the online users and the researcher also personally administered 100 identical surveys for the reasons outlined in Table 5.1. The design of the questionnaire, variables, measurement scale, ethical consideration and language will be discussed in a later section of this chapter.

5.4.2.1 Strength and weakness of data collection methods

Each data collection method has different advantages and disadvantages. Therefore, considering the advantages and disadvantages of these methods, some ideas were developed during the research to overcome the shortcomings of the methods being used. Using in-depth interviews combined with self-administered online surveys, plus a review of the existing literature on e-commerce in Saudi Arabia and in more developed nations provided the current research with a way to crosscheck the data generated by each data collection method. The advantages and disadvantages of the research methods and strategies to minimise their shortcomings are described in Table 5.1.

Table 5.1 Advantages, disadvantages, and proposed strategies to overcome disadvantages

Mode of data collation	Advantages	Disadvantages	Strategy to overcome disadvantages
In-depth Interviews Frechtling and Sharp (1997) Doody and Noonan (2013)	– usually yield richest data, details, new insights – opportunity to explore topics in detail – allow interviewer to explain, clarify, questions, that yields useful responses	– expensive and time-consuming – flexibility can result in inconsistencies across interviews – interviewee may deform information through remind error (remembering the answer), selective perceptions, longing to please interviewer – may seem intrusive to the participant	– interview sample was smaller to keep in time and expense – researcher would made demo interviews/ pilot test interviews to be consistent with responses – researcher would ask the questions from different point of views and cross validate responses
Personally administered questionnaires Sekaran and Hoboken (2003) Dörnyei and Taguchi (2009)	– ability to motivate respondent – doubt can be instantly clarified – high response rate – respondent anonymity is higher	– need much time to get proper of sample respondents – expensive method and time consuming for larger sample	– only 100 sample were surveyed by this method to reduce time and keep within budget – the respondents would contact earlier, in this case their contact information has taken from the e-store managers, thus finding target respondents would be easier.
Electronic questionnaires Sekaran and Hoboken (2003) Ilieva et al. (2002) McPeake et al. (2014).	– inexpensive method with fast delivery and larger geographic coverage – respondents at their own convenience answer – easy to administrate – respondents become more comfortable considering anonymity – no interview bias	– lower response rate, depends on the willingness of the respondents to complete survey – respondents must have computer literacy and – access to internet facilities	– a cover latter explains the context and necessity of the study to attract the respondents. – follow-up contacts by e-mail can be done – study select sample from e-store users, confirmed that they have access to internet as well as basic computer literacy.

5.4.2.2 Design of the survey instrument

Developing a questionnaire is one of the major aspects of quantitative data collection. The questionnaire structure and variables, enabled the collection of the most relevant data for the present research.

- ***Sources.***

Previous research studies were consulted to help guide the questionnaire design. These included AlGhamdi (2014) *Online retailing in Saudi Arabia*; Al-Somali (2012) *Electronic commerce adoption, business to business in Saudi Arabia;* Al-Ghaith et al. (2010) *Factors influencing the adoption and usage of online services in Saudi Arabia*; Al-Sukkar (2005), *The application of information systems in the Jordanian banking sector*. These studies provided examples of ways to produce relevant questions according to the proposed research model and research context. Many questions utilised by these researchers acted as templates which upon modification and adaptation to the needs of the current research were, included in the research questionnaire for this study.

During development of the questionnaire template, the researcher followed the practice of Leedy and Ormrod (2005) with regard to the administrative details of the questionnaire to wit to: use clear language; meet study aims; plan development, sample, distribution and collection; and create a solid covering letter. All of these attributes helped in focusing the issues of the research and enabling the collection of the most accurate information.

The questionnaire was developed both in English and Arabic (Appendix B; Appendix C). Additionally, a cover letter was developed to be addressed to potential survey participants. The letter stated the purpose of the research, and highlighted the interest and significance of the study, it also addressed applicable confidentiality measures, and requested the most unbiased responses possible from potential participants.

The questionnaire development process was completed in a series of steps: designing the survey instrument; development of a measurement scale; developing the layout and validation of the developed questionnaire.

- ***Design.***

At this stage of the questionnaire development, operational definitions for each of the constructs in the proposed model were developed for the study. In designing the survey instrument, the construct's meaning in measurement terms was determined by specifying the activities or operations necessary to measure it (Hair et al., 2006b). In this process, the variables/factors considered in the study were quantitatively defined.

Each construct under investigation was defined and identified through the selection of scale items and scale type (Hinkin, 1995). Furthermore, in this study, each construct (endogenous and exogenous) was developed based on the results of the review of the literature in related areas, such as information technology adoption (Wang and Tsai, 2002, Karahanna et al., 1999) and e-commerce and e-business adoption (Zhu et al., 2004, Tan et al., 2007).

Each concept was determined using different item scales. The questions to measure each concept were established, improved and accepted from earlier investigations. In fact, attention was provided in assembling measurement and scaling processes of questions in the survey plan in this investigation. Sets of questions for each construct are summarised in Table 5.2.

Table 5.2 Construct items developed for survey instrument

Constructs	Items	Adopted from
Endogenous constructs (Independent constructs of the model)		
Prior experience	– I buy online because I developed this habit (previous experience) while living overseas – I buy online because of the competitive prices I got in previous experience – According to my experience, the items I want to buy are banned in Saudi Arabia – I believe that there are problems in exchange/return of goods in online shopping according to my previous experience	(Al-Ghaith et al., 2010, Hernández et al., 2010, Luhmann, 2000, Gefen, 2000)
E-commerce service quality	– I am satisfied with the website customer service of online sellers – I found limited availability of online retailers – I believe that online sellers do not provide adequate customer services – I believe that goods are not delivered as described for online shopping	(Delone and Mclean, 2004, Flick, 2009, Ha and Stoel, 2009, Molla and Licker, 2001)
Payment security and convenience	– I found limited availability of online payment methods – I am unsatisfied with the payment security	(Al-Ghaith et al., 2010, Gibbs and Kraemer, 2004, Lee, 2009)
Trust	– I do not trust e-commerce providers, I had a very bad experience with online shopping – I am afraid of the safety of my information during online shopping	(Al-Ghaith et al., 2010, Kim et al., 2008, Siddiqui, 2008, Trocchia and Janda, 2003)
E-commerce infrastructure	– I am satisfied with the infrastructure of e-commerce services in the Kingdom of Saudi Arabia – I found higher postage costs for online goods due to lack of proper infrastructure – I found all shopping websites in non-Arabic languages	(Al-Ghaith et al., 2010, Gibbs and Kraemer, 2004)
Perceived enjoyment	– I believe that online shopping is not enjoyable and waste of time and money – I do not have any interest in online shopping – I don't know much about online shopping and don't enjoy in searching and buying – I prefer to go to actual shop and buy as it is more enjoyable – I found the online prices higher than the shop prices thus less attractive – I buy online to save time	(Moon and Kim, 2001, To et al., 2007, Venkatesh, 2000, Park and Kim, 2003)
Delivery system efficiency	– I faced problems in delivery of goods – I am unable to receive online goods at my home address – I am unable to receive online goods at my office address	(Bayles and Bhatia, 2000, Hawk, 2004, Kshetri, 2008, Rutter and Southerton, 2000)
Product availability	– I found limited availability of products in the online retailers' website – I believe that goods are not delivered as described for online shopping due to lack of availability	(Cox and Dale, 2001, da Silveira, 2003, Schoenbachler and Gordon, 2002)

Exogenous construct (Independent construct of the model)		
E-commerce usability or adoption level	– Have adequate knowledge for the computer proficiency? – Do you frequently use portable computer device (i.e. laptop, tablet, etc.)? – How long have you been using the internet? – Internet connection type use (i.e. dial-up, ADSL, etc.)? – Internet infrastructure availability of your location to do proper web surfing (Use of infrastructure of e-commerce)? – Have adequate knowledge about internet and online shopping system? – Approximately, how much time do you spend online shopping per week? – Approximately, how much time do you spend online shopping per month? – How much money did you spend on online shopping (per month) last year?	(Bakerman, 2014, Eroglu et al., 2001, Kim and Park, 2005, Klopping and McKinney, 2004, Li et al., 1999, Limayem et al., 2000, Swinyard and Smith, 2003, Zhou et al., 2007, Hongyoun Hahn and Kim, 2009, Karim et al., 2009, Perea y Monsuwé et al., 2004)

Based on these constructs, definitions and questions, this study used the closed interrogation style in which participants were prompted to choose the reaction which most matched their judgement. These kinds of queries produce four key types of results as précised by Foddy (1994). First, the delivery of predetermined replies allows the investigator to gather uniform replies that can be nominated as equally important. Secondly, close-ended queries garner rapid responses and produce responses that are easier to code, computerise and examine. Thirdly, they do not differentiate against the less conversational and less communicative participants. Lastly, another benefit of close-ended queries is that they are a credit task rather than a remembrance task and for this reason, participants find them easier (Foddy, 1994).

Additionally, closed interrogation avoids answer bias caused by the survey environment and encourages contribution. Reaction bias describes the way in which participants reply to questions due to their approach or disposition (Alreck and Settle, 1994, Emory and Cooper, 1991).

- ***Measurement scale.***

A measurement scale was required for different sections of the questionnaire. Most importantly, for the endogenous constructs, a 7-point rating scale was used that was an adaptation of the summated ratings method developed by Rensis Likert (Likert, 1932, Likert, 1974). The 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used to reveal the participants' opinions regarding the study variables. The 7-point rating scale is commonly used in research for opinion measurement and is more reliable than the 3- and 5-point scales that are also frequently applied to survey results (Elmore and Beggs, 1975, Zikmund and Babin, 1997).

Hair et al. (2006b) suggest that Likert scales are ideal for use with self-administered or online survey methods. Commonly, the Likert scale is used when respondents are asked to indicate the strength of feeling on a particular issue, in this case online shopping. Additionally, Churchill Jr (1979) conclude that using a Likert scale with closed questions facilitates statistical measurements of people's attitudes and opinions towards different issues in social and scientific research. The responses are easy to manage and code and are appropriate to be analysed using different statistical techniques (Luck and Rubin, 1987).

- ***Questionnaire layout.***

Questionnaires should be brief, neat, attractive, and easy to follow, with the objective of generating data appropriate to the objectives of the research. A well-designed questionnaire should minimise respondent exhaustion and avoid frustration, consequently increasing the completion rates. The respondents should ideally remain interested in the survey throughout (Zikmund and Babin, 1997).

In the case of the current research, the concept of an online survey was new for the majority of the Saudi respondents. Therefore, the appropriate layout of the questionnaire was particularly significant since the form and content would actually assist the respondents and help avoid errors.

The survey was drafted to be simple and easy to follow in such a way that it would allow participants to readily complete it (Malhotra et al., 1996, Salant et al., 1994). A few features were also used in the survey layout to encourage participants and put them at ease throughout the investigation. Important features included were:

- **Priority.** The most relevant or important questions were placed at the beginning of the survey since at this point the respondents would be the most engaged. Demographic questions were therefore placed at the end of the survey (Lorelle Frazer and Lawley, 2000).
- **Cover page**. A brief description of the significance of the study with a clear and brief message was printed on the cover page to inspire participants to answer. Both a greeting and a thank you were printed on the front and back cover pages. Finally, to confirm authenticity, the names of the university sponsoring the survey and the researcher's academic advisors were printed prominently on the cover page. All these features emphasised the legitimacy and importance of the survey.
- **Layout of the questions.** There were five sections in the questionnaire; each section was identified as A, B, C, D, or E. For each section questions were broken down into different numbers such as A1- A11, B1-B5, C1-C3, D1-D3 and E1-E7, to make the number of questions appear to be fewer than they actually were to encourage higher completion rates (Grossnickle and Raskin, 2000).
- **Total time spent to complete the questionnaire**. Time to complete the questionnaire is one of the most important factors when using this research method. The less time required, the lower the respondent's fatigue or boredom threshold. Therefore, the questions were designed to be concise and to encourage accurate responses in the least amount of time.

To test the success of the question design, a pre-test was conducted with ten online shoppers having similar characteristics to the population in the study. Additionally, five experts were asked to provide constructive feedback and criticism on the questionnaire design. Ultimately, the total length of the questionnaire was seven A4 pages, and required only 10-15 minutes to complete.

- **Reduce respondent's fatigue**: The time taken to complete the questionnaire and the order of the sections reduced and compensated for any participant fatigue. Some modifications were made to prepare the questions in more user friendly and non-technical terms, additionally coherence among the sections were conducted, all these help to reduce the time and fatigue.

5.2.2.3 Face validation and pre-testing methods

It was essential to determine the face validity of the questionnaire before the pilot test and final survey in order to ensure that each statement item that was developed really did measure a particular concept in relation to the context of the study. Usually people with more experience or expertise in the field are asked to judge the questionnaire and advise whether the scale items used in the study have face validity (Bryman, 2008). For this study, the questionnaire was pre-tested, and results and feedback were used to refine the questions for the larger survey on *SurveyMonkey*, and address any other interviewee concerns (Blair, 2004).

For the validity and pre-testing, as discussed earlier, ten online shoppers possessing similar characteristics to the population in this study were surveyed face-to-face. Among these ten respondents, three were PhD students (English and Arabic speakers), three professionals in e-stores and four regular (long term) online shoppers in Saudi Arabia. They were asked to give feedback about the clarity of the questions, the items of the constructs and more appropriate wording for the questions if required.

Based on their comments and feedback, some of the terminology and phrasing used for the constructs were modified to improve the clarity of the questions. Additionally, five experts were consulted for the face validity, a professor, two lecturers and two statisticians. The professor and lecturers were consulted to make sure that there were no contradictions or vagueness in the questions regarding the items of the constructs. The statisticians checked the measurement scale of the responses and the potential of the collected data for possible statistical analysis and

modelling. Based on the resulting feedback and comments from the experts, the researcher made modifications to the overall questionnaire, optimising both its efficiency and validity for the pilot test of the study.

5.5 Pilot test

The questionnaire was tested in a pilot study in order to confirm the reliability of the items and the clarity of the questions. The researcher delivered 100 questionnaires to online shoppers selected randomly from online stores whose managers provided customer email addresses. Seventy-five questionnaires were returned, four of which were incomplete, for a response rate of 71%. The data collected from the pilot study was examined for reliability, completeness of responses and construct validity utilising *SPSS* version 20. It must be noted that participants were requested to assist in instrument improvement by identifying any unclear wording or ambiguity in the questionnaire.

5.5.1 Validity and reliability of scale using exploratory factor analysis (EFA)

An exploratory factor analysis (EFA) was performed on the data to assess the scale reliability of the questionnaire, as EFA provided the most useful tool for finding the most reliable variables by reducing the large number of variables and grouping them into broad categories. The justification for using factor analysis was based on the assumption that the data matrix had sufficient correlations among the variables (Hair, 2010).

Despite the fact that all variables in the instruments were obtained from previous research and theories, EFA was essential to check whether these variables would operationalise and provide an appropriate scenario in the context of online shopping in Saudi Arabia. If the EFA conducted for the pilot provided reliable and valid results, then the variables could confidently be used in the final survey and analysis using conformity factor analysis (CFA) and structural equation modelling (SEM), which will be discussed later in the analysis section of this chapter.

5.5.2 Factorability of data (Kaiser-Meyer-Olkin (KMO) and Bartlett's tests

Prior to factor analysis, it is essential to perform tests for sampling adequacy and robustness. The Kaiser-Meyer-Olkin (KMO) statistical test demonstrates sampling adequacy (Anastasiadou and Anastasiadis, 2011, Sharma, 1995). In addition, Bartlett's test of sphericity determines the appropriateness of factor analysis by testing the magnitude of the correlations of the entire matrix (Hair, 2010). If there is no relationship then factor analysis is irrelevant. A statistical rule of thumb states that a p value <0.05 indicates that it is worthwhile continuing with the factor analysis (Hinton et al., 2014).

KMO statistical (ranging from 0 to 1) values determine the extent to which variables are homogenous (Anastasiadou and Anastasiadis, 2011, Sharma, 1995). KMO values greater than 0.5 are considered to show that the data are suitable for factor analysis (Hair, 2010, Sharma, 1995). Values between 0.5 and 0.7 are regarded as mediocre; values between 0.7 and 0.8 are good; values between 0.8 and 0.9 are excellent; and values above 0.9 are superb (Hutcheson and Sofroniou, 1999).

Table 5.3 KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		**0.772**
Bartlett's test of sphericity	approx. Chi-square	8015.404
	Df	325
	Sig. [P-value]	**.000**

From Table 5.3, it is clear that the KMO is well above the acceptable level of 0.5. The results verify that the KMO test supports the sampling adequacy and the data are suitable for conducting a factor analysis.

For Bartlett's test, if there is no relationship, then factor analysis is inapplicable. The results presented in Table 5.3 demonstrate that the calculated p-value is <0.001, indicating that there are relationships between the variables, allowing factor analysis.

5.5.3 EFA analysis and results of the data

In conducting an EFA, the selection of factor extraction and proper rotation methods for extracting the factors are always crucial (Tabachnick and Fidell, 2001). In this study, principal components analysis (PCA) was selected as the factor extraction method and varimax with Kaiser normalisation was the rotation method.

Principal components analysis (PCA) was selected to produce initial solutions for the EFA, because this extraction process recognises the fundamental evaluative dimensional arrangements and decreases a big number of factors into a smaller number of constituents by converting a set of interconnected variables into a fresh set of unconnected linear complex variables (Cooper and Schindler, 2001, Hair, 2010). Each constituent interpretation looks for a decreasing quantity of total difference in the original variables, and processes what the variables had in common (Churchill and Iacobucci, 1987, Cooper and Schindler, 2001).

The examining orthogonal influence enquiry model with varimax variation in *SPSS* v.20 was used in this review because conclusions produced from orthogonal variation have a greater replicability and generalisability control when likened with leaning variation. Secondly, interpretation of orthogonal rotation factors is easier because the factors do not correlate with one another. Lastly, orthogonal rotation particularly with varimax rotation is the preferred choice of the majority of researchers in like circumstances (Beavers et al., 2013, Costello, 2009, Rennie, 1997).

There are three standards used to control the number of influences to be extracted: the dormant root condition (eigenvalue); the proportion of difference criterion; and the scree test standard.

Eigen standards larger than 1 are important in the dormant root standard. It is common to employ a solution that accounts for 60% (or less) of the total variance in social science research, because the information in this field, by its nature, is often less accurate (Hair, 2010, Kaiser, 1960). The results of the exploratory factor analyses are presented in Table 5.4.

In selecting the items, only items with a loading value over 0.4 were extracted as factor loadings below 0.4 are considered too low to be included (Field, 2013, Stevens, 2012). The data in Table 5.4 illustrate that the item loadings of 26 variables were significant and well above the 0.40 threshold without having any cross loadings among the eight extracted factors. In addition, the factor analysis explained 64.65% (cumulative percentage) of the variance criterion.

These results indicate that the factor analysis provided reliable and valid extracted factors from the literature as all the extracted factors have eigenvalues greater than 1 and cumulatively the factors explained 64.65% of the variance, demonstrating consistency.

The results confirmed that the developed instrument consisted of reliable and valid items, which sufficiently captured the meaning of the model constructs and their associated factors.

Table 5.4 Explanatory factor analysis results

Components	**Attributes**			
	Items	**Loadings**	**Eigenvalue**	**% Variance explained**
Factor 1: Perceived enjoyment	EN1	0.567	5.02	19.32
	EN2	0.700		
	EN3	0.697		
	EN4	0.683		
	EN5	0.677		
	EN6	0.712		
Factor 2: Prior experience	PE1	0.629	2.57	9.89
	PE2	0.825		
	PE3	0.800		
	PE4	0.587		
Factor 3: Service quality	SQ1	0.647	2.371	9.118
	SQ2	0.811		
	SQ3	0.796		
	SQ4	0.545		
Factor 4: Infrastructure	IF1	0.923	1.666	6.408
	IF2	0.921		
	IF3	0.522		
Factor 5: Delivery system	DS1	0.800	1.511	5.811
	DS2	0.836		
	DS3	0.718		
Factor 6: Product availability	PA1	0.882	1.371	5.274
	PA2	0.849		
Factor 7: Payment	PAY1	0.877	1.244	4.785
	PAY2	0.866		
Factor 8: Trust	TR1	0.799	1.046	4.025
	TR2	0.853		
Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalisation.				

5.5.4 Pilot study summary

The pilot study was a smaller version of the main survey and analysis, and was focused on checking the acceptability of the questionnaire, in terms of the instrument, measurement, validity, as well as its reliability. The researcher made some minor modifications, but they were not in the main questions, and the instruments were found acceptable.

Therefore, the pilot test confirmed that the instruments were reliable and ready for the main study. In addition, the pilot test helped understand the time needed to complete the survey for each respondent, and it was found that it took approximately 10-20 minutes, based on the capability and understanding of the respondents. This time was considered a reasonable time for such research, given the nature of the questions and responses.

Finally, the pilot test provided an indication of the amount work that would be required of the researcher and provided valid as well as reliable grounds for including confirmatory factor analysis in the structural equation modelling of the final collected data (to be discussed later in the data analysis section).

5.6 Administration of the final survey

After testing the questionnaire and making amendments to the layout and ordering sequence of the questions, the final survey was carried out in July, 2013 and lasted for three months. As discussed in the sampling section, the online survey link was emailed to a cohort of online shop users (email ID collected from the e-store managers). The management of an online, self-administered survey requires a number of steps in order to generate as much data as possible and reduce non-response preferences (Malhotra, 2008). The steps involved in delivering the online survey are provided briefly in Table 5.5.

Table 5.5 Online survey administration procedure for this research

Step	Timing	Process
1	1 week	Contact the e-store managers for the email list of their customers. Collect around 3500 email addresses, and sort them according to the related e-stores.
2	1 week,	Send e-mails to all participants an the email list to notify them about the purpose, importance and process of this study.
3	2 weeks	With a short and concise cover letter, send email attaching URL link to the survey website of the online questionnaire to all the users in the email list.
4	1 week	Sent a reminder email to the respondents and notify them about the survey, as well as initially inform them about the response rate to encourage.
5	1 week	Combined thank you and reminder e-mail to respondents who have not yet completed the questionnaire. The questionnaire in the form of URL link to web site is also attached one more time.
6	2 weeks	Develop the non response list. Send reminder e-mail to non-responded list for the final time.
7	2 weeks	Thank you e-mail and the total number of participants in this survey, as well as inform them about the reward (i.e. iPod) for the survey.

The activities described in the steps were used to stimulate interest and encourage higher responses. Regarding the reward in the second step of the process, the researcher offered 15 Saudi Riyal (equivalent to approximately USD$5) discount on their payments to their ISPs for each completed survey. The money was given to the managers and they gave the discount for the completed surveys, and an iPod to two winners of the draw that was offered. The winner was selected based on a lottery simulated by the computer from their serial numbers with email addresses. After the total survey was completed, the researchers gave the money to the e-store managers to record against their client accounts if they completed the survey. All these strategies were designed to obtain higher response rates. The strategy was successful as the researcher received 1256 survey responses.

5.7 Data analysis strategies

In order to achieve the desired goals and objectives of the study and to determine the validity of the research hypotheses, analysing the qualitative and quantitative data is essential. In order to guarantee the best and most relevant results, strategies for data analysis are vital. This section describes the strategies and operations planned for analysis of the data.

5.7.1 Qualitative data analysis

Qualitative data (interviews) analysis strategies were grounded in the inductive approach, and several steps were taken during the analysis and interpretation of the interview data. This study used a 'hermeneutical' analysis process to analyse the interview data. As a means of interview interpretation, hermeneutics goes beyond a

> *structuring of the manifest meanings of what is said to deeper and more critical interpretation of the text [of the interview]. (Kvale and Brinkmann, 2009)*

According to Walsham (1993)

> *hermeneutics can be thought of as a key strand of phenomenology since the interpretation of texts is an important part of search of meaning and the essence of experience. (p.9)*

The process follows a cycle (Figure 5.4) and text is interpreted based on iterations of the researcher's own experience and existing literature and research, as well as one's own contextual ideas. The cycle starts from the text interpretation, then makes connection with the literature, finally making a judgment based on the researcher's interpretation and literature. After judgment, conclusions are drawn and the final text or writing is done. The interpretations provide support for making judgements about the text, research hypothesis, and other findings of the research. In addition, this process helps to finalise the conclusions or theorising, suggesting further interpretation or reinterpretation.

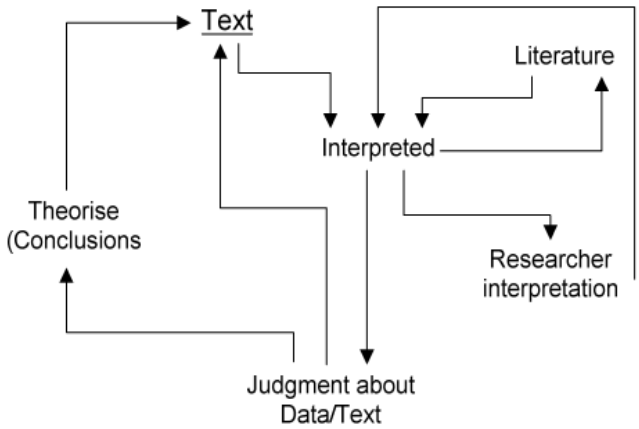


Figure 5.4 Hermeneutic cycle (adapted from (Brdesee, 2013, Thanasankit, 1999)

Pursuant to the hermeneutic cycle, data for this study were acquired from recorded interviews, and observation notes were assessed (Creswell, 2013). Measures taken to authenticate the reliability of the analysis included confirmation of the accuracy of the translation and transcripts, and cross checking of the transcripts against the categories to ensure that they were free from major errors (Flick, 2009, Silverman, 2010).

The researcher understood and interpreted the text using content analysis of textual data. The process devised for searching for words and concepts that matched the categories developed from the research or research questions (in this case, the major constructs of the proposed model) (Flick, 2009).

In accordance with the cycle, the interpretations were matched with the background literature and insight about the contexts as well as the categories were developed. Finally, judgments about the categories were compared with quantitative findings to determine whether the findings addressed the research problem or answered the research questions.

5.7.2 Quantitative data analysis

Quantitative data analysis followed the deductive approach, and a wide range of statistical tools and techniques was employed. These analyses sought answers to the research questions and problem by describing the data and testing hypotheses using collected data. In the current research, inferential statistics involving multivariate analysis was used to interrogate the data. To test the hypotheses, Chi-square and multivariate modelling (structural equation modelling) were used. These major statistical tools can explore the relationship of complex datasets with many independent and dependent variables (Tabachnick and Fidell, 2001).

The quantitative analysis included descriptive data analysis (descriptive of major variables), clustering different types of online shoppers, identifying relationships using tests of the hypotheses and model. In addition, the analysis focused on data measurement, validity, reliability, and the overall goodness of the statistical methods and empirical data In the following sections these strategies have been briefly described in more detail.

5.7.2.1 Descriptive statistics

After processing all the data, the questionnaire variables were analysed in *SPSS* for descriptive statistics. These analyses involve describing the participants' profiles and the general characteristics of different variables, the measurement of central tendencies, such as frequency and mean, standard deviations and standard error. In addition, familiarity and ability with technology, such as computers and the internet were identified using descriptive statistics and frequency distributions.

5.7.2.2 K-means clustering

SPSS was set up to analyse K-means clustering based on the fact that data generated during the study would naturally divide into observations that could be assigned to one of *k clusters*, where *k* is chosen before the algorithm starts partitioning the information. Considering variables such as income, computer accessibility, internet experience, money spent online, time spent on online shopping, the frequency of using e-stores, age and gender groups, the participants were clustered into three different groups – frequent online shoppers, moderate online shoppers and infrequent online shoppers – nominated before clustering started.

The purpose of cluster analysis is to place objects into groups, or clusters, suggested by the data, not defined a priori, such that objects in a given cluster tend to be similar to each other in some sense, and objects in different clusters tend to be dissimilar. Cluster analysis can also be utilised to summarise data rather than to find 'natural' or 'real' clusters; a use of clustering that is sometimes called 'dissection'.

Clustering different types of online shoppers (i.e., high frequency shoppers, moderately frequent shoppers and low frequency shoppers) was done in order to categorise shoppers in the sample data. Based on shopping behaviour variables such as income, computer accessibility, internet experience, money spent online, time spent for online shopping, the frequency of using e-stores, age and gender groups, the sample was clustered into three different groups, i.e., high frequency shoppers, moderately frequent shoppers and low frequency shoppers. The K-mean clustering process offers an easy and simple way to categorise a given set of information over a certain figure of collections (assume *k* clusters) fixed a priori. The goal for the current research was to describe K-centroids, one for each collection. These centroids must be positioned in a smooth

progression as different positions alter the outcome. The best statistical approach is to place them as distant from one another as feasible. A further step is to take each point associated with a specified records set and associate it with the nearby centroid.

When points are no longer available, the primary step is finished and an initial grouping has been completed. At this stage, the K value needs to be re-calculated and new centroids identified as the barycentre of the collections found during the primary step. For the new K centroids, an up-to-date association has to be created using the same statistics set topics and the close new centroid at the next stage. A circle is thereby produced. As a consequence of this approach, it may be observed that the new K centroids alter their position stage by stage till no more variations are observed. In other words, the centroids do not travel any more. The process of K-mean clustering can be explained via the following steps:

- Place the K sockets into the space characterised by the substances that are being collected. These facts characterise the early set of centroids.
- Allocate each object in a group that has the nearest centroid.
- When all substances have been allocated, re-calculate the locations of the K centroids.

Repeat Steps 2 and 3 until the centroids do not move further. This creates a separation of the substances into different collections from which the metric to be lessened can be considered (Ahmad and Dey, 2007, Kanungo et al., 2002, Wagstaff et al., 2001). The justification for using the selection approach is that it is a widely accepted and used method. K-means clustering is efficient in that it allows the researcher a means of controlling the randomness of the data while providing the opportunity to have the cluster as it is in reality by considering several variables responsible for the same attribute. The method has been used for clustering e-store users into categories in several previous studies related to online shopping and e-commerce (Jain, 2010, Ganesh et al., 2010, Mathwick, 2002, Westbrook and Oliver, 1991).

5.7.3 Hypotheses testing

Based on the research problem, questions and corresponding objectives, hypotheses were developed appropriate to the research (described in Chapter 4) and they would be tested using the collected data. This is the inferential statistical analysis part of the data analysis performed during the study. Fourteen hypotheses were tested. Among them three hypotheses were tested using the

Chi-square test; while the rest of the hypotheses were tested using relationships established in the hypothetical model by utilising a structural equation model (SEM). These hypotheses testing methods are discussed here in brief for more clarification of the methods of analysis.

5.7.3.1 Cross tab Chi-square test

In order to explore the influence of age, gender and internet shopping propensity of different groups of users, Chi-square testing was used. In this case, the hypotheses were formulated with the background that age, gender and ability may be influential factors for determining the level of online shopping. The cross-tab Chi square test in *SPSS* was selected because it provides the capacity to analyse the effects and relationship between different groups based on different categories of attributes. Chi-square ensured the researcher found the expected and observed count for different online shoppers, considering their age, gender and capacity to use the technology that supports online shopping (Harn et al., 2006, Hill et al., 2006, Schimmel and Nicholls, 2003).

5.7.3.2 Factor analysis and validation

Prior to applying the structural equation model, factor analysis was necessary to ensure validity and reliability. In the pilot study, exploratory factor analysis (EFA) had been conducted, establishing the reliability of the model constructs and acceptance of the items that would be entered in the model. At the end of the research, confirmatory factor analysis (CFA) was undertaken to guarantee that all the ideas in the model influenced convergent legitimacy, construct cogency, discriminant authority and factorial validity (Figure 5.5) (Byrne, 2013, Hair, 2010).

CFA is used to test how an adequate *a priori factor* structure and its relevant model of loadings match the actual data (Hair, 2010). The CFA measurement model has similarities with EFA analysis; however, these two differ in the relationship with the variables and factors. In CFA, the proposed factors are entered for analysis. CFA provides a better understanding of the model and paves the way for structural equation modelling (SEM) which was the next step of the data analysis.

In addition to the validation and reliability checks, for the goodness of the proposed model, fit indices were also identified and checked with CFA and SEM. There are three kinds of fit indices for CFA and SEM – (i.e., chi-squared test, CMIN/DF, RMSEA, GFI, AGFI) (Hooper et al.,

2008, Suhr, 2006, Diamantopoulos and Siguaw, 2013); (i.e., CFI) (Mak and Sockel, 2001, Suhr, 2006); and (i.e., PRATIO, CAIC) (Diamantopoulos and Siguaw, 2013, Hair et al., 2006b, Hooper et al., 2008). The criteria for these fit indices and their standard are discussed in Chapter 6.

5.7.3.3 SEM model relationship analysis

Finally, to investigate the hypothetical model relationships, structural equation modelling (SEM) has been applied among the factors extracted from the CFA analysis with proper validity and reliability (Anderson and Schwager, 2004). Structural equation modelling (SEM) was nominated in this revision because of its illuminating aptitude, its complete figures of model analysis, its general practice as a trial and error model that can be tested several times, and its capacity to progress stronger models by analysing philosophies on the quantified associations (Byrne, 2013, Hair, 2010, Rubio and Gillespie, 1995). This implies that with different tests, the strongest model would be accepted and it would show the relationships with validity and reliability. SEM permits the concurrent investigation of up to the 200 variables, permitting the inspection of widespread connections among arbitrator and latent forecaster variable pointers (Al-Gahtani et al., 2007). The modelling process and validation procedure are shown in Figure 5.5.

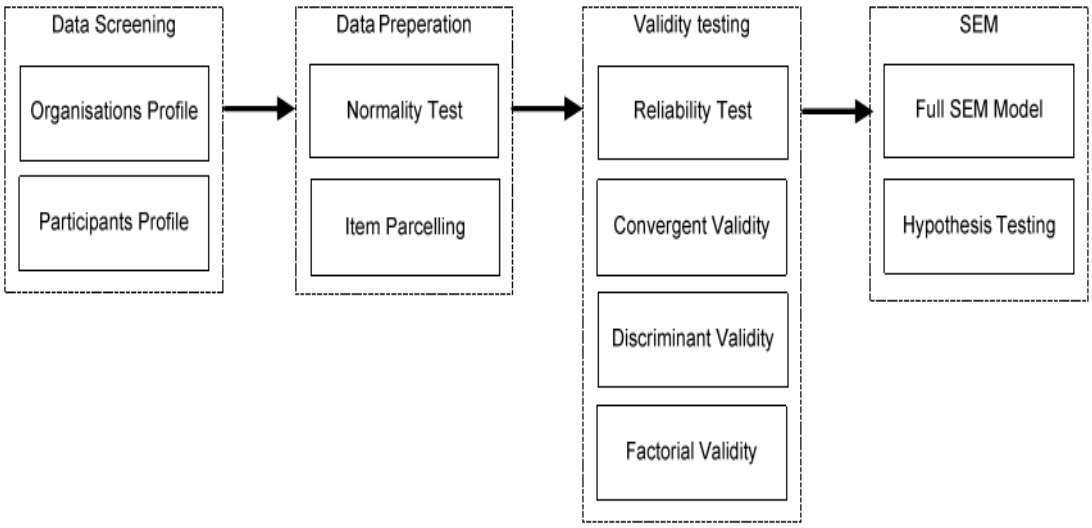


Figure 5.5 SEM modelling process (from (Al-Gahtani et al., 2007)

There are several statistical software packages available for SEM analysis, such as *AMOS*, *LISREL*, *PRELIS*, and *Mplus*. In this research, *AMOS* (version 19) was used to analyse the SEM model. The practical reason for running *AMOS* was that *AMOS* was developed by IBM to run as an extension program to *SPSS* allowing high confidence in the compatibility of results between and (Arbuckle, 2013, Blunch, 2013). The results of these analyses of SEM and CFA are described in detail in Chapter 6.

5.8 Summary

This chapter described the central research procedure used in this study. The research plan and suitable data collection approaches were outlined. The pre-test review and experimental test management were undertaken by educational employees, research experts, colleagues, and a select group of Saudi online shoppers. The pilot test for the research has enabled the researcher to find the most appropriate questions, measurement scale and variables needed for the final survey for the quantitative data collection.

Quantitative data were collected primarily via the online questionnaire and the qualitative data were collected via in-depth interviews. Factor analysis was conducted to find the most relevant factors in this chapter using *AMOS*. This *Analysis* set the base to conduct final statistical analysis in the analysis chapter. However, the strategies for statistical analysis, such as descriptive analysis, hypotheses testing and final model testing have been provided to detail the analysis process and their steps. Lastly, ethical deliberations were considered at length to remain in compliance with relevant and applicable ethical standards for social science research. Data from the field research and data analysis of the results of the survey are presented in the next chapter.

CHAPTER 6: QUANTITATIVE ANALYSIS

This chapter describes the analysis of the data generated by the online questionnaire using different quantitative tools and techniques, presents the answers to the research questions, and explains the meaning of the results.

6.1 Data preparation

The preparation of raw data for final analysis involved coding the data from the questionnaire, entering the collected data into the system, cleaning the data and dealing with missing responses.

Any extensive research, preparation of data for analysis needs to follow a systematic procedure. In the present research, several steps were required for data preparation. To start, the raw data obtained from the hard copy questionnaire was visually checked. Then, the completeness of the datasets was checked, and eligible respondents were identified through the confirmation of complete and legitimate responses. In this case, responses without any variation were considered ineligible.

Additionally, to avoid the influence of acquiescence and extremity bias, some scales had negative statements. These negative statements were then recoded for analysis. For example, the positive statement ‘strongly agree’ initially was represented by a score of 7, whereas ‘strongly disagree’ was represented by a score of 1. This scoring system utilised the reverse order of a Likert scale. After the recoding process, the negative statement ‘strongly disagree’ was represented by a score of 7 and ‘strongly agree’ was represented by a score of 1. This recoding made the datasets consistent with all other responses.

The managed data was entered into IBM-*SPSS* software (version 20) for further analysis. However, before starting the analysis, the data were checked to ensure they had been entered correctly. To do this, random sample rows of the dataset were checked manually with the corresponding survey questionnaire. Finally, for missing data identification, frequencies were computed for each of the corresponding variables to see if any missing data or outliers were present in the entered dataset.

6.2 Data analysis

After assembling all the data, the study moved to the analysis stage. A variety of statistical methods are available for data analysis, and different statistical analysis tools have been utilised for academic research around the globe. For this reason, it was important to select the appropriate statistical methods to make sense of the collected data. Lind et al. (2005) stated that some basic statistical methods should be used to analyse quantitative data. Lind et al. suggested that both descriptive statistics (explaining the features of sample data) and inferential statistics (examine the relationships between variables using hypotheses) are required to explain and prove the worth of the outcome from survey data. This approach was used in this research.

6.2.1 Descriptive statistics

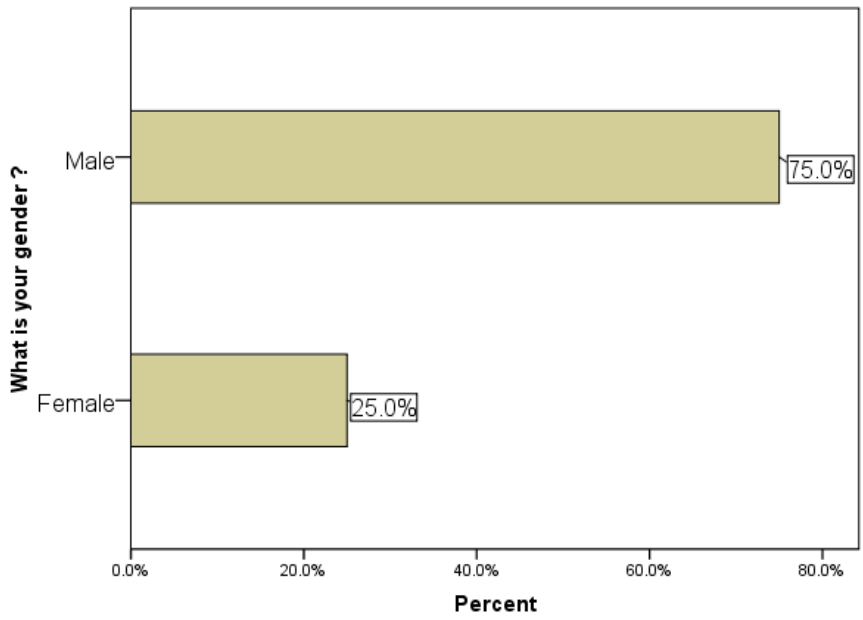
The basic features and characteristics of the data were explored using descriptive statistics. These methods of analysis manage large and different datasets using smaller and statistically comprehensible variables and indicators, enabling the comparison of different variables in a similar quantitative platform. For descriptive statistics, some common indicators are frequency distribution, a measure of central tendency, measures of dispersion, and measures of cross-tabulation. Many of these were utilised in this study, such as frequency and cross-tabulation.

6.2.1.1 Socio-economic information.

- ***Gender of respondents.***

Figure 6.1 illustrates that, out of a total of 904 online survey respondents, the majority (75%) were male (N=678), while 25% of the respondents (N=226) were female. The disproportionate gender numbers suggest that males are more frequent users than females when it comes to the internet in the Saudi Arabia. However, the gender difference might have resulted from the fact that more males received or responded to the survey than females. The response rates from the 3000 emails sent to potential participants supported this interpretation of the data, as well as the fact that males were more responsive than females.

The fact that men responded more frequently than women could be due to cultural influences within Saudi Arabia. Women in the kingdom often lead a conservative lifestyle, which curtails their uptake of innovations. These observations support a higher response rate for the males, but do not ensure that males are the major users of the internet in Saudi Arabia.



What is your gender?		
	Frequency	**Percent**
female	226	25.0
male	678	75.0
Total	904	100.0

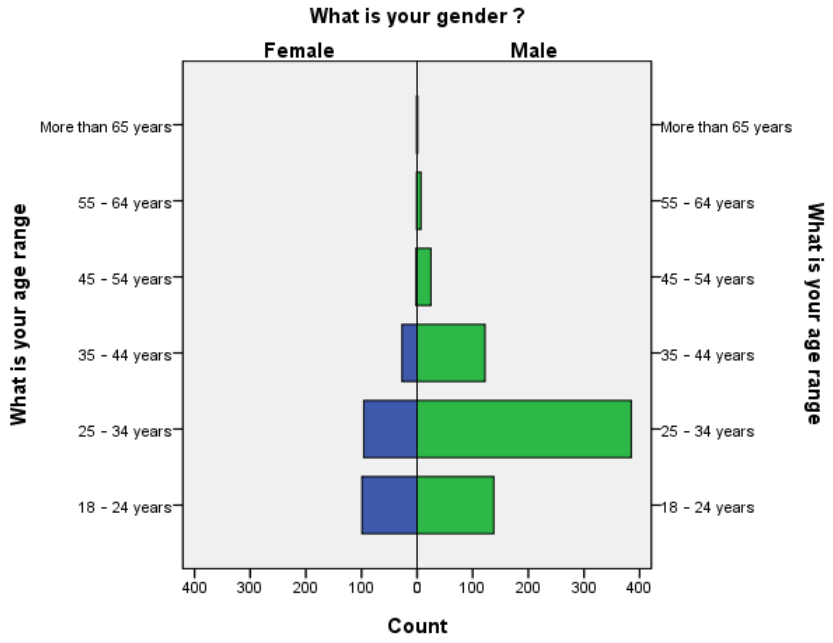
Figure 6.1 Gender distribution of the sample

- ***Age distribution by gender.***

Figure 6.2 reflects the fact that the majority of the respondents in the sample survey (56.85%) were males between the ages of 25-34. The second and third largest age groups for males were 18-24 years (20%) and 35-44 years (18%) respectively. In addition to these, 3.7% of the males were aged between 45-54 years, and only 1% aged between 55-64 years; however 0.1% of males were more than 65 years old. The age ranges were intended to capture 10 intervals and observe the differences in e-commerce behaviours based on age cohort. Respondents under 18 years old were not considered since people younger than 18 years had been excluded in the ethics permission.

For females, the largest groups of respondents were individuals between 18-24 years (43.9%) and between 25-34 years (42.5%), while 11.9% were aged between 35-44 years, 0.9% aged between

45-54 years, and 0.4% aged between 55-64 years and more than 65 years old. For both males and females, individuals aged 45-54 years, 55-64 years, and more than 65 years represented a small number of participants (Figure 6.2). This indicates that, for both males and females, the age groups 18-24 and 25-34 were the most likely to use e-commerce for their shopping. This is a clear indication that young people are more likely to shop online than older individuals.



	What is your age range			
	female		male	
Age Categories	Frequency	Percent	Frequency	Percent
18 – 24 years	99	43.8	138	20.4
25 – 34 years	96	42.5	385	56.8
35 – 44 years	27	11.9	122	18.0
45 – 54 years	2	0.9	25	3.7
55 – 64 years	1	0.4	7	1.0
More than 65 years	1	0.4	1	0.1
Total	226	100.0	678	100.0

Figure 6.2 Age distribution by gender

- ***Occupations of respondents.***

As illustrated in Figure 6.3, the majority of the 904 participants were students (28.65%). The second and third largest occupation groups were an administrator (19%) and other (13.5%). Members of the military and teachers also had a strong presence in the sample, with each group representing approximately 12% of the sample. Smaller numbers of participants identified their occupations as retired, freelancers, housewives (housework) and academics.

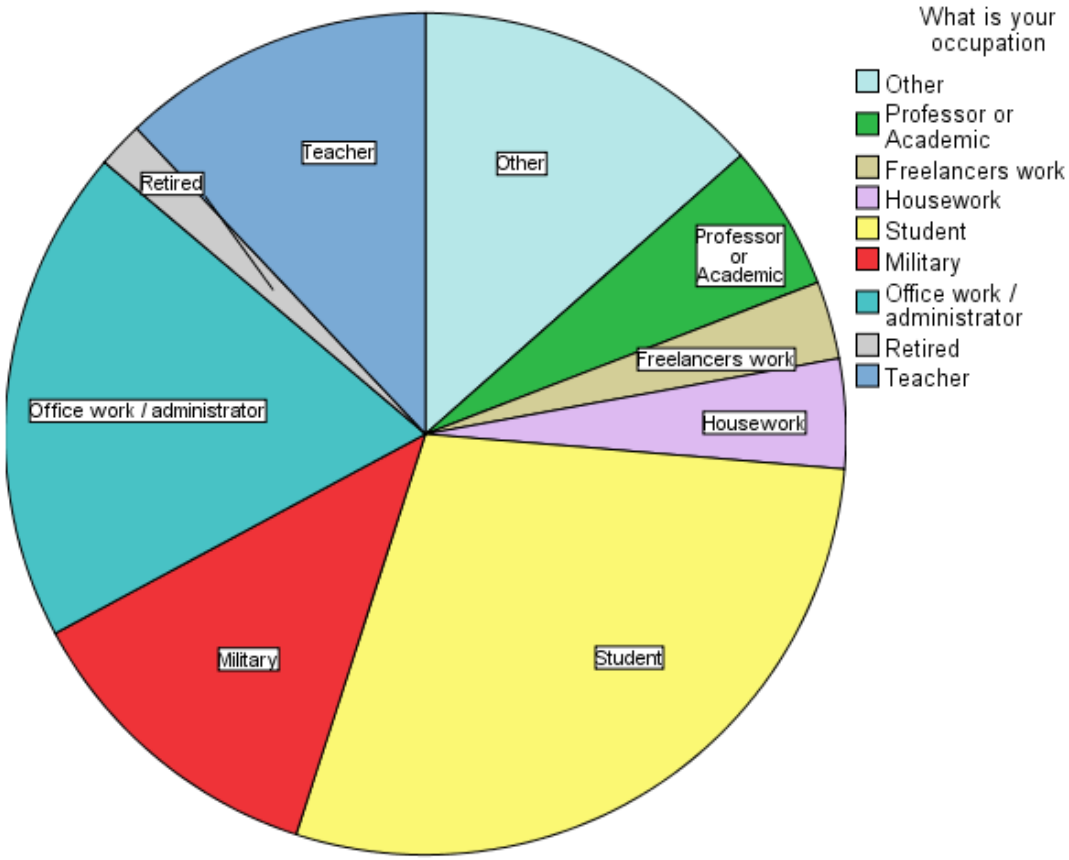
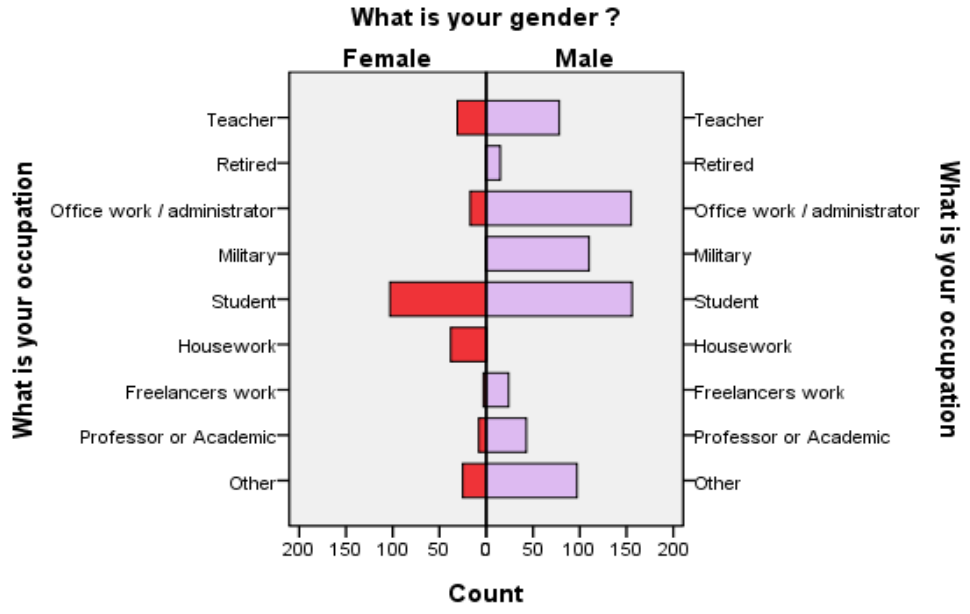


Figure 6.3 Occupations of the respondents

- ***Occupation by gender.***

Occupation distribution by gender is presented in Figure 6.4. This figure shows that for both males and females, the most common occupation was a student. For males, the second and third largest occupational groups were administrator and military, while a lower but still considerable number identified their occupation as teacher or other. In contrast, for females, the second largest occupation group was housewives. This was not a surprising result as it is quite common for the study location and the sample population. The occupations of teacher and other were also common professions for the female participants.



What is your occupation				
	female		male	
Categories	**frequency**	**percent**	**frequency**	**percent**
Professor or Academic	8	3.5	43	6.3
Freelancers work	3	1.3	24	3.5
Housework	38	16.8	156	23.0
Student	103	45.6	110	16.2
Office work / administrator	17	7.5	155	22.9
Retired	1	.4	15	2.2
Teacher	31	13.7	78	11.5
Other	25	11.1	97	14.3
Total	226	100.0	678	100.0

Figure 6.4 Gender-based occupation distribution

The occupation distribution provided important insight into the types of online shoppers that are dominant in the Saudi Arabia. In terms of occupation, students were the most common, which explains their familiarity with computers and the internet. The latest technological inventions are frequently noted on the internet, and students' online activities expose them to innovations and stories of innovations (Eid, 2011).

People involved in administrative work are also frequently introduced to new technologies, so their ability and willingness to use e-commerce are likely to be greater than individuals who are not participating in activities that bring them into contact with ICT.

One interesting result was among the military who participated. A considerable proportion of the respondents belonged to the military. Their use of e-commerce could potentially be due to their lifestyle, which tends to preclude shopping trips to physical locations because of their duties and the hours they work. E-commerce may appeal to members of the military because it is convenient and efficient.

With regard to female participants, housewives were the second largest group (after students) using e-commerce. This might be due to the cultural influences within Saudi Arabia. Some housewives do not have the opportunity or are unwilling to do much physical shopping. For these women, using e-commerce may offer more accessibility to products and freedom of choice. Female teachers, however, also used e-commerce for shopping, and for this group, convenience and efficiency may also play a role. Nevertheless, how the Saudi women learned the use of ICT and computer is not very clear, and might be a topic for further investigation.

- ***Monthly income.***

As illustrated in Figure 6.5, the majority of the respondents (31.5%) earned between Saudi Riyal (SAR) $10000-20000 per month. The second largest group of respondents (27.9%) earned between SAR $5000-10000 per month. The third group of largest group of respondents (18.8%) earned between SAR $100-1000 per month.

Respondents earning greater than SAR $20000 per month made up only a small portion of the sample population, with 5% of respondents earning between SAR $20000-30000 per month and only 1.3% earning between SAR $300000 to 400000. A mere 0.9% of the respondents earned more than SAR $400000 per month. The average income of the e-commerce users varied between SAR $1000 to SAR$20000 per month.

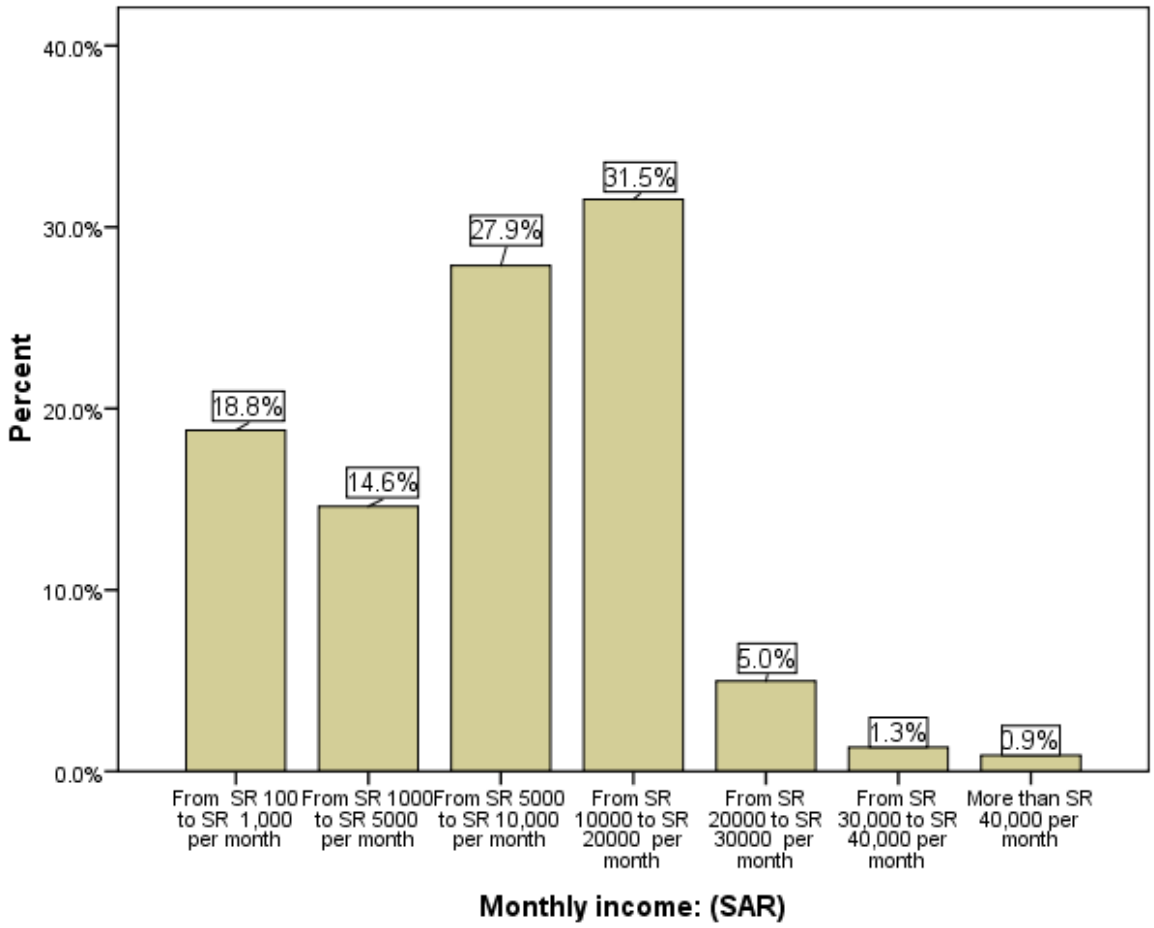


Figure 6.5 Monthly income distribution of the respondents

Males were the dominant income group, with income varying mostly between SAR $5000 to SAR $20000 per month. Comparatively, females were earning much less. The income earned by females primarily ranged between SAR $100 to SAR $10000 per month. The largest group of females (48%) earned SAR $100 to SAR $1000 per month. This is contrasted with males for which the largest group earned SAR $10000 to SAR $20000 per month (Figure 6.6). Income among the participants was, therefore, very diverse and disproportionately higher for males.

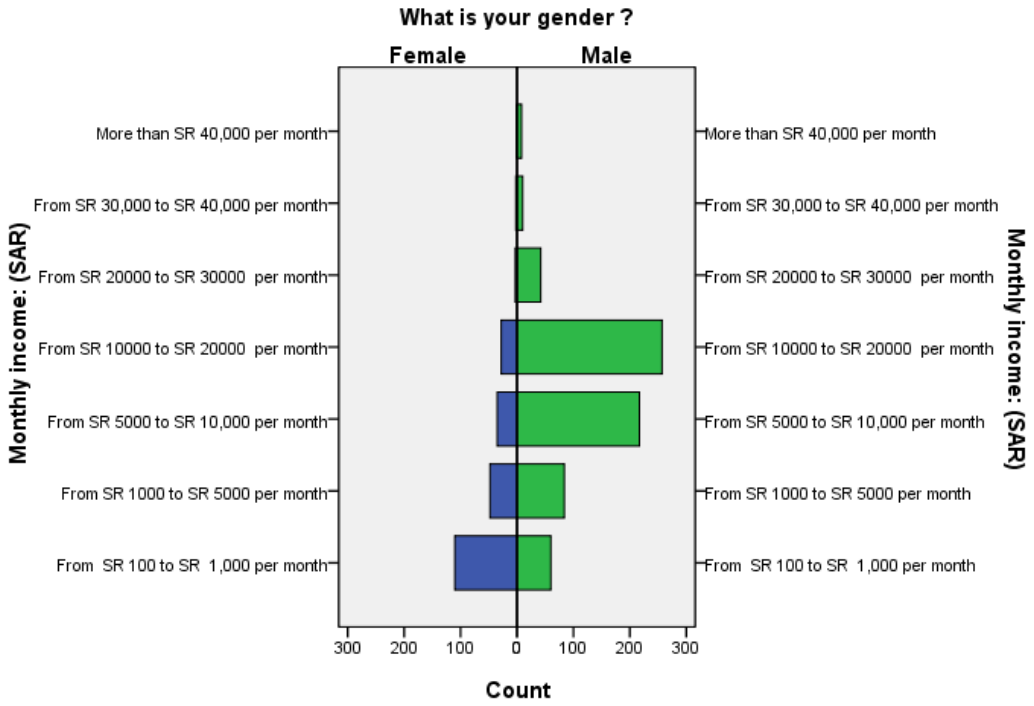


Figure 6.6 Gender-based income distribution per month

This is a common scenario for the majority of families in Saudi Arabia, as, due to cultural norms, fewer females work than males. Females also earn less compared to the majority of males. This analysis provides insight into the purchasing power of males and females in the Saudi Arabia. With their higher income, males have more purchasing power than females, and can buy more regardless of whether the shopping is done physically or via e-commerce.

However, this does not discount the fact that females often receive money from family members such as fathers or husbands. It is likely that women still have less spending power on an individual basis compared to men, but their more extreme social constraints and limits on their ability to shop when they want to could be expected to contribute to increased adoption of e-commerce as it provides them with more freedom to spend the money they have at their convenience.

6.2.1.2 Personal characteristics of respondents

In this section, a general overview of the participants is described in terms of their personal characteristics, such as their ability to use computers, device usage, internet experience, and time and money spent shopping online.

- ***Computer proficiency.***

Table 6.1 illustrates the computer abilities and efficiencies of the participant sample. Approximately 90% of participants indicated that they were extremely proficient at browsing the Internet. In addition to internet browsing, 66% of the respondents considered themselves to be extremely proficient when checking emails, and 51% were extremely proficient when preparing documents using a computer. Participants' attitudes toward these three skills demonstrated that they felt quite competent to handle basic computer tasks and the internet.

E-commerce in the form of online shopping was also explored as part of the questions related to computer efficiency. Of all the participants, 17% felt they could shop online with extreme efficiency, 21% indicated they could do so very proficiently. Cumulatively, therefore, around 40% of the participants considered themselves to be highly proficient online shoppers. The remaining 60% of the sample reported only moderate or low online shopping ability (Table 6.1).

The majority of the respondents had no experience with computer programming or database creation. They were mostly general users of computers without the complex skills needed to use higher-level computer functions. A small segment of the respondents had experience with presentations, spreadsheet management, and video chatting.

Table 6.1 Computer efficiency and ability of participant

	Never used	Not efficient	Moderately efficient	Very efficient	Extremely efficient
Prepare documents	3%	11%	16%	19%	51%
Check e-mails	2%	7%	11%	14%	66%
Browse the Internet	0%	1%	3%	7%	89%
Do online shopping	5%	27%	30%	21%	17%
Text and audio/video chat	25%	35%	21%	8%	10%
Prepare presentations	20%	24%	20%	17%	19%
Prepare spreadsheets	25%	29%	15%	15%	15%
Create databases	42%	26%	14%	9%	9%
Do programming	60%	20v	11%	4%	6v

- ***Device use.***

As shown in Table 6.2, the majority of the study participants used smartphones, with more than 90% using them to browse the internet. Laptop computers were used by more than 50% of respondents for word processing and internet-related work. Tablet devices were used more frequently by respondents than PC-desktops.

Table 6.2 Digital or computer devices used by the respondents

Usability	Laptop	Tablet	Smart Phones	PC-Desktop
Never used	1.99%	24.23%	1.11%	30.53%
Very rarely used	8.19%	14.49%	1.00%	22.35%
Use sometime	17.59%	14.16%	2.43%	15.49%
Mostly used	20.91%	12.94%	4.31%	10.62%
Extremely used	51.33%	34.18%	91.15%	21.02%

- ***Internet experience and usage.***

The ability to access and use the internet is a requirement for e-commerce. Thus, participants' experiences using internet facilities were investigated. Figure 6.7 shows that the majority of e-commerce users (66.7%) had used the internet (i.e. Web-surfing, search engines, and social media) for more than seven years. Additionally, 18.25% of the respondents had used the internet for approximately one year, 11.28% had used it for four to five years, and only 3.76% of the respondents had used the internet for two to three years.

These usage figures reveal that the majority of the respondents were familiar with using the internet and had done so for an extended time period. Most participants, therefore, had the capacity to participate in e-commerce in the form of online shopping.

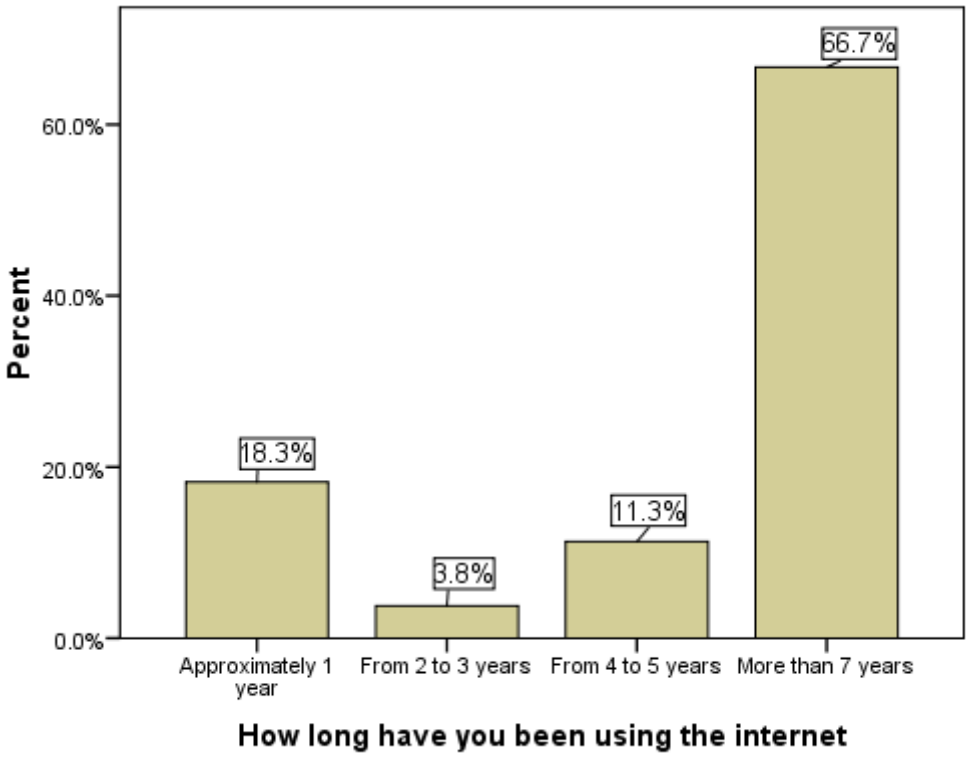


Figure 6.7 **Internet experience of e-commerce adopters**

In Saudi Arabia, several internet connections are available, and these connections provide different internet speeds and facilities. In many areas, people have several internet connection options to choose from. As illustrated in Table 6.3, ADSL was the most commonly used internet connection type (68.6%) among the survey respondents. After ADSL, the majority of the respondents (52.8%) used a mobile broadband connection. Broadband is the third most preferred mode of internet use. Much smaller percentages of participants were using fibre-optic and dial-up connections (Table 6.3).

Table 6.3 **Types of connection used**

	ADSL	Mobile Broadband	Broadband	Fiber Optic	Dial-up
Never used	9.62	5.53	38.27	68.14	74.34
Very rarely used	3.98	7.74	27.65	7.30	9.96
Use sometime	6.64	16.37	16.48	5.86	5.64
Mostly used	11.17	17.59	7.74	4.87	2.88
Extremely used	68.58	52.77	9.85	13.83	7.19

- ***Time spent shopping online per week.***

Figure 6.8 shows the amount of time that the survey respondents spend shopping online in a week. The majority of the respondents (more than 60%) spend approximately one hour per week.

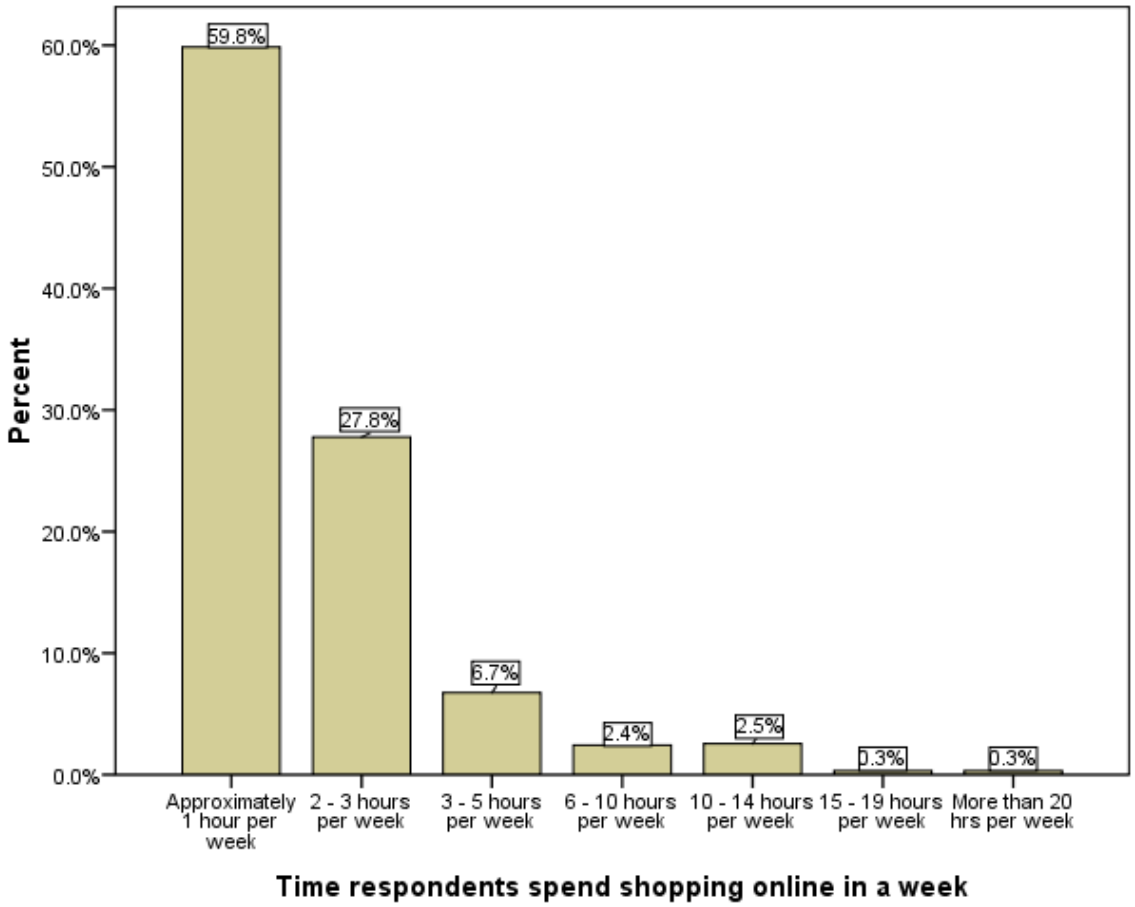


Figure 6.8 Time spent online shopping per week

Another 27.3% of respondents spend two to three hours per week shopping online, while only 7.2% spend three to five hours per week doing so. Far fewer respondents spend six to 10 hours (2.4%) and more than 10 hours (2.5%) per week for online shopping. Most respondents did not spend large amounts of time shopping online, which indicates that e-commerce users use online shopping systems for shorter periods and tend to make purchases quickly with little time spent making the decision to purchase. However, it is possible that users who spend more time per week shopping online may be searching for the best products or comparing prices among different online stores.

- ***Number of times online shopping per month.***

Figure 6.9 presents participants' online shopping frequency (per month) over the last year. The majority of survey participants (61.6%) used online shopping facilities once a month. Another 30.3% went online to shop two to five times per month. Additionally, 7.1% of respondents reported a high online shopping frequency at six to 20 times per month, while a very high usage of online shopping was observed for only 1% of the respondents, who shopped online more than 20 times a month over the previous year.

The results indicate that while the respondents mostly tended to do more 'real world' shopping than virtual shopping via the internet, the latter method is becoming more popular day by day and is on the increase in the Saudi Arabia.

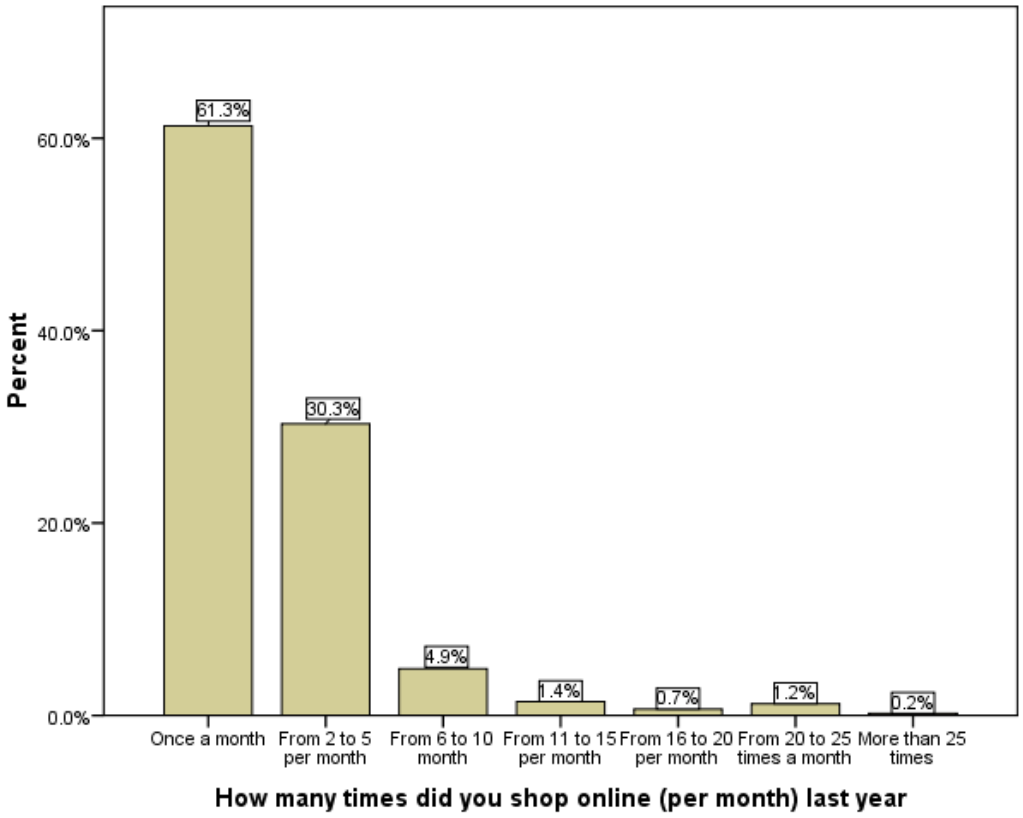


Figure 6.9 Time spent online shopping per month

The time spent online shopping per month varies between male and female. As presented in Figure 6.10, both for males and females, the majority of the shoppers conduct online shopping once in a month. However, there is no major difference between male and female.

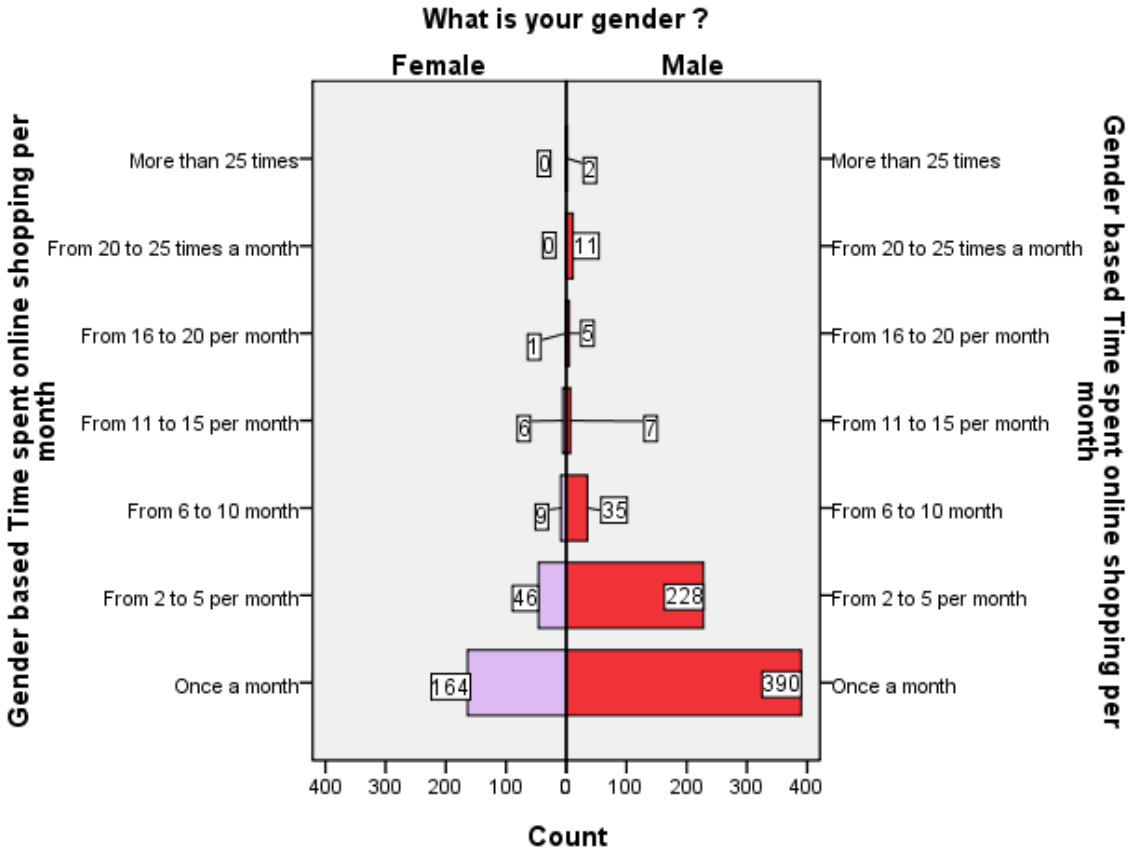


Figure 6.10 **Time spent online shopping per month for male and female**

The time spent online shopping per month varies among different age groups. As presented in Table 6.4, there are variations among different age groups in terms of the frequency of shopping online. However, members of the 25-34 years age group are those who most frequently shop at least once in a month, and is also the group whose members most often shop two to five times per month.

Table 6.4 Time spent online shopping per month for different age group

Time spent online shopping per month and age variation								
		What is your age range						***Total***
		18 – 24 years	25 – 34 years	35 – 44 years	45 – 54 years	55 – 64 years	More than 65 years	
Time spent online shopping per month	Once a month	148	297	89	16	4	0	554
	From 2 to 5 per month	71	140	51	6	4	2	274
	From 6 to 10 month	11	24	8	1	0	0	44
	From 11 to 15 per month	3	8	1	1	0	0	13
	From 16 to 20 per month	0	5	0	1	0	0	6
	From 20 to 25 times a month	4	5	0	2	0	0	11
	More than 25 times	0	2	0	0	0	0	2
Total		237	481	149	27	8	2	904

- ***Money spent on online shopping.***

As illustrated in Figure 6.11, the majority of the participants (36.6%) spent between SAR $100 and SAR $500 per month shopping online. Another 21.2% of respondents spent between SAR $600 and SAR $1000 per month shopping online, while 19.6% spent SAR $11 to SAR $100 per month. There were also some low spending groups. The lowest spending group (12.3% of respondents) spent from SAR $1 to SAR $10 per month shopping online. Another 19.6% of the respondents spent from SAR $11 to SAR $100 per month. At the top of the distribution, 9.3% of the participants spent from SAR $1000 to SAR $5000 per month, 0.3% spent SAR $6000 to SAR $10000 per month shopping online, and the remaining 0.7% spent more than SAR $10000 per month. The average online shopping expenditure per month among the participants ranged between SAR $11 and SAR $1000.

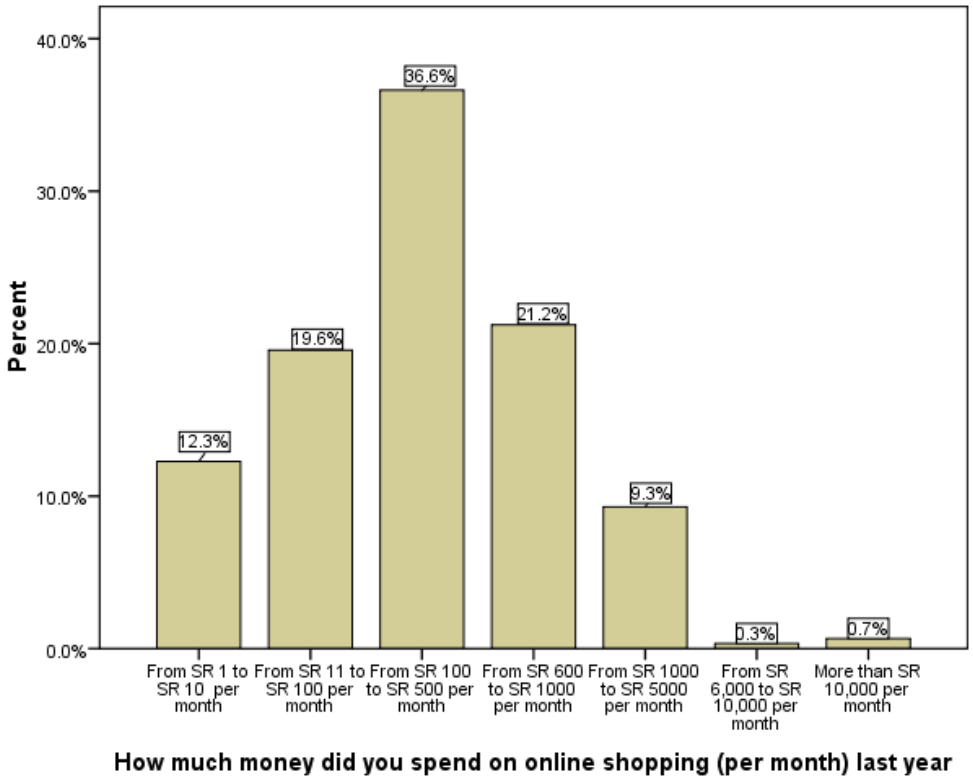


Figure 6.11 Money spent online per month

6.2.1.3 Classifying e-commerce users

Based on the time and money spent on online shopping, the frequency of online shopping, the ability to use a computer and the internet, and the preference for e-commerce, the e-commerce adopters among the respondents were classified into three categories using cluster analysis. In this case the K-mean clustering method was applied using *SPSS* software. This resulted in the participants being grouped into three clusters.

The three clusters included *high frequency users*, who are the most frequent and dedicated users of e-commerce, *moderate users*, who use e-commerce more than *low frequency users*, and never equal the frequency of use of the high frequency users. The three categories were selected based on different literature (Al-Ghaith et al., 2010; Al-sahfi & Weerakkody, 2010), and high, moderate and low are the most frequent user types for different services observed in other research.

Table 6.5 shows different kinds of e-commerce adopters in the study sample. Of the 904 survey respondents, 24.7% were classified as high frequency users, 45.7% were classified as moderate users, and the remaining 29.6% were classified as low frequency users. The majority of e-commerce users who participated in this survey were classified as moderate users.

Table 6.5 E-commerce user types according to cluster analysis

		Frequency	Percent	Valid Percent
user types	high frequency user	223	24.7	24.7
	moderate user	413	45.7	45.7
	low frequency user	268	29.6	29.6
	Total	**904**	**100.0**	**100.0**

6.2.2 Hypothesis testing: The effect of moderator variables

It has been observed in the literature that the major moderator variables (variables that might influence the level of usage of e-commerce) are personal characteristics, such as age and gender (Al-maghrabi & Dennis, 2009; Al-Ghaith et al., 2010; Al-sahfi & Weerakkody, 2010). Thus, in order to investigate the effect of these variables on different e-commerce users, hypothesis testing was conducted independently, not included in the model. These variables were tested to investigate the effects of cultural issues in Saudi Arabia on different e-commerce users. These hypotheses were tested to verify the findings from qualitative and quantitative analyses in this research. Thus, these variables were not considered as constructs in the research model, but as moderating variables, and measured differently.

6.2.2.1 Age and e-commerce users

The age of e-commerce adopters can be an important factor in determining the level of use. According to age, ideas about online shopping may differ. Age is important considering involvement with technology, the desire for modern things, the use of modern techniques, and different views about surroundings. Based on the literature (Al-Ghaith et al., 2010; Al-sahfi & Weerakkody, 2010) and insights gained during this study's interviews, the following hypothesis was developed to investigate the influence of age on e-commerce adoption:

H1: There will be a significant difference between e-commerce user groups (high, moderate, and low frequency) in terms age.

A cross-tabulation Chi-square test was applied to explore the differences among e-commerce user types. If the Chi-square test's p value (significance value) was less than 0.05, the hypothesis was accepted, and significant difference between e-commerce user groups (high, moderate, and low frequency) in terms age was found. In this case, the contingency table shows the expected and observed count for each cross-tab category and provides categories that are different. The cross-tabulation is presented in Table 6.6. The Chi-square test result is illustrated in Table 6.7.

Table 6.6 Cross tabulation for age and e-commerce user types

user type		age range						total
		18-24	25-34	35-44	45-54	55-64	More tha 65	
high frequency user	count	78	118	18	7	1	1	223
	expected count	58.5	118.7	36.8	6.7	2.0	.5	223.0
moderate frequency user	count	16	263	109	20	5	0	413
	expected count	108.3	219.7	68.1	12.3	3.7	.9	413.0
low frequency user	count	143	100	22	0	2	1	268
	expected count	70.3	142.6	44.2	8.0	2.4	.6	268.0
total	count	237	481	149	27	8	2	904

Table 6.7 Chi-square tests for age and e-commerce users

	value	df	Asymp. Sig. (2-sided) [P value]
Pearson Chi-square	$2.426E^2$	10	.000
n of valid cases	904		

Table 6.7 shows that the Chi-square value is very large ($2.426E^2$) and the significance (p value) is less than 0.05, so the null hypothesis for this case was rejected and it was confirmed that there is a significant difference in age among different kinds of e-commerce users (high frequency, moderate, and low frequency). As Table 6.7 shows, the majority of high frequency users (approximately 88%) were within the 18-34 age range, and the observed count for the 18-24 age range exceeded the expected count.

This indicates that high frequency users aged 18-24 are more willing to use e-commerce services. In contrast, for moderate users, the majority (around 90%) of respondents were aged 24 to 44 years, with the observed counts for the age ranges 18-24 and 25-34 exceeding the expected counts. This indicates that, for moderate users, middle-aged people are more likely to be moderate users. For low frequency users, the majority of respondents were within the 18-24 age range, and the observed count was higher than the expected count. The reason for the 18-24 year group being low frequency users could be that many of these people have very low purchasing power due to low level of income. However, while comparing different age groups, it is clear that high frequency users are mostly from age group 25-34, while moderate users are within 34-45 years old and low frequency users are between 18-24 years.

6.2.2.2 Gender and e-commerce adopters

Gender is one of the most important moderator variables, as it influences many issues that are interconnected with online shopping. Shopping preferences often differ between males and females, and in many cases females are more active shoppers than males (Al-sahfi & Weerakkody, 2010). Females also may shop for different types of goods than their male counterparts. Thus, based on the literature (Al-Ghaith et al., 2010; Al-sahfi & Weerakkody, 2010) and actual observations, the following hypothesis was formulated to investigate whether gender has any influence on e-commerce behaviours:

H2: ***There is be a significant difference between e-commerce user groups (high, moderate, and low frequency) in terms gender (male and female).***

Table 6.8 Cross tabulation for gender and e-commerce user types

			What is your gender?		Total
			female	*male*	
user types	high frequency user	count	63	160	223
		expected count	55.8	167.2	223.0
	moderate end user	count	62	351	413
		expected count	103.2	309.8	413.0
	low frequency user	count	101	167	268
		expected count	67.0	201.0	268.0
Total		count	226	678	904

Table 6.8 shows that for high frequency users, the observed number of females exceeded the expected count; while in contrast, the observed number of males was below the expected count. For moderate users, the observed count for males exceeded the expected count, and the opposite was seen for females. For low frequency users, the observed count for females exceeded the expected count, and for males the observed count was below the expected count. This indicates that there is a variance between males and females for high, moderate and low frequency users.

Table 6.9 illustrates that the p value is less than 0.05 (alpha), so the null hypothesis was rejected and the data demonstrates that there is a significant difference based on gender among high frequency, moderate, and low frequency e-commerce users (Chi-square = 46.235, df = 2, $p < 0.05$).

Table 6.9 Chi-square tests for gender and e-commerce users

	Value	df	Asymp. Sig. (2-sided) [P value]
Pearson Chi-square	46.235[a]	2	.000
N of valid cases	904		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 55.75.			

6.2.2.3 Ability to shop online

To a great extent, online shopping is dependent upon one's ability to do it. To engage in online shopping, a user must demonstrate proficiency in selecting products, indicating the desired quantities, and navigating the payment process. Providing delivery information for a particular order is also important.

Regardless of whether a user is extremely proficient in dealing with these tasks, they can be categorised as a high, medium, or low frequency user. However, some level of proficiency is required to deal with online shopping, so the ability to shop online should be related to what kind of user the shopper is in the sense that the more frequently a user shops on line, the more proficient they will become. Based on this empirical understanding, the following hypothesis was formulated to investigate the relationship between the ability to shop online and different kinds of e-commerce users:

H3: There will be a significant difference between e-commerce user groups (high, moderate and low frequency) in terms of their online shopping proficiency.

Table 6.10 Cross tabulation for ability to shop online and types of e-commerce users

			I can do online shopping					Total
			not proficient	somewhat proficient	moderately proficient	very proficient	extremely proficient	
user types	*high frequency user*	count	9	44	62	58	50	223
		expected count	11.1	59.9	67.8	45.6	38.5	223.0
		% within user types	4.0%	19.7%	27.8%	26.0%	22.4%	100.0%
	moderate user	count	12	116	124	83	78	413
		expected count	20.6	111.0	125.6	84.5	71.3	413.0
		% within user types	2.9%	28.1%	30.0%	20.1%	18.9%	100.0%
	low frequency user	count	24	83	89	44	28	268
		expected count	13.3	72.0	81.5	54.8	46.2	268.0
		% within user types	9.0%	31.0%	33.2%	16.4%	10.4%	100.0%
Total		count	45	243	275	185	156	904

Further exploration of Table 6.10 shows that more than 48% of high frequency users were either very proficient (26%) or extremely proficient (22.4%) when shopping online, and these figures exceed the expected count. In contrast, the majority of moderate end users were moderately proficient (30%) and somewhat proficient (28.1%) when shopping online. The scenario for low frequency users was also similar to moderate frequency users. In the case of low frequency users, more than 60% were moderately proficient (33.2%) and somewhat proficient (31%). This reveals that high frequency users have higher levels of proficiency than moderate and low frequency e-commerce users.

As illustrated in Table 6.11, the null hypothesis was rejected as the *p* value was less than 0.05. Thus, it was confirmed that there was a significant difference in online shopping proficiency among different kinds of e-commerce users (Chi-square = 36.622, df = 8, $p < 0.05$).

Table 6.11 Chi-square tests for ability to shop online and e-commerce users

	Value	df	Asymp. Sig. (2-sided) [*p* value]
Pearson Chi-square	36.622[a]	8	.000
N of valid cases	904		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.10.			

6.2.3 Profiling different users

Based on the classification and their characteristics, some general profiles of the users have been assumed, and the general characteristics are briefly discussed in the following sections. These general profiles are the researcher's interpretations and observations, and they have been checked from the dataset.

6.2.3.1 High frequency user – General profiling

Based on the data analysis, prototype profiles have been compiled outlining the characteristics of high frequency e-commerce users based on gender. In this case of male high frequency users, individuals are likely between 25-34 years of age with a college level education. Many high profile male users work in offices or are administrators. These users typically earn between SAR $10000 to SAR $20000 per month. While not all high frequency users fit this profile, high frequency male users are more likely to be young adults, have jobs, and have completed their college education.

A high frequency female e-commerce user is likely to be between the ages of 18 and 24. In terms of occupation, female high frequency users are likely to be students or housewives. While these females might have low personal incomes ranging between SAR $100 and SAR $1000 per month, the likelihood that they may receive money from their fathers or husbands to spend as they wish should not be discounted. While not all high frequency female users fit this profile, high frequency female users are more likely to be younger students or housewives with less personal income who get money from others to do their shopping.

6.2.3.2 Medium frequency users – General profiling

Based on the data analysis, prototype profiles were compiled outlining the characteristics of medium frequency e-commerce users based on gender. In the case of males who are medium frequency users, individuals are likely to be between the ages of 35 and 44 with a high school education. Medium frequency male users are likely to be occupied as teachers or members of the military. These users typically earn between SAR $5000 and SAR $10000 per month. This profile suggests that a male, medium frequency, e-commerce user is most likely to be a middle aged or even older person with a moderate level of education and stable job.

A medium frequency female e-commerce user is most likely to be between the ages of 25 and 34, occupied as a teacher or housewife. This type of user typically earns between SAR $1000 and SAR $5000 per month. While not all medium frequency female users fit this profile, female, medium frequency, e-commerce users are most likely to be mid range adults (25-34 years old) with moderate to low level incomes.

6.2.3.3 Low frequency users – General profiling

Based on the data analysis, prototype profiles were compiled outlining the characteristics of low frequency e-commerce users based on gender. Low frequency male users were most likely to be between the ages of 18 and 24, and possess either a high school or college education. These users were most likely to be unemployed or identify as students. Low frequency male e-commerce users tended to have very low incomes (SAR $100 – 1000 per month), and most probably receive support from the family head in the form of a monthly expense allocation. The lack of disposable income may be a possible factor in the low frequency of e-commerce among these users.

Low frequency female users tended to be between 18 and 24, with either a high school or college education. These users most often chose student as their profession. They also typically had a low income between SAR $100 and SAR $1000 per month, much of which might have been provided by male family members. The overall profiles of low frequency male and female users were similar.

6.3 Structural equation modelling (SEM) and confirmatory factor analysis (CFA)

Structural equation modelling (SEM) was a major analytical technique used in this study to explore the complex relationships between e-commerce proficiency and the independent variables that determine the level of e-commerce use. SEM was applied for some important reasons:

- SEM produces a confirmatory result rather than experimental results for statistics investigations; therefore this method has greater explanatory power.
- Outdated multivariate measures are unqualified for measuring or modifying for capacity error, while SEM delivers obvious estimations of error alterations. SEM is capable of addressing analytical errors and offers the option of adjusting the error to provide better results.
- SEM can integrate perceived and undetected (latent) variables, which is important for this study, in which some variables are latent, such as trust, which can be a function of several direct variables (i.e. payment, cultural belief). SEM can combine several variables under a broad latent variable.
- Apart from SEM, there are no extensive and simple functional different approaches for showing multivariate relationships (Bagozzi and Yi, 2012, Nunkoo et al., 2013, Ullman and Bentler, 2003, Chin, 1998, Byrne, 2013).

These reasons are strong arguments for using SEM in this study. As the study needed to perform a confirmatory analysis of the hypotheses, multivariate procedures need to be followed to account for the many observed and unobserved variables in this study.

Lei and Wu (2007) defined SEM as follows:

> *Structural equation modeling is a general term that has been used to describe a large number of statistical models used to evaluate the validity of substantive theories with empirical data. (p. 33)*

This numerical method permits the investigator to inspect manifold interconnected dependence associations. In the most common form, SEM looks for variation, co-variation, path, and the relationship between measured variables and latent variables (Suhr, 2006). SEM has become a major statistical tool in many disciplines, as it is highly flexible. It is a multivariate technique and it identifies the deficiencies of researchers' understanding and resolves the problems of multicollinearity. Furthermore, its graphical representation is a convenient and powerful way to present complex relationships (Hooper et al., 2008, Suhr, 2006).

SEM usually involves two major activities. The first is to estimate the multiple interrelated dependent relations between variables. The second is to form unobserved variables while estimating measurement errors associated with the imperfect measurement of variables. This technique is important when a dependent variable (usually latent) becomes an independent variable in another equation (Gefen et al., 2000).

In this study, there were both observed and latent variables, alongside complex interrelationships among the variables that required SEM to find the ultimate empirical decisions. In doing the analysis, *AMOS*, a software package developed by IBM for analysis of SEM, was used because it is compatible with the *SPSS* program, which was also developed by IBM and used for the other analysis in this study.

Confirmatory factor analysis (CFA) is a numerical method used to confirm the feature arrangement of a set of experimental variables (Suhr, 2006). The analysis checks the conformity of the factors that were identified in the EFA process. Furthermore, CFA checks the goodness of fit for the planned feature solution. Specifically, CFA is very valuable to authenticate the scales of capacity for specific concepts.

In summary, CFA is particularly a SEM function. It is used to validate hypothesised theoretical constructs (or factors). CFA ultimately develops the measurement model that pinpoints the relationships between the observed variables and latent variables. In this study, CFA was based on the explanatory factor analysis done in the methodology section. Then a CFA was run before the SEM to make sure the SEM relationships were related to a specific model. Issues of reliability and validity of the observed and latent variables were also identified using CFA to ensure a better fit of the final SEM.

6.3.1 Scales reliability

> *Reliability is an assessment of the degree of consistency between multiple measurements of a variable. (Hair et al., 1995)*

It is a characteristic of the calculating appliance that the dependability of the survey is recognised by the uniformity with which similar consequences are attained at dissimilar times or in dissimilar positions.

The IBM-*SPSS* program was utilised to determine the internal consistency of the items for each construct in the survey. The researcher calculated the reliability coefficients using Cronbach's alpha to identify internal consistency based on the sample estimation. The literature suggests 0.7 as the accepted cut-off for a construct to be considered reliable (Santos, 1999, Hair et al., 2010). Table 6.12 shows the Cronbach's alpha value for each scale.

Table 6.12 Reliability of scale for the constructs

Construct	No of Items	Cronbach's alpha
product availability (PA)	2	0.759
previous experience (PE)	4	0.713
payment satisfaction (PAY)	2	0.741
enjoyment factors (EN)	6	0.804
infrastructure system (INF)	3	0.736
delivery system (DS)	3	0.738
trust (TR)	2	0.704
service quality (SQ)	4	0.720

For this study, all the constructs show acceptable reliability, as all have a Cronbach's alpha value over the threshold of 0.7. Thus, it can be concluded that all these constructs would provide acceptable reliability for the next stages of SEM analysis.

6.3.2 Goodness-of-fit index (GFI) metrics

Testing the model fit for both CFA and SEM is mandatory to ensure the model result is admissible and acceptable. The overall fit of the model determines the extent to which the overall hypothesised model is consistent with the collected data. The goodness-of-fit index (GFI) also explains the reality that can be expressed by the model. Following the recommendation of different researchers, one or more measures from each type of index should be used in model assessment (Hair et al., 1998).

6.3.2.1 Fit indices

Three types of fit indices were selected for assessing model fit in this research.

- ***Absolute fit indices.***

At first, absolute fit indices were used to assess the ability of the model to replicate the actual correlation or covariance matrix (Hair et al., 1998). These actions deliverd the most important signal of how well the planned concept fit the information. Complete fit guides include the Chi-squared test, CMIN/DF, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI) (Diamantopoulos and Siguaw, 2013, Hooper et al., 2008, Suhr, 2006).

- The Chi-square (χ 2) statistic is the most general and common absolute fit index; χ 2 shows a noble appropriate model when the projected *p* value with χ 2 is unimportant (Gefen et al., 2000). Nonetheless, from the literature it was understood that Chi-square is enormously sensitive to a big sample size and idea difficulty (Hair et al, 2006). As the collected data for this study had a sample size of over 200 cases, the estimated *p* value of the Chi-square would probably be significant, despite the fact that other indices show better fit values. An alternative solution to this problem is usually found in normed χ 2 (CMIN/DF), which mitigates the result of a model size by distributing the Chi-square by the gradations of liberty χ 2/df, where a value less than 3.0 is evidence of a healthier fit, and occasionally even values less than 5.0 are permissible (Hair et al., 2006a).
- The root mean square error of approximation (RMSEA) provides a good indication of an absolute fit index. A RMSEA value equal to zero shows an exact fit of the model, while a RMSEA value between 0 and 0.05 is considered a good fit. A value between 0.05-0.10 is considered a moderate fit, and a value over 0.10 shows a poor fit (Fan and Sivo, 2007, Hooper et al., 2008).
- As an alternative to the Chi-square test, Jöreskog and Sörbom (1993) created the goodness-of-fit index (GFI), which estimates the quantity of modification that is accounted for by the projected covariance (Tabachnick and Fidell, 2001). Usually, compilation cut off argument of 0.90 is suggested for the GFI (Hooper et al., 2008).

- ***Incremental fit indices.***

Incremental fit indices are usually known as comparative or relative fit indices (McDonald and Ho, 2002). These indices measure how much better the fitted model is compared with a baseline model. In this case, the null proposition is that the all flexibles are un-correlated in the models. The comparative fit index (CFI), normed fit index (NFI), the Tucker-Lewis index (TLI), and the incremental fit index (IFI) are the common incremental fit indices computed by *AMOS*.

Among all incremental fit indices, CFI tends to be the mostly commonly reported in the literature, as CFI can deal with smaller samples and overcome the effect of sample size. For CFI, the cut-off value is usually accepted as CFI ≥ 0.90 (Hu and Bentler, 1999, Suhr, 2006). However, some recent studies suggest that a cut-off of CFI ≥ 0.95 is more appropriate to guarantee that mis-specified models are not recognised (Hooper et al., 2008).

- ***Parsimonious fit indices.***

Parsimonious fit indices (PFI) are used to assess the cost-benefit trade-off of model fit and the degrees of freedom (Suhr, 2006, Hu and Bentler, 1999, Hooper et al., 2008). The common PFIs include consistent akaike information criterion (CAIC), the parsimonious normed fit index (PNFI), and the parsimony ratio (PRATIO) (Hooper et al., 2008, Leelayouthayotin, 2004). Details of these fit indices and their criteria are summarised in Table 6.13.

6.3.2.2 Summary of indices used in the study

Table 6.13 Goodness-of-fit indices and criteria used in this study

Assessment index category	Fit index	Acceptable level	References
absolute fit index	Chi-square χ 2 (*p* value for the model)	Insignificant *p* value (*p* > 0.05)	Gefen et al., 2000; Barrett, 2007; Hooper et. al., 2008; Hair et al, 2006
	CMIN/DF (normed Chi-square (χ 2/df))	< 3 good; < 5 sometimes permissible	Hair et al, 2006; Tabachnick & Fidell, 2007
	RMSEA (root mean square error of approximation)	< 0.05 good 0.05 to 0.10 moderate > .10 bad	Hu & Bentler 1995; Hooper et. al., 2008; Fan & Sivo, 2007; Leelayouthayotin, 2004
	GFI (goodness-of-fit index)	> 0.90	Miles & Shevlin, 1998; Hooper et. al., 2008; Hair et al, 2006
	AGFI (adjusted goodness-of-fit index)	≥0.90 good > 0.80acceptable	Hair et al. 1998; Kelloway 1998; Chau 1997; Rai & Patnayakuni, 1996
incremental fit indices	CFI (comparative fit index)	> 0.90 (acceptable) > 0.95 (more appropriate)	Hu & Bentler, 1999; Suhr, 2006; Mak 2001; Miles & Shevlin, 1998
parsimonious fit indices	PRATIO (parsimony ratio) * used for model adding more parameters	> = 0.5 closer to 1 better	Leelayouthayotin, 2004; Hair et al, 2006
	CAIC	$CAIC_{model} < CAIC_{saturated}$	Akaike 1987; Diamantopoulos & Siguaw, 2000; Hooper et. al., 2008

6.4 Confirmatory factory analysis model

6.4.1 CFA model for exogenous constructs

In this study, before going to the structural model, a CFA model was tested for the independent constructs that determine the acceptability of e-commerce (online shopping). This CFA model and its fit indices would confirm the factor structure of each individual variable. From EFA and CFA, eight latent factors were entered into the model (Figure 6.12).

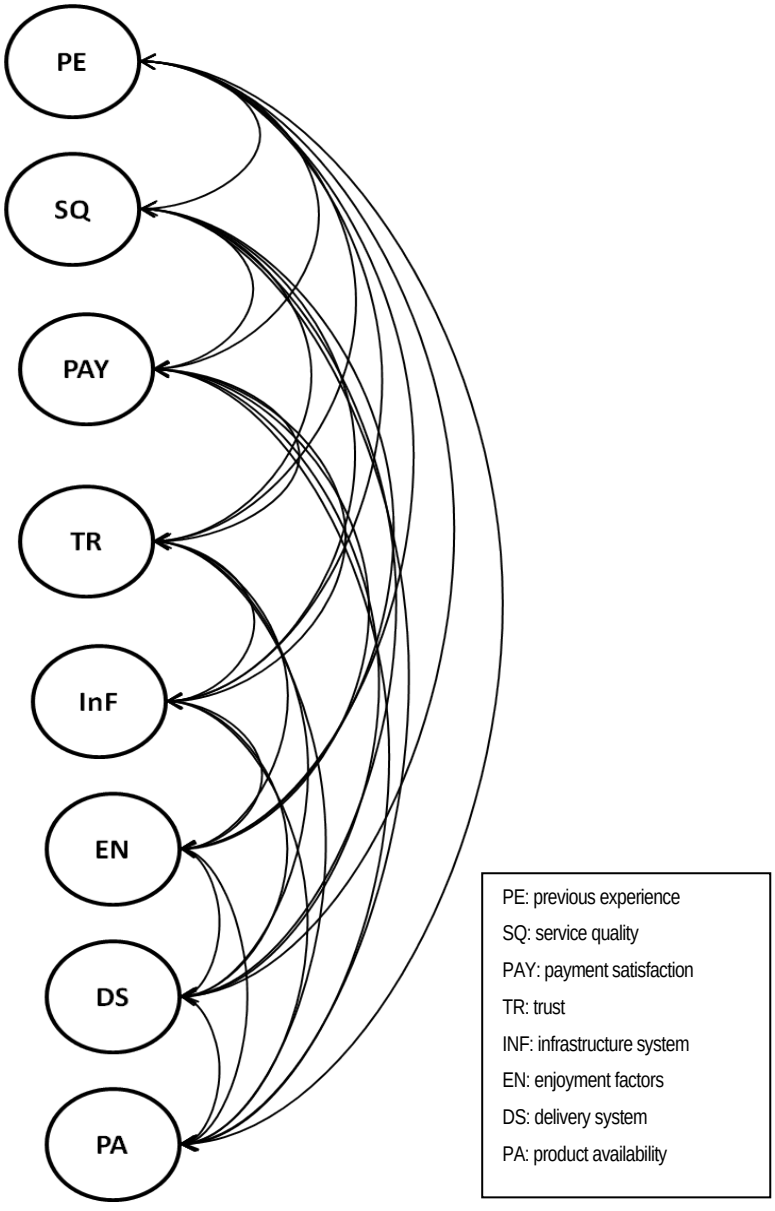


Figure 6.12 CFA model for exogenous latent constructs (developed by researcher)

Figure 6.12 shows the independent constructs and the covariates of these constructs. Based on this model, the estimated model fit values are presented in Table 6.14. In this case, the model fit was good and falls within the acceptable limits, except for Chi-square. However, as it is known that Chi-square is sensitive to sample size and this study had a large sample, other fit indices were also examined. The normed Chi-square (CMIN/DF) showed an acceptable fit for the estimated model of 3.66 < 5. In addition, the RMSEA showed a moderate level of acceptance, and the GFI, AGFI, CFI, and PRATIO were all acceptable.

Table 6.14 Overall fit indices of CFA model with exogenous constructs

Chi-sq.	*p* value	CMIN/DF	RMSEA	GFI	AGFI	CFI	PRATIO	CAIC
1001.473	0.00	3.668	0.054	0.919	0.895	0.901	0.84	1610.40<2740.19*

**extracted from AMOS results as CAIC*

6.4.2 CFA model for endogenous construct

In this research, the acceptability of e-commerce was the dependent variable that determines the level of e-commerce (online shopping) use in Saudi Arabia. This construct is dependent upon the independent constructs discussed above. In this case, the acceptability of e-commerce is also a latent construct, which is estimated based on the acceptability parameters. The factor analysis provided the acceptability parameters, and then a CFA model was developed based on the result and is presented in Figure 6.13.

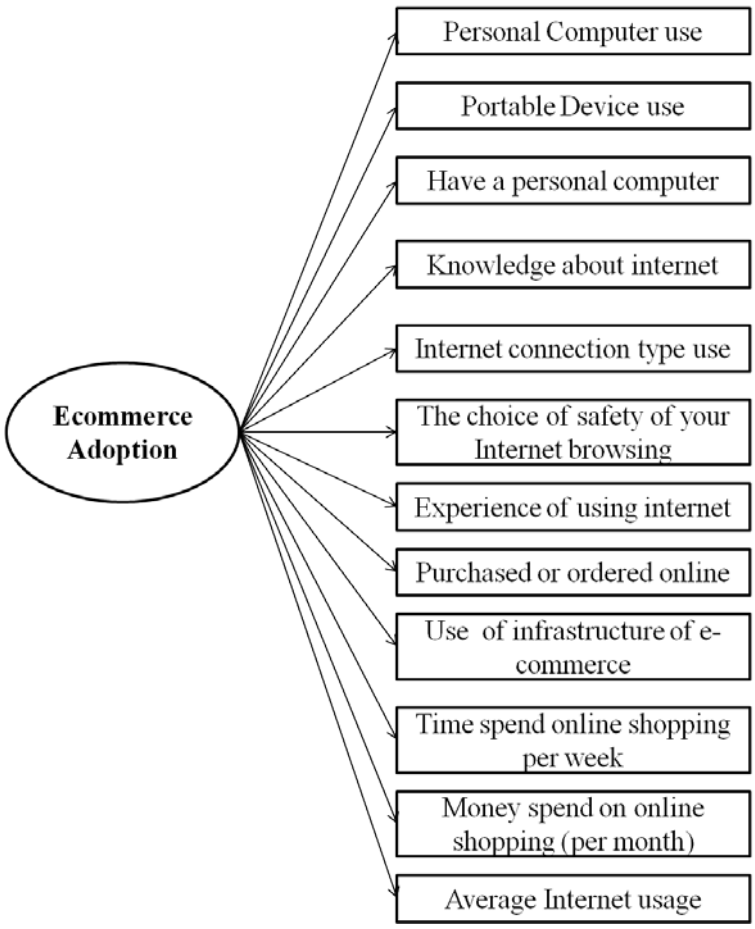


Figure 6.13 CFA model for endogenous latent construct (dependent variable)

Figure 6.13 shows the dependent construct and the factors associated with this construct. Based on these factors, the acceptability of e-commerce was measured. Using this model, the estimated model fit values are presented in Table 6.15.

Table 6.15 Overall fit indices of CFA model with endogenous construct

Chi-sq.	*p* value	CMIN/DF	RMSEA	GFI	AGFI	CFI	PRATIO	CAIC
170.02	0.00	3.149	0.049	0.97	0.957	0.420 **X**	0.818	357.38<608.93*

**extracted from AMOS results as CAIC*

In this case, all the model fit indices were accepted except for the CFI value. The CFI checks the objective model with the properties of a self-governing model (a model in which the variables are expected to be uncorrelated). In this particular model, there was only one construct, thus, the uncorrelated nature of the constructs (as the base of the CFI value calculation) was not confirmed.

Therefore, despite all the fit values being good and acceptable, this index shows a lack of fit. Furthermore, CFI is not operative if most of the associations between variables approach 0 as this

means there is less co-variance to describe. Thus, in the case of this model. the fit index is not considerable. Additionally, Raykov (2000), Raykov (2005) noted that CFI is an unfair quantity based on non-centrality. Therefore, in this CFA model, it was considered an invalid fit index.

6.5 Validity analysis

Before entering the independent and dependent constructs into the structural model and testing the hypotheses, the validity of these constructs needed to be finally checked. In this case, the validity check was performed only for the independent constructs, as there was only one dependent construct in this research (e-commerce acceptability). Therefore, the researcher's next step was to calculate convergent and discriminant validity. Here, a few measures were necessary to calculate discriminant and convergent legitimacy of the constructs. These were maximum shared variance (MSV), average variance extracted (AVE), and average shared variance (ASV). Convergent legitimacy shows how well the latent constructs are explained by the observed variables, and for that, the ASV needs to be > 0.50 (Hair et al., 2010). According to Ghadi et al. (2012):

> *Discriminant validity is a test to ensure there is no significant variance among different variables that could have the same reason. Discriminant validity indicates to differentiate between one construct and another in the same model. (p.140)*

Hair et al. (2010) suggested for discriminant validity both MSV and ASV must be less than AVE. The threshold criteria for all these validity tests are presented in Table 6.16.

Table 6.16 Recommended measures for model validity (Hair et al. 2010)

Analysis test	Recommended criteria
convergent validity	AVE > 0.5
discriminant validity	MSV < AVE ASV < AVE

The MSV, AVE, and ASV as well as Cronbach's alpha are presented in Table 6.17.

Table 6.17 Reliability analysis for exogenous constructs

Construct	Cronbach's alpha	AVE	MSV	ASV
product availability (PA)	0.759	0.606	0.071	0.017
previous experience (PE)	0.713	0.452	0.278	0.067
payment satisfaction (PAY)	0.741	0.600	0.071	0.025
enjoyment factors (EN)	0.804	0.421	0.278	0.128
infrastructure system (INF)	0.736	0.620	0.054	0.019
delivery system (DS)	0.738	0.500	0.174	0.052
trust (TR)	0.704	0.596	0.436	0.084
service quality (SQ)	0.720	0.500	0.436	0.121

As illustrated in Table 6.17, all the constructs demonstrated validity (Cronbach's alpha > 0.7). Additionally, there is discriminant validity for all the constructs. This indicates that the constructs of the model have no constructs that had any effect on other constructs.

However, there are two constructs (previous experience and enjoyment factor) that have convergent validity issues. For these two constructs, the AVE is less than the threshold value. The researcher explored the reason for this. As the reliability was acceptable and the discriminant validity was passed, the reasons for the convergent validity issues were investigated. The researcher found that the question that was asked to determine previous experience and enjoyment factors was sometimes misinterpreted by the respondents.

The variables for this have mixed responses, which somewhat contradict the qualitative responses. As the users misinterpreted and mixed these variables, the convergent validity for these constructs was below the threshold. This was not a problem for the structural model, however, even though the convergent validity was not to the highest mark.

Table 6.18 shows that the square association amongst any two hypotheses was less than their particular AVE. This was an indication of the discriminant legitimacy of all concepts in the study model. Each hypothesis was characterised by particular objects that had no result on other hypotheses.

Table 6.18 Factor correlation matrix with square root of the AVE on the diagonal for the exogenous latent constructs

	PE	EN	InF	DS	TR	SQ	PAY	PA
PE	**0.672**							
EN	0.527	**0.649**						
InF	0.217	0.114	**0.788**					
DS	-0.146	-0.417	0.076	**0.702**				
TR	0.108	0.315	0.111	-0.141	**0.772**			
SQ	0.241	0.492	0.233	-0.229	0.660	**0.704**		
PAY	0.232	0.267	0.015	-0.145	0.089	0.029	**0.774**	
PA	0.035	-0.146	0.055	0.266	0.033	0.035	-0.150	**0.778**

All the validity and reliability checks indicate that the CFA model was verified, and these constructs could be safely entered into the structural model analysis. The results of the hypotheses and model fit are presented in the next section.

6.6 Structural model analysis

A structural model enables researchers to investigate the relationships between independent and dependent constructs extracted from the measurement models (CFA models). However, to test the relationships between these constructs, prior to analysis, a hypothetical model or relational model needs to be developed. The hypothetical model was developed based on the literature review and real world observations. Based on the hypothetical model, the path analysis was run and the coefficients and significance of the relationships were estimated. Finally, the model fit indices were compared with the standard and recommended fit indices in order to check the model fit.

6.6.1 Hypothesised structural model

Based on the literature and general real world observations of the online shopping, this study hypothesised that e-commerce acceptability is influenced by independent constructs (previous experience, service quality, payment, trust, infrastructure, enjoyment, delivery system, and product availability) (Figure 6.14).

As illustrated in Figure 6.14, there are 11 hypothesised relationships. These relationships were tested in the path analysis of SEM, and the results are presented in the following section.

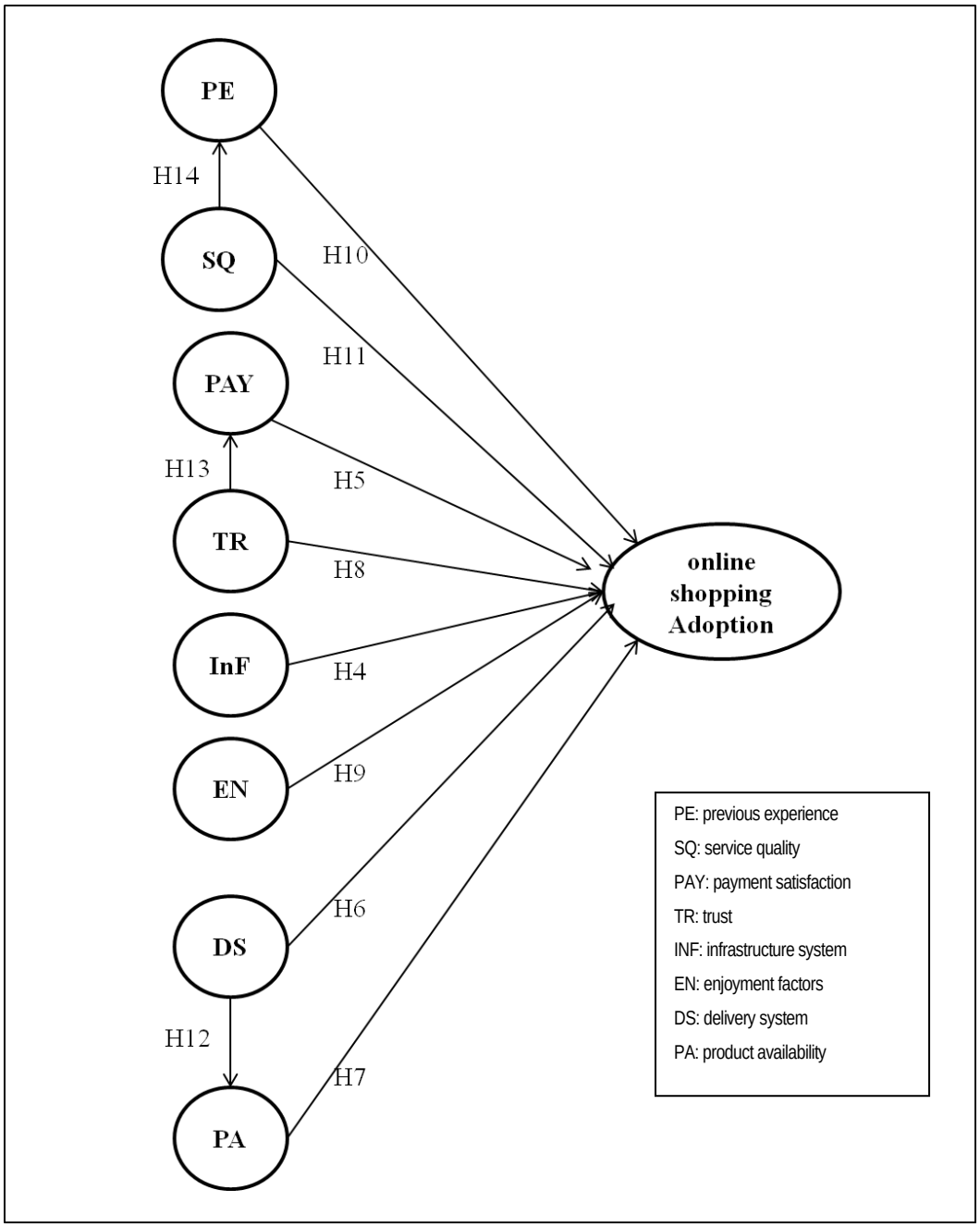


Figure 6.14 **Hypothetical model to be investigated by SEM analysis (developed by researcher)**

6.6.2 Structural model result

In SEM, the structural model tested (Figure 6.15) the estimated path coefficients, t-values (critical ratio) and standard errors, in order to evaluate the relationships and make a decision regarding the hypotheses. In this case, the path coefficient and the critical ratio reflect the strength of the relationships between the independent and the dependent constructs.

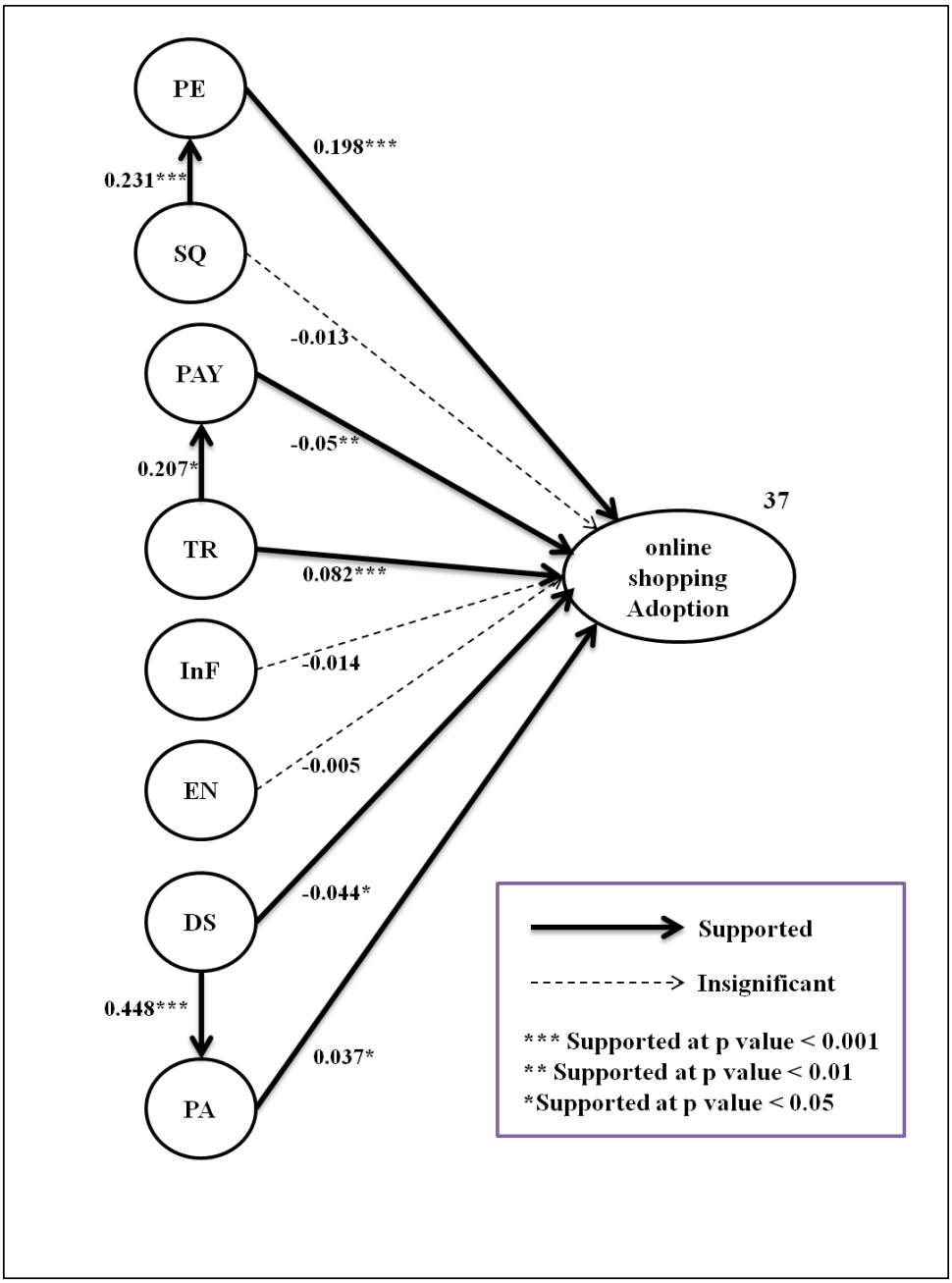


Figure 6.15 Research structure model analysis (developed by researcher)

Additionally, standard errors represent the number of errors in the path coefficient that are caused by the presence of a sampling error. The critical ratio (t-value) is obtained by dividing the path coefficient by the standard error, and this provides the basis for hypothesis testing. A hypothesised relationship is considered to be significant if the estimated critical ratio (t-value) exceeds a standard critical ratio of ±1.96 (significant at alpha (α) level 0.05) or ±2.56 (significant at alpha (α) level 0.01) (Gefen et al., 2000, Lind et al., 2005).

Figure 6.15 presents the SEM outputs and depicts a graphic representation of the structural model with the results of the hypothesis testing. However, for better understanding, the results are also presented in Table 6.19.

Table 6.19 Research model output based on SEM analysis

Hypothesis	path coefficient	t-value CR	p	empirical support
H4: InF → e-commerce adoption	-0.014	-0.179	0.742	Rejected
H5: PAY → e-commerce adoption	-0.05	-2.820	**	Accepted
H6: DS → e-commerce adoption	– 0.02	-1.996	*	Accepted
H7: PA → e-commerce adoption	0.037	2.022	*	Accepted
H8: TR → e-commerce adoption	0.082	3.452	***	Accepted
H9: EN → e-commerce adoption	-0.005	-0.325	0.861	Rejected
H10: PE → e-commerce adoption	0.198	5.023	***	Accepted
H11: SQ → e-commerce adoption	-0.013	-0.327	0.743	Rejected
H12: DS → PA	0.448	5.728	***	Accepted
H13: TR → PAY	0.207	2.030	*	Accepted
H14: SQ → PE	0.231	5.535	***	Accepted

As illustrated in Figure 6.15 and presented in Table 6.19, out of eight independent constructs, five had a statistically significant relationship with the dependent construct. Previous experience, payment, trust, delivery system, and product availability have a significant influence on or relationship with e-commerce acceptability. However, service quality, infrastructure, and enjoyment have no significant relationship with the acceptability of e-commerce. The model as a whole can explain 37% of the variance for online shopping adoption in Saudi Arabia.

In addition to just checking the hypotheses, the model fit is an important part of this analysis. To accept the result from the model, the model must pass the majority of the fit indices discussed earlier. The results of the fit indices are compared with the recommended and accepted levels. These results are presented in Table 6.20.

Table 6.20 Overall fit indices of SEM model

Chi-sq.	*p* value	CMIN/DF	RMSEA	GFI	AGFI	CFI	PRATIO	CAIC
1576.08	0.00	2.363	0.039	0.915	0.901	0.889	0.90	2458.2<6089.3

In terms of the SEM model, all the fit indices show a good and acceptable fit, except for CFI. CFI is below the acceptable level by a very small margin. As a whole, all the fit indices indicated that this model provides authentic and reliable results. Therefore the use of this model to test the research hypotheses was authenticated. The findings of the hypotheses will be discussed in the discussion section of this dissertation.

6.7 Summary

This chapter discussed the quantifiable investigation of the research, including the procedure of analysis, groundwork, and the descriptive measurements. A valuation of legitimacy and dependability was approved, and the exploration model was authenticated using the progressive statistical method SEM. CFA was engaged to carry out this examination using *AMOS*-20 software.

The general actions of the measurement model were recognised by confirming all the threshold standards recommended by the literature. The outcomes also indicated that all the hypotheses fulfilled the standards of consistency and discriminant and convergent validity. In relation to the operational model, the outcomes demonstrated that all the fit procedures fulfilled the suggested threshold principles, providing a model fit to the facts.

The path estimates test indicated that the five path relations were important, and three paths were not maintained. This chapter found that age, gender and computer proficiency have significant variation among high, moderate and low frequency users.

In addition, payment system, delivery system, previous experience, product availability, and trust has a significant impact on the use of online shopping and e-commerce adoption in Saudi Arabia. However, these are quantitative findings, in order to explore more in details about these, qualitative findings are required. Therefore, the next chapter examines the study's qualitative data.

CHAPTER 7: QUALITATIVE DATA: THE INTERVIEWS

The interviews conducted with online shoppers and online store managers in Saudi Arabia are discussed in this chapter. The interview questions were designed to explore the experience and perceptions of both users and managers regarding the current trends, challenges and future of e-commerce in Saudi Arabia. The outcomes of the interviews were employed to augment and refine the findings of the quantitative analysis section of this study.

7.1 Results of qualitative data analysis

The purpose of the interviews was to get a comprehensive and in-depth idea about the existing conditions, problems encountered and future scope of e-commerce from both the users' and the managers' perspective. The structured interviews included a number of questions focusing on important issues such as:

- general information about online shoppers
- shopping frequency
- devices and applications utilised
- payment methods
- delivery system(s)
- importance of trust
- support from the government.

Each participant was interviewed in person for between 60 and 90 minutes by the researcher. All interviews were conducted in Arabic, translated and transcribed into English prior to the analysis. Each interviewee was provided with a summary of the research objectives prior to the actual interview so that they could get a clear idea about the nature of the study. In addition, they were also notified that they could contact the researcher in order to know the progress and the outcomes of the study.

7.1.1 General profile of interviewees

Both users and managers of online shopping in Saudi Arabia were interviewed. Fifteen users and 19 managers with different backgrounds were interviewed. The sample of qualitative interviews was small and yielded converging responses to the point of saturation. As a result, it was concluded no more information could be acquired by contacting more respondents. Taking this into account, the sample size was considered to be sufficient in regards to the scope of the research. Details of the interviewees are recorded in Table 7.1 and the managers in Table 7.2.

Table 7.1 Record of e-commerce users' interviews

Interviews	Region	Gender	Age
1	Center- Riyadh	male	29
2	Center- Riyadh	female	22
3	Center- Riyadh	female	31
4	Center- Riyadh	female	35
5	Center- Riyadh	female	30
6	Center- Riyadh	female	25
7	East- Dammam	female	28
8	West- Jeddah	male	28
9	South- Jazan	male	36
10	West- Jeddah	female	24
11	North	male	25
12	West- Jeddah	male	29
13	North	male	40
14	South	male	38
15	South- Jazan	male	32

Table 7.2 Record of managers' interviews

Inter-views	Store Name	Store Web link	Institute
1	20ayar	http://www.20ayar.com/	not in group
2	Mumzworld	http://www.mumzworld.com/ar	Mothoq group
3	Alwaneshop	http://alwaneshop.com/	Mothoq group
4	Ecommercesea	http://ecommercesea.com/	Sea group
5	Mikshati	http://www.mikshati.com/cms-page-impressum-5.html	not in group
6	Arrajolshop	http://arrajolshop.com/	not in group
7	Missrodina	https://instagram.com/missrodina/ social media	not in group
8	Tadreebi	http://www.tadreebi.com/	Mothoq group
9	Private store	unknown link	Mothoq group
10	Wardatstore	http://wardatstore.com/	Mothoq group
11	Private store	Social media	unknown
12	Aljiser	http://www.aljiser.com/	Mothoq group
13	Shoppingboxsa	http://www.shoppingboxsa.com/store/	Mothoq group
14	CDK	http://cd-k.com/	Mothoq group
15	Izone	https://www.izone-stores.com/ar/	Mothoq group
16	Akoonstore	https://www.akoonstore.com/index.php?route=common/home	Mothoq group
17	Sokria	http://sokria.com/	Mothoq group
18	Private store	Social media	unknown
19	Teesnbags	teesnbags.com	not in group

7.1.2 Reliability and validity of interview analysis

Additional measures were taken to ensure the reliability and validity of the data. To assess the reliability of the information, the researcher asked the interviewees to repeat and summarise the key points after the interview. Moreover, the information of the respondents was tested by asking similar questions in the same interview, that is, they were asked similar questions but differently phrased to observe whether they provided the same answer that they had provided earlier. This arrangement allowed for the triangulation of the data because the interview findings could be compared to the findings of the quantitative survey.

7.1.3 Interview data analysis: Why or why not shop online

Data was collected from recorded interviews. The interview transcripts were analysed line by line to interpret and synthesise the information provided by each respondent. The analysis of each interview was also designed to clarify the relationships among different issues highlighted in the interviews. The interviewees were selected from the survey database, and they were selected randomly.

7.1.3.1 Factors affecting the adoption of e-commerce.

- ***E-commerce marketing strategies.***

There are a variety of marketing strategies designed to attract customers to e-commerce. Findings from the interviews suggest that managers used social networking as the primary method of encouraging business.

Instagram and *Twitter* were found to be the most widely used social networking mediums for e-commerce. *Instagram* gives products mass exposure. The managers liked its visual and image-focused nature, which allowed easy sharing of images and videos with the target audience on the internet-mobile interface (Interviewee #7; manager). Apart from *Instagram* and *Twitter*, managers also used mobile SMS and subscriber messages via email as key parts of their marketing strategies (Interviewee 4, 5; manager).

Advertising on other online channels such as *YouTube* and special bulletins in certain forums have also gained popularity. However, while electronic media were growing in popularity as marketing and sales tools, print media were not, as yet, considered obsolete. For example, some managers also placed commercial ads in the local newspaper for the promotion of their products (Interviewees 4, 5, 9; managers).

- ***Infrastructure.***

Infrastructure such as internet provision, particularly broadband provision, a reliable electrictric grid and a reliable mobile cellular network play essential roles in the diffusion of e-commerce. Users and managers of e-commerce contribute little to infrastructure; the government in Saudi Arabia plays the central role in providing the necessary infrastructure and as the key needs to provide adequate investment to ensure its modernisation goals. The majority of the managers in the interviews stated that they receive very little or no support from the government and have pressed government for the required infrastructure.

> *Unfortunately I have not received any sort of support from our government so far. In fact, e-commerce is yet to be recognised by the government and they must take necessary steps for ensuring a good infrastructure for the sake of e-commerce development. If no steps are taken, ultimately we will have to close our businesses down. (Interviewee #3; manager)*

- ***Personal technology available for online shopping.***

Customers use particular devices for online shopping according to their own preferences and product or service availability. According to the findings of the quantitative analysis, the use of smart phones is significantly greater than the use of other devices – desktop, laptop and tablet. The managers who were interviewed agreed with this finding. According to the managers, the majority of users ordered using their smart phones. The orders placed using smart phones were so large in number that some e-store managers were thinking about developing an application (app) for it.

> *My online store is available for all devices, but, certainly the large number of orders comes from the Smartphone and soon we will create an app for our store. (Interviewee #8; manager)*

However, there were some mixed responses regarding the use of devices. A few interviewees stated that they had received most of their orders from laptop users or they do not experience significant differences among the devices. It must be noted that there are some managers who carry out their business by selling their products on Instagram and Twitter, even though they do not have any online store (Interviewee #3; manager).

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carry out their business by selling their products on Instagram and Twitter, even though they do not have any online store (Interviewee #3; manager).

- ***Knowledge of online shopping processes and protocols.***

Knowledge of how online shopping works is an important factor in determining participation in e-commerce. Familiarity with technology reduces anxiety and provides confidence. Such familiarity can also demonstrate to new users that an in-depth knowledge of how to operate a computer and in-depth knowledge of the internet are not required to participate in online shopping, which was confirmed by the interviews with managers. All that is required are some very basic skills and concepts regarding computer operation and an active internet connection.

Interviewee #10 noted that going online had been much more complicated in the past, but had now become easier. According to this interviewee, it no longer required a great effort to learn how to purchase products online (Interviewee #10; manager).

The interviews with e-commerce users confirmed that basic computer skills and familiarity with the concept of the internet were all that were needed to conduct business online:

> *One needs to be familiar with some skills, to know the initial foundations in dealing with the computer and the Internet. (Interviewee #4; user)*

> *Online shopping needs familiarity with the Internet and computer use in order to get a comprehensive idea of choosing the method of purchase, sales and the way of presentation of the product by the e-stores. (Interviewee #12; user)*

Some interviewees assigned importance to privacy and security. Interviewee #7 stressed the importance of having the basic knowledge to select trusted sites due to the increasing number of scams and fraud threats. An understanding of the rudiments of exchanging money and goods online is important for shoppers who wish to protect themselves. For example Interviewee #7 suggested the use of prepaid shopping cards rather than a credit card as a good idea in order to protect the buyer's financial information (Interviewee #7; user).

- ***Experience of the process of shopping online.***

The frequency of online shopping and the amount spent reflect on the availability of e-commerce in Saudi Arabia and the infrastructure to support it. The qualitative analysis revealed that among the interviewees, there were three primary types of online shoppers. The majority of the

interviewees had used online shopping as a medium for purchasing items once or twice a year. Some of interviewees used online shopping once every month. In between these two types of users, there was a group of users who shopped online three to five times a year.

In most cases, the interviewees' online shopping was limited to buying airline tickets, other tickets, games and electronic appliances. Interviewee #8 revealed the reason why he or she and by extension other users were not usually interested in buying other products online, stating that:

> *I prefer buying airline or other tickets, games and electronic appliances online as these do not require a postal address. But I don't make other (different type of) types of purchases online due to lack of confidence in the Saudi Postal services. (Interviewee #8; user)*

The interviewees did not spend significant amounts of money shopping online. Interviewee 10 reported spending 5000 riyals per annum, but others spent less than 1000 riyals per annum. It was evident that most of the users were not particularly accustomed to online shopping in Saudi Arabia for a variety of reasons, including the environment and their lack of experience. They were Rogers' (2003) 'initial adopters', and mostly interested in e-commerce as an innovation, but based on their responses virtual shopping appeared to be growing in acceptance.

- ***Communication skills.***

Communication skills are also important for online shopping. Interviewees confirmed the necessity of having a basic knowledge of English, especially in the Arab Middle East, because many e-commerce websites are written in English and misunderstandings can be avoided if the shopper has some knowledge of that language. (Interviewee #10; user).

According to most of the managers, greater knowledge of online shopping increases the use of online shopping. And some noted recent progress among younger shoppers, whose knowledge of the virtual world as well as of computer skills was improving. (Interviewee #8; manager).

- ***Age and gender.***

The e-commerce market in the Saudi Arabia consists of a diverse spectrum of users. However, age is an important consideration as younger people are more interested in technology, modernity and innovations as a group and over 51% of Saudi Arabia is under the age of 25. Similarly, gender is also important as choice, taste and need to shop vary greatly, depending on gender.

Age. It was found from the quantitative analysis that most of the study participants were young. Interviews with the managers also supported this.

> *Young people are mostly attracted by the online products. People aged from 18 to 30 are the main target customers of my business. (Interviewee #4; manager)*

One of the manager interviewees noted that young people are more accustomed to using computers and the internet, and appeared more interested in modern innovation and technology, with a greater tendency to search for their desired products through internet browsing. The interviewee felt that a considerable segment of people in the market belonged to the younger generation (Interviewee #8; manager).

Gender. The gender of the users was also an important factor considering the target group of e-commerce users. Extant literature suggests that females are more active e-commerce shoppers than males. The quantitative analysis for this study agreed with prior research in that it found a significant difference among gender groups in terms of e-commerce usage.

The majority of the manager-interviewees reported that they received the preponderance of their orders from female users. Most of the balance noted that male customers were their main users. A few of the interviewees responded, however, that their sites showed gender-balanced usage.

7.1.3.2 Maintaining interest in online shopping

Previous experience influences a customer's future behaviour. A user having previous experience is supposed to be familiar with the procedures of online shopping. Furthermore, customers having favourable experiences with a particular website are more likely to return to the same website more frequently for purchasing products.

- ***Common products bought and sold online.***

Buyers purchase various products online. Interviews of both users and managers revealed that electric products, mobile phones and computer accessories were the most popular online shopping items. Other growing online categories include clothes and cosmetics. Users also mentioned bags and gift items on their shopping lists. At the time of the study, the most popular online shopping items were cosmetics, wearables and electronic appliances.

The interviewee data demonstrated the strong relationship between searching for products online and buying them online. Most of the time, shoppers purchased products which they actually found by browsing online with electronic devices. At the time of the study consumable and perishable products were not, as yet, being purchased online.

Quantitative analysis also found that previous experience has a significant relationship with e-commerce usage. User interviews confirmed that customers have both positive and negative experiences of online shopping, but the majority of the users had positive experiences and intended to buy again from the same e-store. At the same time, online shoppers had bad experiences with online shopping. These shoppers were determined to learn from their previous mistakes. They tended to become more cautious in order to avoid the same bad experience in the future.

> *Some stores are honest in their dealings with the customer, end purchasing from their store will most probably continue. But I have had several bad experiences too. After arrival of the product, I came to realise that it was not that particular product I had ordered. (Interviewee #1; user)*

Further interviews made it clear that bad experiences mostly related to the lack of detailed specification of the product and late delivery to the customer (Interviewee #14, #15; users). They also expressed their unwillingness to buy any other product from the same store in the future. Hence, it can be understood that previous experience is an important factor that drives the decision making of the customer about future online shopping.

- ***Enjoyment.***

There are various dimensions to the enjoyment of online shopping. For example, users have the opportunity to compare different products, do online product research including seeing other shopper's reviews, avoid crowds, shop at any time 24/7 and save time and money.

Most of the users interviewed commented on the attractive prices of the online products, nominating price as one of the important reasons for online shopping. A considerable number of the interviewees also pointed out that the ease of shopping and home delivery motivated them to make online purchases, and confirmed that they enjoyed comparing products and prices. Also, some items are not available in the local market and can only be bought from online sources.

I can compare prices from more than one place and can view comments and reviews of the consumers about the product [Feedback]. (Interviewee #9; user)

The major reason for me is that I can avoid the crowd of the market and can get the product easily delivered to home. Secondly, there are some products you cannot find in local market but are only available online. (Interviewee #3; user)

- ***Service quality.***

Managers of online shopping sites always try to position themselves in the marketplace by offering what they perceive as the most desired services and quality. As customer satisfaction has important implications for the continued use of an online service managers are very aware of this key dimension of online commerce success. Interviews of the service providers confirmed that almost all of the service providers give post purchase support and services to the customers according to the client's needs.

In case of a manufacturing defect or damage during the shipment, the customer gets the replacement and/or repairing of the product. (Interviewee #10; manager)

- ***Payment.***

Payment is an integral part of e-commerce. The success and failure of e-commerce businesses in most cases depends on the smooth operating of the payment system. An easy and secure payment system is important for both the users and service providers. It greatly motivates the users to continue and extend their usage of e-commerce.

Findings from the quantitative analysis suggest that the payment system has a 'significant' and 'very important' relationship with e-commerce usage. Interviews of both users and managers confirmed these findings. The emergence of online shopping has created new forms of financial needs. Hence, replacing the traditional payment systems, new types of payment have emerged, including one-time-use and pre-paid credit cards, online bank transfer systems optimised for the internet, *PayPal* and similar systems including proprietary ones. In addition, credit cards and debit cards are well positioned to increase their roles as payment media as in less developed countries e-commerce is actually a driver to their wider spread adoption for payment.

The users' interviews revealed that cash-on-delivery was the most preferred payment system for online shopping. Customers also like this system for its high level of reliability from the user's

perspective (Interviewee #9; user). Online bank transfers and credit cards were also used. Only a few of the users used credit cards to pay for products ordered online.

The interviews of the managers showed that most of the service providers provided the customers with two types of payment options – cash-on-delivery and bank transfer, although there were also some managers who had limited the options to bank transfer, *PayPal* or credit cards (Interviewee #5, #10, #11, #12; manager).

In spite of considerable growth in online shopping, there are several hurdles and barriers which are yet to be resolved. In developing countries like Saudi Arabia, restricted payment options and security issues have become a key concern. Findings from the interviews revealed that most of the users were not willing to use credit cards for purchasing products, preferring cash or bank transfer:

> *We used it (credit card) in the past, but we stopped this method because a lot of customers are concerned about their security and safety. (Interviewee #3; manager)*

> *We have stopped it (credit card) because it has also caused troubles for us too. The company that provides this service could not transfer money to our bank account. (Interviewee #1; manager)*

> *The main problem in credit card penetration is that it is not quick and easy to use. Security is of course the second major concern. (Interviewee #4; manager)*

With infrastructure support for efficient payment by credit card and security issues related to verifying the card holder due to a lack of a proper address system to verify billing addresses against, a more secure and advanced payment system has become necessary to support continued advances in online shopping. Both users and managers think that online payment systems like *PayPal*, ATM and SADAD should be introduced for the improvement of e-commerce, particularly in light of the ongoing security issues.

> *Payment through PayPal is the best way because PayPal guarantees the security and rights for both the buyer and seller. (Interviewee #9; user)*

> *I think giving SADAD integration to e-commerce will solve the inherent problem of the credit card. (Interviewee #4; manager)*

- ***Delivery system.***

One of the most important factors influencing e-commerce adoption is the delivery system. It was important from both the users' and managers' perspective. Users reported that they wanted their products delivered at home easily and safely, while online stores had serious concerns for their commercial reputations as well as payment and returns concerns related to the practice of charge on delivery being so prevalent. Quantitative analysis in this study found the relationship between the delivery system and the usage of e-commerce 'significant' and 'very important'. Interviews of both users and managers revealed some important facts about the current delivery system of e-commerce in Saudi Arabia.

Some of the customers rated the current delivery system 'excellent' and 'satisfactory' while most of them voiced their discontent with the systems in place and particularly the performance of Saudi postal services. The problems with the postal system are not unique to Saudi Arabia. The delivery of mail and parcels in many developing countries is problematic compared to advanced Western countries due to weak infrastructure, corruption, lack of proper addresses for individual buildings or apartments, and weak postal administration. The interviewees talked about the unwanted delays they often experienced in receiving their orders. Beyond issues with Saudi Post some shipping companies and/or online stores also failed to dispatch the products on time. Customers also face problems of delivery as the service providers cannot always find the actual home address.

> *Unfortunately, the delivery system of Saudi Post cannot be compared with other courier companies, in terms of attention, ease of communication and speed of response. (Interviewee #9; user)*

> *Saudi Post makes some unwanted delays. It makes me wearisome when they are unable to deliver my product to my desired place. I have to go to the main centre and wait there for some time. Also not all the shipping companies are good. I have bad experience with Aramex, and I have not yet received my product ordered an year ago. (Interviewee #4; user)*

> *Every home in Saudi Arabia must have a particular address and every street and building must have a particular name or number so that the delivery system could be made more efficient. (Interviewee #15; user)*

Most of the shops send their products through the shipping companies. Interviewee mentioned many such companies like Zajel, Aramex, FedEx, SMSA, Alma Express, and Aymakan. However, there are also a few shops which usually deliver their products directly under their own initiatives, particularly when the destination is within the capital territory (Interviewee #4, #9; manager).

Most of the shops use third party delivery systems, such as FedEx, DHL, Saudi Post or mailing services by signing contracts with their chosen shipper or shippers. These agreements, in some instances, allow the online store to offer discounts on the actual shipping charges passed through to their customers. However, there are some online shops which regularly deal with the third party delivery system but cannot get such a discount, because they do not have any agreements with shippers in place.

We deal with Aramex and there is a special agreement between us to reduce the shipping costs and to encourage the client to purchase more. (Interviewee #5; manager)

We deal with SMSA Company and Saudi Post. There is no agreement between us to reduce the cost. I own a commercial license but they do not accept it they only accept the physical shop to get the discount. (Interviewee #7; manager)

Almost all the shops charge for the delivery of the products. Since they make a contract with the shipping companies and other delivery agencies, they are obliged to pay the required fee for transportation. But there is a mixed response regarding the amount being charged. The majority of the managers think that the charges are very high. But a considerable number of them also think that it is not high but reasonable. However, there are very few shops which provide free shipping for the delivery of the products particularly when the volume of the product is limited to a certain amount. (Interviewee #2, #11; manager)

Yes, we charge for delivery. Delivery costs 25 to 50 Riyals (depending on location and expedited delivery requested) but for the most customers, it's around 25 riyals. I think it is high. (Interviewee #4; manager)

We charge around SR 50. Yes it is high. But some customers do not bother as we deliver the products to their desired place within 24 hours. (Interviewee #11; manager)

Time required for delivery was another important concern. Unlike in more advanced economies, delivery time depended on the types of orders and place of destination. Most of the shops did not maintain a time schedule for the delivery of the products. However, they did try to send the

products daily if the recipient was within the capital. The online vendors voiced their dissatisfaction regarding the efficiency of the delivery system as they had found several flaws. In most cases, the agents of the delivery company did not appear either loyal or professional according to the manager-interviewees. But they charge high prices relative to the quality of their service.

> *Processing the Orders takes around 18 hours for its confirmation and service delivery in the city of the Riyadh; is within 24 hours but outside Riyadh it is 3-5 working days. (Interviewee #3; manager)*

> *Home-delivery services are not up to the mark in Saudi Arabia. The demand is higher than the supply. There are only 2 companies that deliver to the whole kingdom with cash on delivery, but they ask for high prices. Their quality is bad - many lost and stolen packages and [many] delayed. Insurance is weak. Rejection rate is high because delivery companies' agents are not professional in their attitudes. Rejection rate is very low when we send the products by our own vehicles. (Interviewee #4; manager)*

There are several challenges to overcome for the smooth functioning of e-commerce in Saudi Arabia. Most of the managers agreed that the price of delivery is an important matter to be considered, one which may hinder the future potential of e-commerce. If the price of delivery could be reduced, more customers would be attracted to online shopping. Secondly, solid, modern infrastructure for the handling of products from the online store's warehouse to the final destination address is essential. The lack of accurate home addresses combined with a paucity of post offices or other facilities that could act as neighbourhood distribution centres is the major concerns in this regard (Interviewee #8; manager).

Another issue that must not be overlooked is the lack of specialisation for the delivery of certain products. For example, a considerable number of online consumers are the buyers of electronic products. However, according to at least one interviewee, there are no shipping companies to ship specialised electronic products (Interviewee #10; manager). Likely the generalised case is that there are no shipping companies that handle fragile products with adequate care.

Additional shipping challenges include the fact that deliveries cannot be made to women at home unless a female delivery person is added to each delivery truck. The female delivery person

liaises with the client face-to-face and the driver who is male has the requisite driver's licence. Finally, as some manager interviewee's noted, the wide-spread practice of consumers wishing to pay C.O.D. has meant that drivers must be willing and able to carry large amounts of cash. C.O.D. payments also tend to be associated with high return/rejection rates for goods (Liao et al., 2012)

- ***Trust.***

Trust has a pivotal role in any business transaction, and is even more important in e-commerce than traditional commerce. The major concerns of online shoppers in adopting online purchasing are fraud, security risks and cheating. In a trustworthy business environment, customers feel more confident in making transactions, which in turn motivates them to continue their dealings with the online stores. Quantitative analysis in this study found that the relationship between trust and the use of e-commerce was 'significant' and 'very important'. In line with these findings, interviews of users and managers also confirmed the importance of trust in e-commerce.

Most of the managers thought that developing trust in online shoppers was the major issue in online business. According to them, trust develops gradually through mutual interaction between customers and online stores with the passage of time. However, they also mentioned the uncertainties that make customers more anxious in most of the cases.

> *Yes trust is very important and is the foundation of any relationship. In Saudi Arabia, most of the customers are not familiar with e-commerce culture and the process of online payment. They do not feel confident whether they will receive the goods they were promised. There is no clear legal right for them to claim the products. (Interviewee #16; manager)*

Users gave a mixed response when they were asked about their level of trust in e-commerce sites. Some of the users expressed their satisfaction while the rest were unsatisfied and afraid of some fraud. Their interviews clearly reflected that not every store was reliable and that one must be careful before finalising the deal. Some stores unreasonably raised prices or concealed details about their products. But those shoppers who were careful and purchased from sites that proved trustworthy shared their good experiences and expressed satisfaction:

There is a big chance of cheating because there is no government department to protect the buyer's rights. (Interviewee #12; user)

Of course there is gimmick, you will find one item displays at the double price in the global markets. (Interviewee #9; user)

I have no bitter experience so far and I am satisfied. I am extremely careful. I always make my dealing with some famous e-stores which are more credible than others. I do not take risks, no matter how attractive the offer is. (Interviewee #7; user)

Good service providers try to maintain the best quality for a given price point. On the other hand, since there is a significant chance of fraud, customers mostly wanted to continue purchasing from the same stores with which their experience had been good. Interviews with managers revealed that the majority of them had a loyal group of customers and experienced many repeat transactions. In many cases, they tried to maintain their connection with their customers, by providing post-delivery service and, most importantly, maintaining the quality specification of the products. However, a few others also stated that they did not have such customer groups:

We have many VIP customers. It came with time because we sell only original products and are also provide customer care. (Interviewee #4; manager)

Yes, we have loyal groups of customers. It has been developed after a long time by maintaining various means of communication with the client and rapid response to inquiries and guidance on how to use the site and purchase. If applicable, we also provide them with help in various issues. (Interviewee #8; manager)

We try to communicate with customers by telephone in the beginning of the store in order to assure them and win their confidence. (Interviewee #17; manager)

- ***Product availability.***

With the advent of the internet and the rise of e-commerce, online shoppers can find a wider choice of goods in a much enlarged market space in the advanced economies. In general, when the buyer can find the desired items on a website, they are more likely to return to that site for shopping. Thus product availability is becoming an important competitive advantage for online sellers in advanced economies, and as the market matures in Saudi Arabia this is also becoming important in the domestic Saudi market. Quantitative analysis confirmed that there is a 'significant' and 'very important' relationship between product availability and e-commerce adoption and use in Saudi Arabia.

The majority of the users responded that they found most of their desired products available. According to the interviewees, some products that are not locally available can be easily accessed on the online market and, often at a lower price. Note, there are some particular products which are not permitted in Saudi Arabia due to religious and legal restrictions. These restrictions are a positive for online shopping as consumers wishing to circumvent those restrictions have created online demand for these locally restricted products.

> *Yes products are available, because the company has no official service centre and authorised dealer in the Saudi Kingdom. Moreover, the prices in the local market for the same product are high, e.g. Apple company. (Interviewee #1; user)*

> *There are some products you cannot find in local market due to religious and legal restriction imposed by Saudi Government. People usually buy those products online. (Interviewee #8; user)*

Service providers make strong attempts to change their offerings based on actual demand. Most of the managers interviewed stated that they always provided the desired products to customers. An in depth interview also revealed that they sometimes brought some new products to the market to judge the preference and to create demand.

> *I can provide the products compatible to the needs of Saudi society. In 2013, I tried to sell what they do not need; some new product in the community, and the result was not appreciable. So, I made a radical change in the business model consistent with what is desired by the community. (Interviewee #16; manager)*

7.1.3.3 Major obstacles to the adoption of e-commerce in Saudi Arabia

There are many challenges yet to be overcome in order to develop a well-functioning online market in the Saudi Arabia. Most of the users interviewed expressed dissatisfaction with online marketing and also the weakness of the Saudi Post's delivery service. They were also critical of the lack of infrastructure in general; and confidence in the companies providing the online shopping sites. (Interviewee #15; user).

From the managers' point of view, the major obstacles were related to payment and the delivery system. The number of shipping companies operating in Saudi Arabia is currently not adequate. Lack of a secure and easy payment system is another problem both for users and online stores.

Moreover, according to the interviewees, the lack of customer confidence and high shipping charges are further issues that need to be addressed if the market is to continue to grow.

Some of the manager-interviewees suggested that the potential of e-commerce is yet to be recognised in Saudi Arabia and there is a lack of proper guidance and support from the government for future development of e-commerce (Interviewee #7; manager).

7.2 Improving e-commerce in Saudi Arabia

In spite of obstacles, e-commerce activities of all sorts are growing in Saudi Arabia and the government does support internet and e-commerce initiatives. Thus, there is no doubt that Saudi Arabia will experience further growth in online shopping in line with global trends. What is at issue is how fast improvement comes and how far Saudi Arabia might be able to go as a regional distribution centre for retail e-commerce.

Since knowledge and experience play an important role in online shopping, some users thought that proper awareness should be created among the buyers. Raising awareness among young Saudi's about their rights, how to be good consumers online and how to avoid fraud and cheating were identified by one interviewee as important considerations for accelerating online shopping growth. (Interviewee #7; user).

A considerable number of the users also thought that government intervention was necessary to bring more discipline and order to the market. Beyond this users suggested that the government also support new market entrants, and put in place specific legal measures to combat fraud and misrepresentation of goods and services.

> *There should be a single website containing the information of all the e-stores in the Kingdom of Saudi Arabia and should be approved by the government. (Interviewee #1; user)*

> *A branch of the Ministry of commerce should check the transactions. Government should take stern action when any customer or seller is found involved in any commercial frauds. (Interviewee #11; user)*

The managers also voiced support for a more active supporting role for government in e-commerce. According to them, government can promulgate laws to maximise Saudi Arabia's

chances of becoming an e-commerce warehousing hub for the region (Interviewee 4; manager). Currently, as in-place delivery systems suffer from many shortcomings, managers want the government to subsidise the infrastructure required to facilitate, rapid, safe and secure deliveries of all types of goods. Finally, a secure and easy payment system was seen as an absolute requisite for e-commerce to advance rapidly and even more importantly in boosting consumer confidence. Users felt that SADAD should be encouraged by the government to come into operation as soon as possible.

> *The Ministry of Commerce must work hard to increase confidence between the customer and e-shops. Also must find a way to save the rights of clients who deal with electronic stores. And we must have a government reference preserving the rights of both users and e-shops, considering the warranty or replacement or recovery. (Interviewee #5; manager)*

7.3 Qualitative findings summary

Qualitative research was conducted using semi-structured interviews to add clarity and depth to the quantitative data and literature investigation.

Qualitative analysis demonstrated that the major contributors to the adoption and expansion of e-commerce in Saudi Arabia were trust in the online store, the safety and security of the payment system, prior experience online, the pleasure of shopping online, wider product availability and the quality of the delivery system. ICT knowledge, age and gender also had some influence on rates of adoption and usage. The summary of these findings are presented in a concept map in Figure 7.1.

Through qualitative analysis it was found that cultural factors have a greater influence on online shopping adoption by users in Saudi Arabia. The effects of cultural factors (i.e. age and gender) were supported by hypothesis testing as described in Chapter 6. The knowledge and experience of users also greatly influenced online shopping adoption in Saudi Arabia, an observation that was supported by both qualitative and quantitative analyses (hypothesis testing in Chapter 6).

Qualitative analysis explored psychosocial factors, such as trust, service quality and enjoyment, and their potential influences. In contrast to hypothesis testing (Chapter 6), it was found that enjoyment and service quality do not have any direct influence on online shopping adoption in Saudi Arabia. Purchasing process factors (i.e. delivery system and payment process) were found

to have a significant influence on users from both qualitative and quantitative analysis. Qualitative analysis indicated that infrastructure and product availability are important influences on users. Contrary to the findings from quantitative analysis (Chapter 6), product availability is an important factor, but e-commerce infrastructure was not recorded as having a direct influence on users in Saudi Arabia.

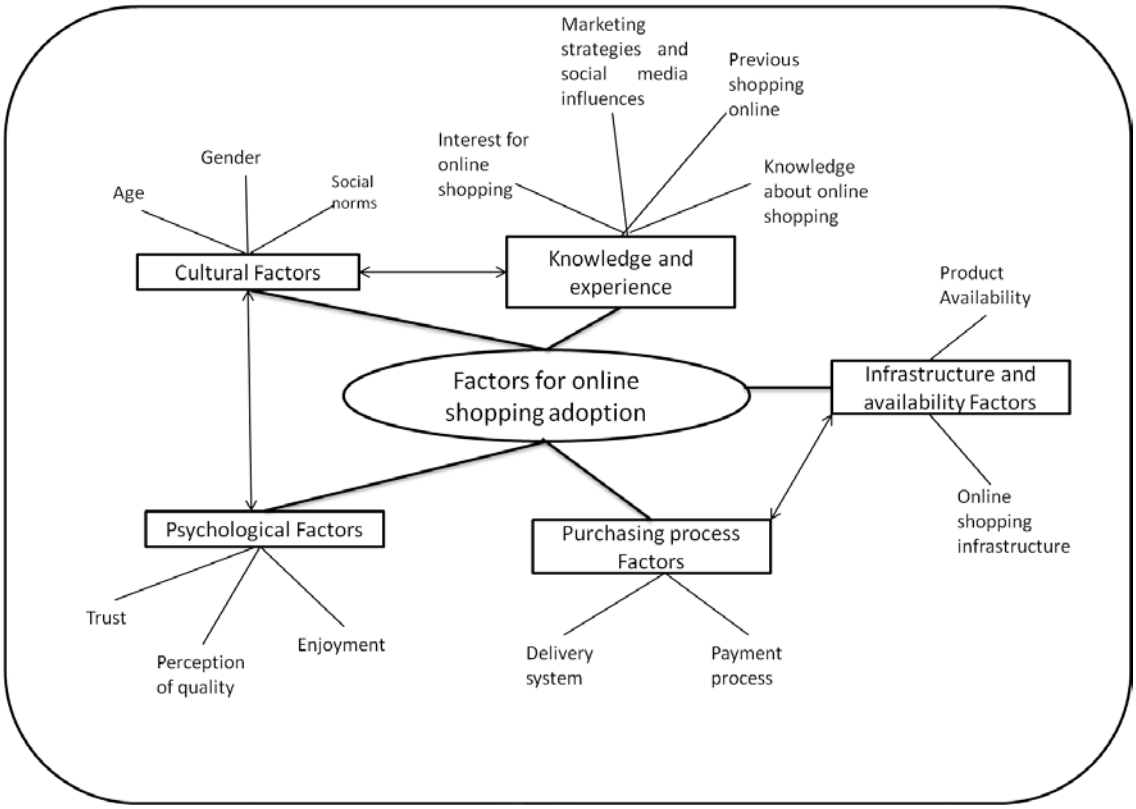

Figure 7.1 Hermeneutics concept map for online shopping adoption factors

7.4 Summary

This chapter discussed the important factors that emerged from the qualitative analysis. The qualitative research assisted in refining the conceptual model as well as allowing the researcher to expand on the results of the quantitative analysis.

The interviewees' views on the current state of e-commerce and factors that are likely to influence their adoption or further use of e-commerce were examined. The main challenges facing e-commerce in Saudi Arabia, and possible meansto overcome them were also examined from interviewees' points of view.

All the questions in the interview were adequately answered by the respondents, adding more detailed information in this study. The responses were not only limited to the structured

questions, but also their logical explanations which helped to highlight real issues as they were experienced by users day-to-day. This wealth of data both from users' and managers' provided more detailed and in-depth information to contribute to the analysis of online shopping in Saudi Arabia.

The propensity to shop online, the factors responsible for e-commerce adoption, the perceptions and expectations of users and managers in light of their experience have all been thoroughly discussed. The next chapter combines the quantitative and qualitative findings and discusses the findings in relation to the literature.

CHAPTER 8: DISCUSSION

8.1 Introduction

Many studies have been undertaken to identify the factors affecting the adoption of e-commerce in a number of different countries. The intent of this study was to understand the behaviour of consumers in Saudi Arabia in terms of e-commerce, to identify the factors which influence the adoption of e-commerce in Saudi Arabia, and finally to propose an integrated model representing the factors and the influence they exert on the potential consumers of e-commerce in Saudi Arabia.

This chapter presents a discussion of the study results and compares them and prior research findings that either support or contradict the study findings. This is followed by a summary of the final model with supported and unsupported constructs representing the factors influencing the adoption of e-commerce in Saudi Arabia. Finally, the new generalized model is described as it would operate in the Saudi context, along with its adoption possibilities in other developing or Middle Eastern countries.

8.2 Findings from quantitative and qualitative analysis

This study explored the characteristics of e-commerce consumers in Saudi Arabia, such as gender, age, occupation, income, computer skills, and familiarity with computers, the internet and other information technologies. These factors were compared with the time and money they spent on online shopping, and the frequency of online shopping in order to understand the adoption characteristics of e-commerce consumers. Based on these characteristics, the e-commerce consumers of Saudi Arabia were classified. The differences between these groups in terms of demographic variables and ICT capacity were tested through a number of hypotheses to validate the categories of e-commerce users. Then some hypotheses were tested to understand e-commerce diffusion and adoption in Saudi Arabia. Detailed discussion of these findings is presented below:

8.2.1 Characteristics of e-commerce users

Table 8.1 shows the characteristics of e-commerce users identified in this study, together with the results of prior studies. All of the findings from this study were supported and found to be generally consistent with prior studies.

Table 8.1: Characteristics of e-commerce users in Saudi Arabia with prior studies

Characteristics	Findings	Prior studies
Gender	Major portion of the respondents were men.	This finding aligns with the findings of Simsim (2011), who noted that Saudi women were less frequent users of internet facilities. Previous studies have indicated that females are less likely to purchase online than men (Gefen and Straub, 1997, Alzahrani, 2011, Al-Gahtani et al., 2007, Venkatesh et al., 2000, Venkatesh et al., 2003, Venkatesh and Morris, 2000).
Age	Majority of study participants were young adults (aged between 18 and 34 years).	The result is consistent with the findings from prior studies (Eid (2011), who found that internet usage and functionality are more widespread among the young people of Saudi Arabia.
Occupation	Majority of the respondents were students.	The result is consistent with the findings of Eid (2011), who found in the course of his research that the majority of e-commerce or online users were students from different areas of Saudi Arabia.
Income level	Major portion of the respondents were upper middle class and middle class people.	(Argaam, 2014, Peskin, 2009).
Computer ability and internet experience	Major portion of the survey respondents were highly efficient at computer and internet use.	The findings are consistent with Sait et al. (2004), who found that experienced internet and computer users are more positive about e-commerce and feel that e-commerce would make life easier.
Device use for internet usage/online shopping	Majority of the study participants used a smartphone.	The findings are consistent with the study of Alsharif (2011) who found that Saudis are accessing the internet via their smartphones and that usage is increasing rapidly.

The study results show that the majority of the respondents were males using e-commerce. In Saudi Arabia males have greater freedom of movement, greater opportunities for communication and fewer restrictions (Tubaishat et al., 2006). Furthermore, gender influences the acceptance of technology (Baker et al., 2007, Sait et al., 2007, Hu et al., 2010).

The majority of the study participants were young-adults aged between 18 and 34 years. Younger individuals demonstrate positive attitudes towards online activity, whereas older individuals perceive online activity as lacking behavioural control (Morris and Venkatesh, 2000). Thus, younger people who are more acquainted with technology, understand the concept of e-commerce, and are more inclined to use e-commerce.

The majority of the respondents were students, which reflects the fact that students are the most technologically savvy of the national population, and postgraduate students are very familiar with online and internet issues. The next highest numbers of participants were administrators from the government sector because they are supported by the e-government initiatives launched in Saudi Arabia in 2005 (MCIT, 2006).

The majority of the respondents had an income between Saudi Real (SAR) 5000 and 20,000 per month. These incomes are those of upper middle class and middle class people, which can be explained by the fact that the majority of the samples in this study were young adults with university degrees or performing entry-level jobs in the public or private sector.

In terms of using the internet, the majority of the survey respondents were highly efficient at computer and internet use. The results imply that the usage of computers and the internet is increasing rapidly in Saudi Arabia among the more educated and affluent strata of Saudi society.

The majority of the study participants used a smartphone to access the internet and shop online, while the second most used device was the laptop computer for internet and online shopping. Telecommunications in Saudi Arabia have been driven by heavy infrastructure investment (Sait et al., 2004, Ramady, 2010). For example, as long ago as 2002, the Saudi government approved a plan to invest more than US$10 billion to improve the information and communications technology (ICT) infrastructure of the country between 2005 and 2020 (Esty et al., 2003). In addition, as discussed in Chapter 3, the Saudi government launched multiple initiatives in 2005 and the years following, supporting the development of the internet and e-initiatives in Saudi Arabia. These many initiatives and growing globalisation have increased the popularity of the internet, e-commerce and latterly the use of smartphones.

The study results show that most of the respondents spent one to three hours per week shopping online, bought online at least once a month, and spent approximately SAR 100-1000 (US$27-270). These findings can be explained by the fact that the internet is a common means of spending time engaging with social media and visiting websites where they encounter advertising from online stores. Thus, online expenditures are becoming increasingly common in response to access to a wider range of products.

From these findings, it can be concluded that computer and internet adoption and usage is expanding in the lives of younger, more educated and more affluent Saudis, which represents the

expanding scope of e-commerce in Saudi Arabia. This strongly suggests that the adoption of e-commerce in Saudi Arabia will continue to expand.

8.2.2 Categories of e-commerce users

Based on recorded characteristics, the study found three types of e-commerce users – low frequency users, moderate users and high frequency users. These user groups were mostly comparable with non-adopters, initial adopters and continuous adopters (Eder and Igbaria, 2001, Yu-hui, 2008, Venkatesh et al., 2003, Chwelos et al., 2001). The key difference is that the low frequency users include not only the non-adopters, but also new users who have adopted online shopping, but are mostly inactive and participate infrequently in online shopping.

The difference between these groups in terms of demographic variables and ICT capacity were tested using hypotheses testing to validate the categories of e-commerce users. For this purpose three hypothesis were formulated (H1, H2, H3). Table 8.2 shows the results of hypothesis testing in relation to the differences between three types of e-commerce users together with the results of prior studies. All of the hypotheses were supported and found to be generally consistent with prior studies. Thus, there is a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms of age, gender and the ability of the users to shop online.

Table 8.2: Hypothesis testing regarding difference among three types of e-commerce users in Saudi Arabia with prior studies

Characteristics	Findings	Prior studies
H1: There will be a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms of age.	Supported	These findings are in line with those of many other researchers. Alkhunaizan and Love (2012), has explored that young people aged between 19 and 25 years are major users of e-commerce in Saudi Arabia. Eid (2011), found that the majority of the e-commerce users in Saudi Arabia are young people who get much satisfaction from e-commerce and are loyal to their selected online retailers. Carveth and Kretchmer (2002), identified that in the UK, people more than 50 years of age are less interested in the internet and internet related facilities. Morris and Venkatesh (2000) found that younger individuals demonstrate positive attitudes towards online activity, whereas older individuals perceive online activity as lacking behavioural control.
H2: There will be a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms gender (male and female).	Supported	These findings are consistent with some other researchers. Previous studies (Gefen and Straub, 1997, Alzahrani, 2011, Al-Gahtani et al., 2007, Venkatesh et al., 2000, Venkatesh et al., 2003, Venkatesh and Morris, 2000) have indicated that females are less likely to purchase online than men. Venkatesh et al. (2003), and Al-Shafi and Weerakkody (2010) found that males and females pursue different levels of e-commerce adoption and use, and that gender is a factor that influences the uptake and frequency of engagement with e-commerce. Al-Ghaith et al. (2010), found that females in Saudi Arabia are more interested in using e-services than males, in this research women were found to be more interested in online shopping. Furthermore, as observed by Al-maghrabi and Dennis (2009), the female perception of e-commerce in Saudi Arabia is positive and women shop online more when encouraged by the positive experiences of others.
H3: There will be a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms the ability to shop online.	Supported	This result is consistent with Fuller et al. (2006) who found that familiarity with technology has a positive influence and increases an individual's confidence.

There is a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms of age (H1: Chi-square, X^2 (10, N=904) = $2.426E^2$, $p < 0.05$). The high and low frequency users were mainly young-adults (18-34 years), while the moderate users were mostly middle aged and aged (25-44 years) in Saudi Arabia. Young adults are more familiar with new technologies because they are graduates moving into new types of jobs or have a good personal income or are regularly exposed to new technology which they enjoy and use, including buying products online. Middle aged people also have familiarity with the internet, and a steady income which enables them to buy products of their choice. However, the attraction of online shopping appears to be relatively low in the middle aged and aged groups compared to the young adults. As a person ages, they tend to look less for adventure and take fewer risks in doing any deals. So, even though they could afford to buy, their age might reduce

their level of participation through greater caution and force of habit. Young adults among the respondents who participated infrequently in online shopping might be attracted to online shopping and be interested and skilled in new technology use, but other factors, such as income or environment, might cause their lower adoption of e-commerce in Saudi Arabia.

Gender influences the acceptance of technology, especially in gender-based societies like that of Saudi Arabia (Baker et al., 2007, Sait et al., 2007, Hu et al., 2010). This research also found that there is a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms of gender (male and female) (H2: Chi-square, X^2 (2, N=904) = 46.235, $p < 0.05$). Detailed investigations found that female users were in greater numbers at the high and low frequency end of the scale, while male users of e-commerce formed the large group in the moderate frequency users group. The results for the female participants demonstrate that women's interest in shopping online and their activity online is quite high. Even when they didn't purchase, they browsed. This behaviour can be explained by the fact that in Saudi, females are less exposed to the open market, and are more restricted in terms of when and where they can shop. E-commerce provides an easy option for purchasing without going outside the home, which is a major cultural issue in Saudi Arabia.

There was a statistically significant difference between e-commerce user groups (high frequency, moderate, and low frequency) in terms the ability to shop online (H3) in Saudi Arabia. The result indicates that high frequency users are more capable and efficient at shopping online than the other users, which reflects the fact that greater experience and knowledge encourage individuals to make greater use of the internet. Moderate or low frequency users lacked expertise.

8.2.3 Factors affecting e-commerce diffusion and adoption in Saudi Arabia

Factors affecting e-commerce diffusion and adoption in Saudi Arabia were tested through hypotheses testing to understand which factors affected the diffusion and adoption of e-commerce in Saudi Arabia. Eleven hypothesis were formulated (H4 to H14). Table 8.3 shows the results of hypothesis testing regarding e-commerce diffusion and adoption in Saudi Arabia, together with the results of prior studies. All of the hypotheses were supported and were found to be generally consistent with prior studies, except H4, H9, and H11. Thus infrastructure (H4), the

enjoyment of shopping online (H9), and service quality (H11) have insignificant effects on e-commerce adoption in Saudi Arabia. Product availability (H7), trust (H8), and prior experience (H10) have significant positive effects on e-commerce adoption in Saudi Arabia, whereas inefficient and low payment security (H5), and poor delivery systems (H6) have significant negative effects. In addition to these, there are significant interactions between delivery system and product availability (H12), trust and the payment system (H13), and service quality and prior experience of using online shopping (H14) in Saudi Arabia.

Table 8.3: Hypothesis testing regarding difference among three types of e-commerce users in Saudi Arabia with prior studies

Characteristics	Findings	Prior studies
H4: There is a direct and positive relationship between ICT infrastructure and e-commerce adoption.	Not supported (there was no significant interaction between ICT infrastructure (in particular e-commerce infrastructure) and e-commerce adoption)	Some studies have findings supporting the hypothesis which contradicts with the findings of this study. Al-Ghaith et al. (2010), and Gibbs and Kraemer (2004) found in their studies that ICT infrastructure have a direct and positive relationship with e-commerce adoption.
H5: Inefficient and low payment security has a direct and negative influence on the decision to use e-commerce.	Supported	This finding is in line with some other studies (Eid, 2011, Lee, 2009, Rogers, 2003, Taylor and Todd, 1995a, Venkatesh et al., 2003, Hua, 2008) which concluded that payment system is one of the most important aspects of e-commerce and online shopping.
H6: A poor delivery system has a negative effect on the adoption of e-commerce.	Supported	This result is consistent with many studies which have found that delivery system has a major impact on the success of e-commerce and online shopping (Bayles and Bhatia, 2000, Rutter and Southerton, 2000, Rogers, 2003, Taylor and Todd, 1995a). Previous studies of Saudi Arabia have found that the purchase delivery system is one of the major obstacles in the expansion of e-commerce (AlGhamdi et al., 2011b, AlGhamdi et al., 2011c, Aleid et al., 2009).
H7: Product availability has a strong positive effect on the adoption of e-commerce	Supported	In line with the findings from this study, studies conducted in other countries have found that product availability makes a difference in the adoption of e-services (Cox and Dale, 2001, da Silveira, 2003).

H8:	Trust has a direct and positive relation with participation in e-commerce.	Supported	This finding is consistent with many studies which found that trust is a major issue for any type of business and for e-commerce is one of the prime elements determining the willingness of individuals to shop online, and is the major part of normative beliefs and motivation to comply (Belkhamza and Wafa, 2009, Palvia, 2009, Kim et al., 2008). Additionally, these findings are in line with the findings of other researchers in Saudi Arabia. AlGhamdi et al. (2011b) found that trust is one of the major determinants of customer satisfaction and it helps to increase confidence in the payment process. In addition, Al-maghrabi and Dennis (2009) found that trust has a direct effect on the way in which women purchase online. E-stores women perceive as trustworthy are more successful because they create repeat purchases through loyal customers.
H9:	The enjoyment of shopping online has a direct and positive influence on e-commerce adoption.	Not supported (Enjoyment was an insignificant factor for e-commerce adoption in Saudi Arabia)	This result contrasts with previous studies (Lee et al. (2005); Moon and Kim (2001); Turel et al. (2007); Rouibah (2008), who found that enjoyment was an important predictor of e-commerce adoption. Moreover, this situation contrasts with that in Europe and America, where consumers are increasingly buying online. (AlGhamdi et al., 2011a) found online purchase and growing e-commerce is a common pattern in the western world, and using online commerce saves time and is enjoyable when compared to physical shopping at different stores.
H10:	Prior experience has a strong positive relation with e-commerce adoption.	Supported	This result is consistent with previous research (Luhmann, 2000, Gefen, 2000, Hernández et al., 2010, Al-Ghaith et al., 2010, Devaraj et al., 2002, Cho, 2004) which found that familiarity with the e-store and the previous services of particular online vendors increases satisfaction and builds the good reputation of online shopping, which would positively increase the adoption of e-commerce by others. The findings were consistent with the study of Al-Ghaith et al. (2010) in Saudi Arabia, who found better experience expands opportunities for more future transactions online and concurred with the observation that the better the experience of shopping online, the more positive the view of the user and the more likely others will begin to shop online.
H11:	Service quality has a direct and positive relationship with e-commerce adoption.	Not supported (Service quality had no direct significant influence on participation in e-commerce in Saudi Arabia)	This finding is inconsistent with that of other researchers (Delone and Mclean, 2004, Harris and Goode, 2004, Molla and Licker, 2001) probably due to the fact that these studies have had a different research context and were undertaken in a different study area.
H12:	There is a significant interaction between delivery system and product availability.	Supported	This finding is in line with Ahn et al. (2005), as well as Schoenbachler and Gordon (2002), where they found product availability ensures product delivery.
H13:	There is a significant interaction between trust and the payment system.	Supported	This result is confirmed by previous studies, such as Özgüven (2011), Meskaran et al. (2013), and Kim et al. (2010), who found a positive relationship between trust and payment systems for online shopping.
H14:	There is significant interaction between service quality and prior experience of using online shopping.	Supported	This result is in line with the result of Kassim and Asiah (2010), that confirms that service quality has a strong relationship with the experience of e-commerce users.

8.3 Summary of final model

A conceptual demand side model was developed in this research to identify factors influencing e-commerce adoption in Saudi Arabia using a mixed model method. The basic concepts of the model were taken from several other models – theory of planned behaviour (TPB) (Ajzen, 1991), decomposed theory of planned behaviour (DTPB) (Taylor and Todd, 1995), technology acceptance model (TAM) (Davis, 1989), and unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) – which have been developed and validated in Western nations. The model consisted of eight constructs:

- payment security and convenience
- e-commerce infrastructure
- delivery system efficiency
- product availability
- trust
- perceived enjoyment
- prior experience
- e-commerce service quality.

In the following section, supported and unsupported constructs are described and explained which have been verified through hypothesis testing.

8.3.1 Unsupported constructs

Hypothesis testing indicated that infrastructures (H4), enjoyment of shopping online (H9) and service quality (H11) have insignificant effects on e-commerce adoption in Saudi Arabia. In this section, possible explanations for the lack of support for these constructs are discussed.

8.3.1.1 Infrastructures

E-commerce, like any other ICT innovation, needs the proper infrastructure to be successful. Weak infrastructure is often a barrier to e-commerce adoption in developing countries (Zaied, 2012). Realizing the potential of e-commerce, the Saudi government developed plans and projects to improve ICT infrastructure (AlGhamdi et al., 2011a). Unfortunately, none of these projects has been successfully implemented, nor do up-to-date detailed plans even exist. Thus e-commerce infrastructure is weak in Saudi Arabia (AlGhamdi et al., 2010). These circumstances

have inured the users to the idea that the development of infrastructure is not particularly urgent or important. Thus, this research found no significant interaction between ICT infrastructure (in particular e-commerce infrastructure) and e-commerce adoption in Saudi Arabia (H4: InF → E-commerce usage, β = -0.014, *p* value > 0.05).

8.3.1.2 Enjoyment of shopping online

Perceived enjoyment becomes a vital component of e-commerce adoption. When consumers perceive that the online shopping experience is pleasurable, they are more likely to engage in future shopping sessions (Chiu et al., 2012). The impact of perceived enjoyment on e-commerce adoption depends on the degree of pleasure individuals feel when using e-commerce websites, their motivation for shopping online, and the overall attractiveness of e-commerce, which relates to the TAM and UTAUT models, where enjoyment relates how people perceive the technology (Venkatesh, 2000); (Moon and Kim, 2001). In Saudi Arabia, people mostly shop by visiting stores, while online shopping is often considered to be more necessary than fun, due to absence of pleasant website images, animation, humour and lack of interactive features (Al-Ghaith et al. (2010). Enjoyment was an insignificant factor for e-commerce adoption in Saudi Arabia (H9: EN → E-commerce usage, β = -0.005, *p* value > 0.05).

8.3.1.3 Service quality

Service quality is defined as the overall support delivered by the online shopping service providers, which is considered to be an essential feature for attracting customers (Zeithaml, Parasuraman, and Malhotra, 2002; Santos, 2003; Delone Mclean, 2004). It positively influences users' repeat purchasing behaviour in most research (Delone and Mclean, 2004; Chiu et al., 2012). Surprisingly, the results for this study showed that service quality had no direct significant influence on participation in e-commerce in Saudi Arabia (H11: SQ→E-commerce usage, β = -0.013, *p* value > 0.05). However, there was positive and significant interaction between service quality and prior experience (H14: SQ → PE, β = 0.231, p value < 0.0). Users in Saudi Arabia often think of the e-store as having no physical existence and consequently they don't expect much service. Moreover, the users do not get the opportunity to judge the quality of the e-store vendors, and naturally assume that their service quality is insignificant, so that it does not influence participation in online shopping.

8.3.2 Supported constructs

Hypothesis testing indicated that product availability (H7), trust (H8), and prior experience (H10) have significant positive effects on e-commerce adoption in Saudi Arabia, whereas inefficient and low payment security (H5), and a poor delivery system (H6) have significant negative effects. In addition to these, there are significant interactions between the delivery system and product availability (H12), trust and the payment system (H13), and service quality and prior experience of using online shopping (H14) in Saudi Arabia. In this section the possible explanations for support for these constructs are discussed.

8.3.2.1 Product availability

One of the main advantages of online shopping is access to a larger global market. Product unavailability is likely to result in unhappy customers who are less likely to return to a specific vendor whether in the real world or online. When conducting qualitative research on the slow adoption of e-commerce in Saudi Arabia, AlGhamdi et al. (2012) found that consumers complained of a lack of online retailers providing highly necessary or desired products. When the users receive products on time and at low cost, it improves their perception of e-commerce, its convenience and reliability because it appears to the customers that the products are in stock (Ahn et al. 2005; Schoenbachler and Gordon 2002). Thus, the results show that there is a positive relationship between product availability and e-commerce adoption in Saudi Arabia (H7: PA → E-commerce usage, $\beta = 0.037$, p value < 0.05). Additionally there is a positive and significant relationship between the delivery system and product availability (H12: DS → PA, $\beta = 0.448$, p value < 0.0).

8.3.2.2 Trust

Trust is a crucial objective in e-commerce (Purani, and Sahadev, 2015). It is one of the most important concepts in the relationship marketing paradigm related to the development of B2C e-commerce (Corbitt, Thanasankit, and Yi, 2003). Due to the separation of seller and buyer in online shopping and the dependence on information technologies and systems, consumers always experience some level of risk where trust plays as a solution. In addition, trust in e-commerce systems is based on the consumer's confidence in the processes. Despite having proper e-commerce infrastructure, the condition of the online payment system may affect customers' perceptions of the safety and trustworthiness of online transactions, which in turn may affect their

acceptance and adoption of e-commerce (Eid, 2011). The study results show that, there was a direct and positive relationship between trust and e-commerce adoption (H8: TR→ E-commerce usage, β = 0.082, p value < 0.05), and between trust and online payment (H13: TR → PAY, β = 0.207, *p* value < 0.0) in Saudi Arabia. The positive image of international vendors, such as Amazon and eBay and other large e-commerce sites has helped users have faith in online purchase and payment. The opposite situation is observed in the case of local e-sectors in Saudi Arabia. Likewise, the TPB, and TAM model trust play a great role for e-commerce adoption by creating a positive attitude towards e-commerce vendors.

8.3.2.3 Prior experience

Prior experience and familiarity with technology reduces anxiety and provides confidence (Fuller et al., 2006). Users who have less experience and familiarity with the online shopping process may be less likely to adopt the technology, whereas users with positive prior experiences shopping online would be more likely to embrace e-commerce more fully (Deck and Jahedi, 2015). Positive prior experiences also help build trust in the online shopping experience (Chiu et al., 2012). Again, e-commerce service quality positively influences users' repeat purchasing behaviour (Delone and Mclean, 2004; Chiu et al., 2012). Thus, the results show that prior experience has a direct and positive relationship with e-commerce adoption (H10: PE→E-commerce usage, β = 0.198, *p* value < 0.05), and there is positive and significant interaction between service quality and prior experience (H14: SQ → PE, β = 0.231, p value < 0.0).

8.3.2.4 Inefficient and low payment security

Despite having proper e-commerce infrastructure, the condition of the online payment system may affect customers' perceptions of the safety and trustworthiness of online transactions, which in turn may affect their acceptance and adoption of e-commerce (Eid, 2011). In Saudi Arabia, the online shopping payment system lacks efficiency, as well as security (AlGhamdi et al., 2011c, Almousa, 2011, AlGhamdi et al., 2012a, Aleid et al., 2009). This inability to conduct transactions safely, simply and easily inhibits the rate of e-commerce adoption among users in Saudi Arabia, whether buyers or sellers (Almousa, 2011, Aleid et al., 2009). The data from the study revealed that the lack of a trustworthy system of payment had a negative and significant impact on the

adoption of e-commerce in Saudi Arabia (H5: PAY→E-commerce usage, β = -0.05, *p* value < 0.05), and direct and positive relationship between trust and online payment (H13: TR → PAY, β = 0.207, *p* value < 0.0) in Saudi Arabia.

8.3.2.5 Poor delivery system

A system for delivering goods bought online is critical to the adoption of e-commerce. Furthermore, when the users receive products on time and at low cost, it improves their perception of e-commerce, its convenience and reliability because it appears to the customers that the products are in stock (Ahn et al. (2005); Schoenbachler and Gordon (2002). The delivery system in Saudi Arabia is not even close to the standard followed in the developed world and citizens who want to shop online face huge problems in getting products delivered after an online purchase (AlGhamdi et al., 2011b, AlGhamdi et al., 2011c, Aleid et al., 2009). Thus, a poor delivery system has a negative effect on the adoption of e-commerce in Saudi Arabia (H10: DS → E-commerce usage, β = -0.044, p value < 0.05), and a positive and significant relationship between the delivery system and product availability (H12: DS → PA, β = 0.448, *p* value < 0.0).

8.4 Triangulation of quantitative and qualitative findings

The quantitative and qualitative findings were triangulated with evidence from the literature relating to the uptake of e-commerce around the world in order to identify similarities and differences between the adoption of e-commerce in Saudi Arabia and other countries where e-commerce is available (Figure 8.1).

As presented in Figure 8.1, from demographic and cultural issues, gender and age become the common factors, as they were found significant in quantitative and qualitative findings. Other common factors are familiarity with the internet and internet tools (ICT knowledge), prior experience, payment, trust, delivery system and product availability. These factors are crucial to the adoption of e-commerce. However, factors like awareness and enjoyment might complement the results, as the quantitative model explains only 37% of the variance of e-commerce use by Saudi users.

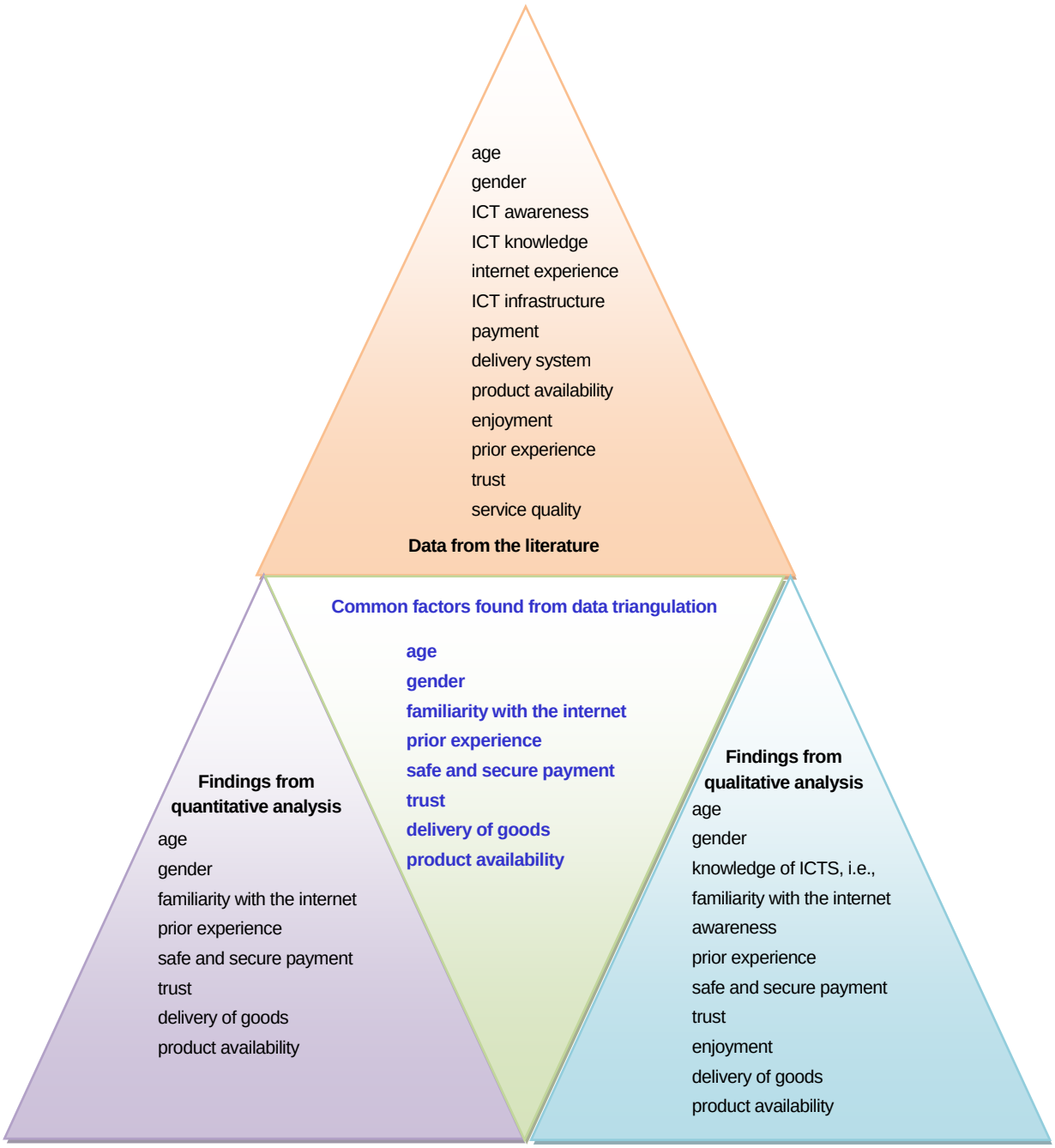

Figure 8.1 **Findings from the quantitative and qualitative analysis**

8.5 Generalized e-commerce adoption model for Middle East Region

Based on the overall research findings (both qualitative and quantitative), the researcher has developed a conceptual e-commerce adoption model for Saudi Arabia, in general for the Middle Eastern region, where the social, economic and cultural similarities are dominant. The generalized model (Figure 8.2) covers the results from triangulation and shows the generalized path and relations for e-commerce adoption and use in this region.

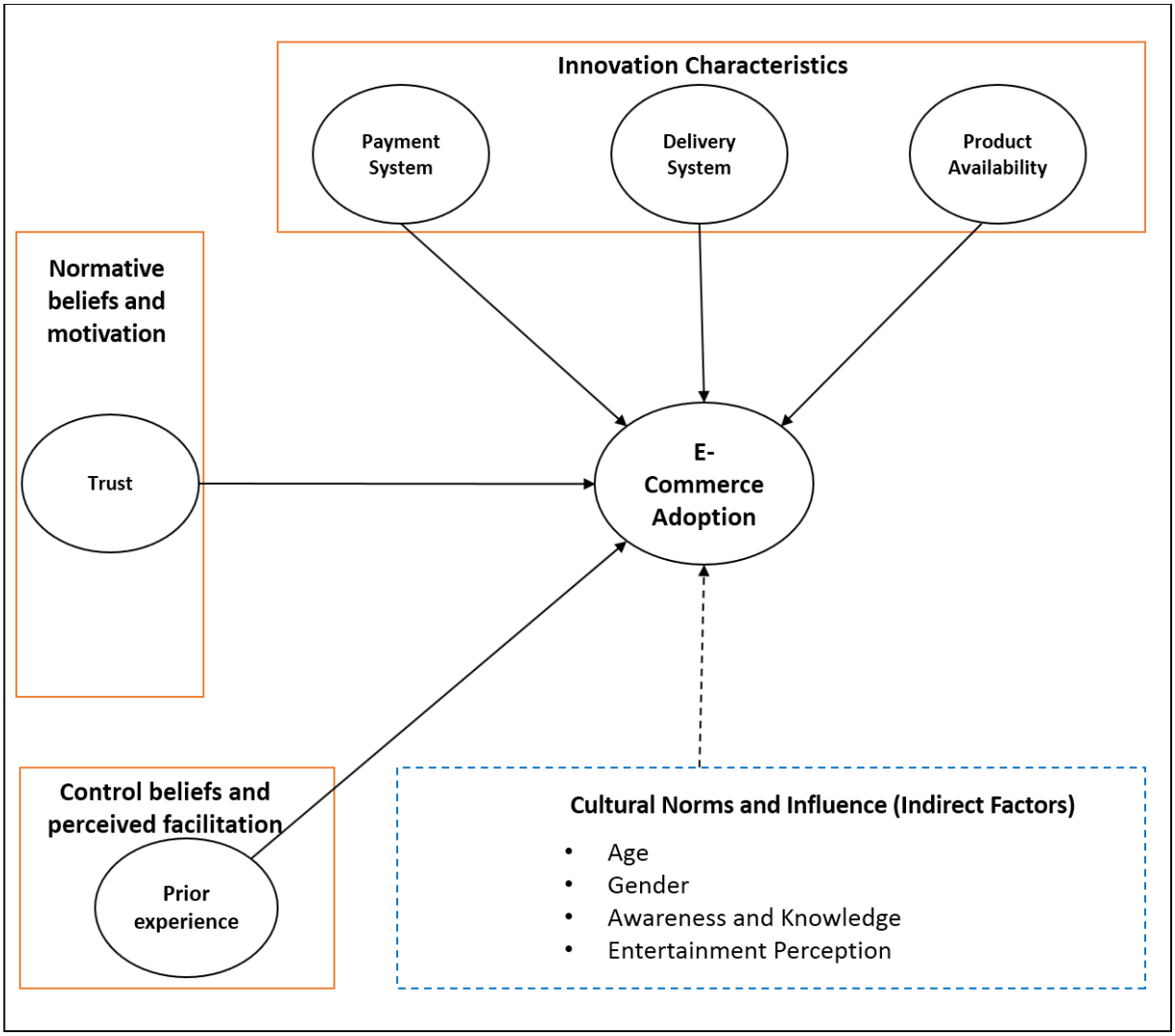

Figure 8.2: Generalized model for e-commerce adoption in Middle Eastern region

Figure 8.2 shows the generalized model consisting of the factors affecting e-commerce adoption in the Middle East. E-commerce in this region would likely improve if these factors played positive role. In this case, e-commerce should evince innovative characteristics as part of its payment system, delivery system and ensure the availability of the products shown online. In the Middle East, the payment system is yet not efficient, and cash on delivery is the major payment

system. More advanced and user friendly options, such as *PayPal*, debit cards, shopping cards, or SADAD should be introduced in the whole region. Apart from payment, there is no universal delivery system available for this region. The governments are relatively strict in their management of their postal systems, but a modern delivery system could be a vital development in improving the acceptability of e-commerce services. Easy payment, proper delivery and product availability; these characteristics of an e-commerce system would potentially improve its acceptance to the users and increase their services.

In addition to innovation characteristics, people in this region are very concerned about the safety of transactions. The UAE has already established a trust mark for e-commerce and online vendors, and all other governments should come forward to develop a region-wide trust mark for e-commerce services. Trust is a major issue in Islamic culture, and people of this region follow an Islamic code quite strictly. Establishing trust for e-commerce is therefore essential. People with some online experience should be encouraged and their stories told, so that their good experiences would increase their trust and belief in the concept of e-commerce, which is relatively new in the Islamic dominant region of the Middle East. Better prior experience would increase positive word-of-mouth for e-commerce services. This would lead to greater acceptance and adoption of e-commerce.

Finally, cultural norms and social influences would play an indirect role in the adoption of e-commerce in the Middle East (with focus on Saudi Arabia). Islamic culture and the social traditions of this region make e-commerce more acceptable to females than males, considering the restrictions on females, who are unable to visit outside frequently. Thus, for this region providing more facilities to female customers would increase e-commerce growth. Additionally, the young and young adult cohort of the population is now emerging in this region. Targeting these groups would create a better environment for e-commerce. Apart from this, with the help of the current social system, awareness about ICTs and their benefits to daily life need to be dispersed to all classes of people. Then e-commerce would have a greater positive image and the society would accept that with pleasure.

8.6 Summary

This chapter discussed the findings of the study by comparing the qualitative data collected from interviews with the quantitative data gathered from the questionnaire survey. In addition, the results obtained from a variety of research resources were also compared for each of the findings of the descriptive statistics and hypotheses. A detailed explanation and interpretation of the results was provided in the context of B2C adoption of e-commerce in Saudi Arabia. The main factors influencing the adoption of e-commerce in Saudi Arabia were confirmed by triangulating the results of quantitative and qualitative discussions, along with information from the literature.

This chapter concludes that age, gender and proficiency in using the internet, as well as the computer, are positive factors for the use of online shopping. In addition to these, a reliable payment and delivery system is essential in the Saudi context in order to have well-functioning online shopping. Reliable delivery of goods creates a positive service experience. Furthermore, product availability and prior experience of online shopping also directly influence the adoption of online shopping in Saudi Arabia. Finally, trust is a major factor affecting people's choice to participate in online shopping.

The major findings of this research, based on all the analysis, has been summarised in this chapter. In the following chapter, the contributions, implications and limitations of the study and future research are presented.

CHAPTER 9: CONCLUSION

The research and research results are summarised in this chapter, and recommendations for encouraging the growth of e-commerce in Saudi Arabia have been provided. The chapter begins by the detailed answers to the research questions. The next of the chapter details the contribution of the research and discusses the limitations of the study. Future research ideas are presented to conclude the thesis.

9.1 Answers to the research questions

In this section, the study findings are discussed as they relate to the research questions.

RQ1: What is the current state of e-commerce in Saudi Arabia?

In Chapter 3, the current situation of e-commerce in Saudi Arabia was discussed in different sections to present a comprehensive picture of e-commerce adoption in Saudi Arabia.

RQ2: What types of e-commerce adopters are now present in Saudi Arabia?

Among 904 survey respondents, using K-mean clustering methods, the study found three kinds of e-commerce adopters in Saudi Arabia: *high frequency users (223), moderate frequency users (413) and low frequency users (268)*. These categories explain what types of users are shopping online in Saudi Arabia, and their characteristics were examined using descriptive statistics. The data revealed that age, gender and computer proficiency varied significantly among the categories, and *high frequency* users were usually young people, with a relatively higher percentage of women who showed superior skill in shopping online. Moderate users were mostly male and middle aged, and data analysis showed that their ICT knowledge was moderate. More details about e-commerce users were presented in Chapters 5 and 8.

RQ3: What are the factors that influence individual adoption of e-commerce in Saudi Arabia?

From the literature review of numerous previous studies of e-commerce worldwide, three major domains were observed:

- perceived characteristics of innovation
- normative beliefs and motivation to comply
- control beliefs and perceived facilitation.

For each domain, several factors were identified that might influence the adoption of e-commerce. From quantitative analysis, it was found that payment security and convenience, ICT infrastructure, the delivery system, product availability, trust, enjoyment, prior experience, and service quality might be the most influential factors impacting e-commerce adoption. These factors were determined using a complex statistical model to analyse the data.

When qualitative analysis was conducted on the data from the interviews, age and gender were demonstrated once again to be significant factors in e-commerce adoption. Moreover, knowledge of ICTs and enjoyment of shopping also proved to be important factors. The same factors were also found in the literature, and hypotheses were written relating to them, as was noted in Chapter 4, the most relevant factors were considered to be predictors of e-commerce adoption in Saudi Arabia.

RQ4: What are the major predictors of intention to use e-commerce services in the Saudi Arabia?

From the statistical model, the study found five significant predictors of e-commerce adoption in Saudi Arabia. They were:

- payment security and convenience
- delivery system
- product availability
- trust
- prior experience with online ICTs.

Among these, payment, delivery and product availability were part of the *perceived characteristics of innovation* dimension. In addition, trust fell into the dimension of *normative beliefs and motivation to comply,* and prior experience was from the *control belief and perceived facilitation* dimension. These predictor variables had a significant impact on the adoption of e-commerce in Saudi Arabia.

In terms of relative significance, trust and prior experience proved to be the most significant predictors (significant at <0.001). The second most significant predictor was the payment system (significant at <0.01), while the delivery system and product availability were found to be the third level of significance (significant at <0.05). However, in addition to these predictors from the

model, other statistical tests found that age, gender and computer proficiency were also significant ($p < 0.05$) influencers of e-commerce adoption in Saudi Arabia. Age and gender are attributed to the cultural context (i.e. the Islamic religious system) of Saudi Arabia, while ICT knowledge is a function of the changing trend in education and social structure of society (i.e. increase of ICT usages, education for women, and involvement of women in ICT) in Saudi Arabia. More discussion about these predictors can be found in Chapter 8.

RQ5: What are the strategic solutions to maximise e-commerce adoption?

Brief recommendations are provided in this section. However, detailed recommendations are available as a separate Appendix G.

Recommendations for the government:

- Improve the online shopping payment system and add the scope of using SADAD for e-commerce transactions.
- Develop a well-functioning mailing address and mailing system with the help of Saudi post.
- Prepare a legal framework for online shopping and e-commerce business with the Ministry of Finance.
- Formation of a 'trust' mark by the government to support the online shopping vendors, regarding their trustworthiness.
- Develop ICT and e-commerce infrastructure, and make internet facilities more available.
- Create awareness of the facility of online shopping through the education system and an awareness campaign.

Recommendations for e-commerce organisations:

- Ensure product quality, availability and service quality for their goods and services.
- Use better ICT facilities for websites, applications, make online shopping easier by adopting the local demand and culture.
- Create network and Chamber of Commerce for e-commerce organisations and link up with different government ministries.
- Develop innovative and attractive advertisements to attract people of all classes to online shopping.

9.2 Academic contributions of the study

The outcomes of the study not only focused on providing strategic recommendations to the government and organisations, but also contributed in the theoretical or academic field. The research covered online shopping in a B2C setting and used several statistical methods to produce valid and acceptable results, which have contributed in enriching the knowledge base of the academicians. Some of the major academic contributions of this research are presented below:

- The study developed a demand side model to identify factors influencing e-commerce adoption in Saudi Arabia. The basic concepts of the model were taken from several other models – TPB, DTPB, TAM and UTAUT – which have been developed and validated in Western nations. Therefore, formation of a new model in a developing country from existing models ensures that the already established models can be tested in developing countries, which would highlight issues faced in developing national e-commerce. Using the model the study find the key factors.
- The study contributed by finding key factors that influence e-commerce adoption in the Saudi Arabia and the Arab world, where they have relatively the same religious and cultural context.
- This study has categorised e-commerce adopters, which is new in the context of Saudi Arabia. Identifying high frequency users, moderate users and low frequency users of online commerce sites, demonstrated that there are different categories of users and that their preferences for going online vary according to different socio-economic and demographic variables. The categorisation of e-commerce adopters provides a new dimension by which to analyse customers and potential customers in order to best modify the online environment to encourage their participation in e-commerce.
- This study differs from other research in the B2C environment in Saudi Arabia by investigating all the aspects of technology adoption. During the analysis, environmental, socio-economic, behavioural, and normative factors were considered all together in understanding technology adoption in a holistic way. This enabled the study to identify the most relevant factors from all major domains and the results, therefore, form a source of new knowledge about e-commerce adoption in Saudi Arabia.
- Analysis of the data generated by this study established the importance of age, gender and knowledge in e-commerce adoption, and therefore contributes to the impetus to investigate

social and cultural influences and their impact on the uptake of new technologies as part of research into the adoption of new technologies in Saudi Arabia.

- A structural equation modelling technique which enables a simultaneous assessment of the adequacy of the measurement model and the conceptual model used to assess the target behaviour. The use of SEM enriches analytical aspects of technology adoption, in particular for e-commerce for developing countries with an Islamic culture and social system. The study found the engagement of Saudi women in e-commerce and online activities is changing. This is an important detection considering the social and religious setting of Saudi Arabia, and contributed to an exploration of possibilities of social change in Saudi Arabia, with the use of ICT and the internet.

9.3 Limitations of the study

The study utilised careful design and a systematic process to get as little error as possible for the quantitative and qualitative methods and analysis. In addition, the researcher tried to enhance the strength of the outcome by sending the survey questionnaire to a large sample population and interviewing both technology users and e-commerce professionals in Saudi Arabia.

Nevertheless, like other studies and human endeavour, this study was not free of limitations. Recognising these limitations also provides an opportunity to outline future directions for further research.

The **first limitation** of the study is that cross-sectional design, representing a slice of time, was used. Therefore the results fail to present any change of views over time or with the advent of new circumstances. In reality, with new technological inventions, human behaviour and responses may change, and for future research, a longitudinal design of the study could capture the changes for e-commerce users in Saudi Arabia.

The **second limitation** of the study is that, it has only focused on current online shopping adopters. Due to limited time and resources, it was not possible to get the views of non-adopters of e-commerce. Data provided by non-adopters could have added greater depth to our understanding of why they are not using e-commerce facilities at all. The reasons and issues of the non-adopters could provide more ideas of how to attract to e-commerce.

A **third limitation** related to the development of a model to predict e-commerce users. In this research, the model was developed for B2C adoption of online shopping in Saudi Arabia. Therefore, the researcher only included variables related to the demand side (user side) limiting variables for the supply side (e-commerce vendors). It may be due to this limitation, that the model can explain only 37% of the variance of e-commerce adoption for users in the Saudi Arabia.

9.4 Future directions of the research

The research was conducted as a cross-sectional study (one point of time), the limitations of cross-sectional design due to lack of time (just few months), this can be overcome in future studies, where the changes in preferences of e-commerce adoption can be explored over longer period, where the change over time can be studied. To add the views of the non-adopters, future studies could be conducted with the inclusion of non-adopters which would provide more details about e-commerce in Saudi Arabia.

The study sample was limited by to the resources and the capacity of the researcher. Future studies should include sample populations from more geographic regions in order to increase the number of perspectives from which data can be drawn, while providing a more authentic representation of the population of the Saudi Arabia and reactions to the e-commerce adoption process. In addition more participants from the Middle East and, in particular, the Arabian Gulf countries, should be included in a study such as this in order to compile a clearer picture of the direction of future of online shopping in the region as a whole. For future studies, interaction models (demand and supply) with more variables should be used. In addition, more variables of more models can also be incorporated to test online shopping adoption as a whole (both demand and supply). These would provide more dimensions of online shopping and retail e-commerce in Saudi Arabia. Last but not the least, as discussed, a study of Saudi women (mostly young women) and their responses to e-commerce and ICT usage would provide further insight into the behaviour of a group who are likely to play a large part in the development of online shopping and the prospects of e-commerce in Saudi Arabia.

9.5 Concluding remarks

The study started with the aim of investigating the reasons responsible for slow growth and adoption of e-commerce in Saudi Arabia. In addition to explore the reasons and factors, the research was intended to bridge the gap of knowledge considering B2C e-commerce and online shopping adoption in the cultural context of developing countries. The study considered online shopping as the major study domain for e-commerce in Saudi Arabia. This study added a valuable resource to current and future investigations of e-commerce adoption in developing countries and provided an empirical example of how more research can be conducted regarding the acceptance and uptake of e-commerce technology, and the implications of online shopping – both the selling and the buying – in a cultural context like Saudi Arabia.

In order to achieve the research aim, the study looked over the present condition of e-commerce in the form of online shopping within Saudi Arabia, and found very low pace of online shopping and lack of acceptance of e-commerce business in Saudi Arabia. In order to find the reasons for such slow growth and lack of acceptance, the research explored several cultural factors related to users' age, gender, and computer proficiency, and investigated their influences on major types of online shopping users in Saudi Arabia. The major types of e-commerce users were classified as: *high frequency users, moderate users, and low frequency users*. The study found that cultural factors related to age, gender, and computer proficiency have vital influences on the major types of online shopping users, and the high frequency users were mostly young adults, with better internet proficiency. Females being high frequency users, reflect the culture in Saudi Arabia, where female activities are more circumscribed than in Western countries for historical cultural reasons. E-commerce/online shopping is potentially a way to get what is required without going outside.

In addition to these observations, the study developed a statistical model to identify the eight significant factors responsible for e-commerce adoption within Saudi Arabia. Specifically, payment, delivery systems, product availability, trust, and prior experience were found to have a direct impact on e-commerce adoption. Enjoyment, infrastructure, and service quality were not found to have a direct influence on the adoption of e-commerce. Based on the significant factors, the study made recommendations for Saudi Arabia government and online shopping providers. Among these was the recommendation that existing payment and delivery systems be updated

and improved. E-commerce vendors were also advised to gain the trust of e-commerce users by focusing on infrastructure and service quality. The study provided deep insight about the challenges to e-commerce adoption in countries like Saudi Arabia. Indeed the study made valuable contributions by exploring the major challenges in online shopping adoption, identifying the crucial factors contributing to slow e-commerce growth in Saudi Arabia, and providing sustainable solutions to encourage e-commerce adoption.

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APPENDICES

APPENDIX A: THE ETHICS COMMITTEE APPROVAL

Flinders University and Southern Area Health Service

SOCIAL AND BEHAVIOURAL RESEARCH ETHICS COMMITTEE

Research Services Office, Union Building, Flinders University
GPO Box 2100, ADELAIDE SA 5001
Phone: (08) 8201 3116
Email: human.researchethics@flinders.edu.au

Project No.:	**6043**
Project Title:	Study of the Adoption of E-Commerce Services in the Kingdom of Saudi Arabia
Principal Researcher:	Mr Abdullah Alqahtani
Email:	alqa0037@flinders.edu.au
Address:	School of Computer Science, Engineering and Mathematics
Approval Date:	5 June 2013
Ethics Approval Expiry Date:	**26 February 2016**

The above proposed project has been **approved** on the basis of the information contained in the application, its attachments and the information subsequently provided with the addition of the following comment:

Additional information required following commencement of research:

1. Please ensure that copies of the correspondence requesting and granting permission to conduct the research from all companies to be involved are submitted to the Committee *on receipt.* Please ensure that the SBREC project number is included in the subject line of any permission emails forwarded to the Committee. Please note that data collection should not commence until the researcher has received the relevant permissions (item D8 and Conditional approval response – number 6).

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. Participant Documentation

Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ensure that:

- all participant documents are checked for spelling, grammatical, numbering and formatting errors. The Committee does not accept any responsibility for the above mentioned errors.
- the Flinders University logo is included on all participant documentation (e.g., letters of Introduction, information Sheets, consent forms, debriefing information and questionnaires – with the exception of purchased research tools) and the current Flinders University letterhead is included in the header of all letters of introduction. The Flinders University international logo/letterhead should be used and documentation should contain international dialling codes for all telephone and fax numbers listed for all research to be conducted overseas.
- the SBREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 'INSERT PROJECT No. here following approval'). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au.

2. Annual Progress / Final Reports

In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Human Research (March 2007)* an annual progress report must be submitted each year on the **5 June** (approval anniversary date) for the duration of the ethics approval using the annual progress / final report pro forma. *Please retain this notice for reference when completing annual progress or final reports.*

If the project is completed *before* ethics approval has expired please ensure a final report is submitted immediately. If ethics approval for your project expires please submit either (1) a final report; or (2) an extension of time request and an annual report.

Your first report is due on **5 June 2014** or on completion of the project, whichever is the earliest.

3. Modifications to Project

Modifications to the project must not proceed until approval has been obtained from the Ethics Committee. Such matters include:

- proposed changes to the research protocol;
- proposed changes to participant recruitment methods;
- amendments to participant documentation and/or research tools;
- change of project title;
- extension of ethics approval expiry date; and
- changes to the research team (addition, removals, supervisor changes).

To notify the Committee of any proposed modifications to the project please submit a Modification Request Form to the Executive Officer. Download the form from the website every time a new modification request is submitted to ensure that the most recent form is used. Please note that extension of time requests should be submitted prior to the Ethics Approval Expiry Date listed on this notice.

Change of Contact Details

Please ensure that you notify the Committee if either your mailing or email address changes to ensure that correspondence relating to this project can be sent to you. A modification request is not required to change your contact details.

4. Adverse Events and/or Complaints

Researchers should advise the Executive Officer of the Ethics Committee on 08 8201-3116 or human.researchethics@flinders.edu.au immediately if:

- any complaints regarding the research are received;
- a serious or unexpected adverse event occurs that effects participants;
- an unforseen event occurs that may affect the ethical acceptability of the project.

Andrea Fiegert
Executive Officer
Social and Behavioural Research Ethics Committee

c.c Dr Robert Goodwin
Dr Denise Vries

APPENDIX A_2: APPROVALS AND CORRESPONDENCE LETTERS TO CONDUCT THE STUDY FROM MCI

وزارة التجارة والصناعة
Ministry of Commerce and Industry

13 Nov 2012

To whom it may Concern

This Letter confirms that **Mr. Abdullah Saleh Alqahtani** who has a scholarship from the Ministry of higher Education in Saudi Arabia to study a Doctor of Philosophy (Computer Science) at Flinders University in Australia will be under our supervision during conducting surveys and interviews in Saudi Arabia.

Mr. **Abdullah Saleh Alqahtani** is undertaking a study of the Adoption of E-Commerce Services in the Kingdom of Saudi Arabia.

As part of his study, it is necessary for him to conduct surveys and interviews in Saudi Arabia to obtain data on e-commerce readiness from government agencies in Saudi Arabia.

It would be appreciated if you could provide appropriate assistance to **Mr. Alqahtani** in carrying out these surveys and interviews.

Yours sincerely,

Abdulrahman A. Al-Aiban

HR Director General
Tel: +966 1 409 0985
Mob: +966505654115
www.mci.gov.sa

+966 1 401 2222 Riyadh 11162 الرياض
Kingdom of Saudi Arabia المملكة العربية السعودية
www.mci.gov.sa

وزارة التجارة والصناعة
Ministry of Commerce and Industry

١٤٣٣/١٢/٢٨هـ
٢٠١٢/١١/١٣م

سعادة الملحق الثقافي السعودي في استراليا **وفقه الله**
السلام عليكم ورحمة الله وبركاته

نفيدكم بأننا سنقوم بالإشراف على الطالب/ **عبدالله صالح دليم القحطاني** والمبتعث من قبل برنامج خادم الحرمين الشريفين للحصول على درجة الدكتوراة في علوم الحاسب الآلي في كلية علوم الحاسب، الهندسة والرياضيات في جامعة فلندرز في استراليا. سوف يتم الإشراف عليه أثناء قيامه بجمع البيانات وإجراء الدراسات المتعلقه ببحثه خلال الفترة المتوقعة لبقائة في المملكة العربية السعودية.

لكـــم فائق التقدير ،،،

عبدالرحمن عبدالله العيبان
مدير عام الموارد البشرية

+966 1 401 2222 Riyadh 11162 الرياض
Kingdom of Saudi Arabia المملكة العربية السعودية
www.mci.gov.sa

APPENDIX B: THE STUDY COVER LETTER AND QUESTIONNAIRE—ENGLISH VERSION

Flinders UNIVERSITY
ADELAIDE • AUSTRALIA

Dr. Robert Goodwin
Senior Lecturer in School of Computer Science, Engineering and Mathematics

Room (358), Information Science & Technology Building

GPO Box 2100
Adelaide SA 5001

Tel: (+61 8) 8201 3113
Fax: (+61 8) 8201 2904
Email: Robert.goodwin@flinders.edu.au

http://csem.flinders.edu.au/

CRICOS Provider No. 00114A

8 April 2013 **LETTER OF INTRODUCTION**

Dear Sir/Madam,

This letter is to introduce **Mr. Abdullah Alqahtani** who has a scholarship from the Ministry of Higher Education in Saudi Arabia and currently a PhD student in the School of Computer Science, Engineering and Mathematics at Flinders University in Australia.

He is undertaking research leading to the production of a thesis and other publications on the subject of " Study of the Adoption of E-Commerce Services in the Kingdom of Saudi Arabia".

He would be most grateful if you would volunteer to assist in this project, by completing this questionnaire which covers certain aspects of this topic. This questionnaire aims to investigate organizational and technological requirements that will be necessary for the adoption of e-commerce to resolve the delay of e-readiness in public sector organizations.

If you are interested you will be requested to complete an 9 - page questionnaire. This questionnaire will not take more than 4 minutes of your time to complete. A summary of the results will be sent by email to interested respondents.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting thesis, report or other publications. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on (+61 8) 8201 3113, by fax on (+61 8) 8201 2904 or by email to (Robert.goodwin@flinders.edu.au).

Thank you for your attention and assistance.
Yours sincerely

Dr. Robert Goodwin
Senior Lecturer
School of Computer Science, Engineering and Mathematics - University of Flinders, Australia

Users Survey

Section A: Participant Information

1. What is your gender?

☐ Male ☐ Female

2. What is your age range?

☐ 18 – 24 years ☐ 25 – 34 years ☐ 35 – 44 years

☐ 45 – 54 years ☐ 55 – 64 years ☐ More than 65 years

3. What is your occupation?

☐ Student ☐ Office work / administrator ☐ Military ☐ Teacher
☐ Professor or Academic ☐ Freelancers work ☐ Retired ☐ Housework
☐ Other _____

4. What is your highest qualification

☐ Nothing ☐ Under High School ☐ High School

☐ College ☐ University Graduate ☐ Post Graduate

☐ Other _____

5. Monthly income: (SAR)

☐ From SR 100 to SR 1,000 per month ☐ From SR 1000 to SR 5000 per month

☐ From SR 5000 to SR 10,000 per month ☐ From SR 10000 to SR 20000 per month

☐ From SR 20000 to SR 30000 per month ☐ From SR 30,000 to SR 40,000 per month

☐ More than SR 40,000 per month

Section C: Computer Proficiency and Related Information

6. Rate your computer proficiency in following statements?
Select only one response per statement.

		Never used	Very rarely used	Use sometime	Mostly used	Extremely used
1	I can prepare documents					
2	I can check e-mails					
3	I can browse the Internet					
4	I can do online shopping					
5	I can do text and audio/video chat					
6	I can prepare presentations					
7	I can prepare spreadsheets					
8	I can create databases					
9	I can do programming					

7. Rate your usage of following devices
Select only one response per device

		Never used	Very rarely used	Use sometime	Mostly used	Extremely used
1	Laptop					
2	Tablet					
3	Smart Phones					
4	Personal Desktop Computer					
5	Other, please specify_____					

Section D: Internet Usage

8. How long have you been using the internet?

☐ Approximately 1 year ☐ From 2 to 3 years ☐ From 4 to 5 years
☐ From 6 to 7 Years ☐ More than 7 years

9. Rate your usage of following Internet connections
Select only one response per connection

		Never used	Very rarely used	Use sometime	Mostly used	Extremely used
1	Dial-up					
2	Broadband					
3	Mobile Broadband					
4	ADSL					
5	Fiber Optic					
6	Other, _____					

10. Rate your Internet usage in the following statements
Select only one response per statement

		Strongly Disagree	Disagree	Weakly Disagree	Neutral	Weakly Agree	Agree	Strongly Agree
1	I do not know much about Internet							
2	I do not consider Internet useful							
3	Internet is not available on my location							

11. Approximately, How much time do you spend online shopping per week?

☐ Approximately 1 hour per week ☐ 2 - 3 hours per week
☐ 3 - 5 hours per week ☐ 6 - 10 hours per week
☐ More than 10 hours per week

12. How many times did you shop online (per month) last year?

☐ Once a month ☐ From 2 to 5 per month ☐ From 6 to 10 month
☐ From 11 to 15 per month ☐ From 16 to 20 per month ☐ More than 20 times a month

13. How much did you spend on online shopping (per month) last year?

☐ From SR 1 to SR 10 per month ☐ From SR 11 to SR 100 per month
☐ From SR 100 to SR 500 per month ☐ From SR 500 to SR 1000 per month
☐ From SR 1000 to SR 5000 per month ☐ From SR 6,000 to SR 10,000 per month
☐ More than SR 10,000 per month

Section E: E-commerce over the Internet

14. Rate following statements regarding online shopping?
Select only one response per statement.

			Strongly Disagree	Disagree	Weakly Disagree	Neutral	Weakly Agree	Agree	Strongly Agree
Prior Experience	1	I buy online because I developed this habit (previous experience) while living overseas							
	2	I buy online because of the competitive prices I got in previous experience							
	3	According to my experience, the items I want to buy are banned in Saudi Arabia							
	4	I believe that there are problems in exchange/return of goods in online shopping according to my previous experience							
E-commerce Service Quality	1	I am satisfied with the website customer service of online sellers							
	2	I found limited availability of online retailers							
	3	I believe that online sellers do not provide adequate customer services							
	4	I believe that goods are not delivered as described for online shopping							

Payment Security and Convenience	1	I found limited availability of online payment methods							
	2	I am unsatisfied with the payment security							
Trust	1	I do not trust e-commerce provider, I had a very bad experience with online shopping							
	2	I am afraid of the safety of my information during online shopping							
E-commerce Infrastructure	1	I am satisfied with the infrastructure of e-commerce services in the Kingdom of Saudi Arabia							
	2	I found higher postage costs for online goods due to lack of proper infrastructure							
	3	I found all shopping websites in non-Arabic languages							
Perceived Enjoyment	1	I believe that online shopping is not enjoyable and waste of time and money							
	2	I do not have any interest in online shopping							
	3	I don't know much about online shopping thus feel less enjoy in doing search and buy							
	4	I prefer to go to actual shop and buy as it is more enjoyable							

	5	I found the online prices higher than the shop prices thus less attractive							
	6	I buy online to save time							
Delivery system efficiency	1	I faced problems in delivery of goods							
	2	I am unable to receive online goods at my home address							
	3	I am unable to receive online goods at my office address							
Product Availability	1	I found limited availability of products in the online retailers' website							
	2	I believe that goods are not delivered as described for online shopping due to lack of availability							

Thank you

END OF SURVEY

APPENDIX C: THE STUDY COVER LETTER AND QUESTIONNAIRE—ARABIC VERSION

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CRICOS Provider No. 00114A

خطاب تعريف

السلام عليكم ورحمة الله وبركاته

انا اخوكم/ عبدالله صالح دليم القحطاني مبتعث من وزارة التعليم العالي وحالياً طالب دكتوراة جامعة فلندرز (استراليا).

اقوم ببحث حول مدى جاهزية التجارة الإلكترونية في المملكة العربية السعودية ومحاولة تطويرها.آمل مساعدتكم من خلال تعبئة الإستبيان التالي ورقياً أو من خلال الرابطين أدناه (رابطين عربي او انجليزي حسب الرغبة). الإستبيان موجه الى أفراد الشعب كافة سواء من الجنسيه السعوديه أو الجنسيات المقيمه في المملكة.الإستبيان طويل نوع ما ويعود ذلك الى كبر مشروع الدكتوراة (لن يأخذ من وقتكم اكثر من نصف ساعة).

اذا كنت ترغب في تعبئة الإستبيان اليكترونيا لك حرية اختيار اللغة:

الرابط العربي

الرابط الإنجليزي

الرجاء تمرير هذا الاستبيان الى من تحب من أصدقائك أو أحد من أفراد عائلتك ولك كل الشكر والتقدير على المساعده في هذه الاستبانه...

لكم فائق الشكر ,,,

عبدالله القحطاني

كلية علوم الحاسب الآلي والهندسة والرياضيات - جامعة فلندرز, استراليا

إستبانة البائعين

❖ **القسم الاول : معلومات المشارك (الرجاء الإجابة على الأسئلة التالية)**

1. **ما هو جنسك؟**

☐ ذكر ☐ أنثى

2. **كم عمرك؟**

☐ 18- 24 سنة ☐ 25 – 34 سنة ☐ 35- 44 سنة
☐ 54 – 54 سنة ☐ 55- 64 سنة ☐ أكثر من 65 سنة

3. **ما هو مؤهل حصلت عليه؟**

☐ طالب ☐ عمل إداري/ مكتبي ☐ عسكري ☐ مدرس
☐ أكاديمي ☐ أعمال حره ☐ متقاعد ☐ أعمال منزلية
☐ أخرى

4. **ماهو أعلى مؤهل حصلت عليه ؟**

☐ لا شي ☐ أقل من الثانوية العامة ☐ الثانوية العامة
☐ دبلوم ☐ بكالوريوس ☐ دراسات عليا
☐ أخرى

5. **كم معدل مرتبك الشهري**

☐ من 100 ريال الى 1000 ريال شهرياً ☐ من 1000 ريال الى 5000 ريال شهرياً
☐ من 5000 ريال الى 10000 ريال شهرياً ☐ من 10000 ريال الى 20000 ريال شهرياً
☐ من 20000 ريال الى 30000 ريال شهرياً ☐ من 30000 ريال الى 40000 ريال شهرياً
☐ أكثر من 40000 ريال شهرياً

❖ **القسم الثاني : معلومات عن الكمبيوتر والتقنية**

6. **الرجاء اختيار خيار واحد فقط من الجدول التالي والذي يوضح فيه مدى كفائتك في استخدام الكمبيوتر:**

		لاتستخدم أبدا	قليل ماتستخدم	تستخدم بعض الاحيان	غالبا ماتستخدم	تستخدم دائماً
1	يمكنني إعداد الوثائق والمستندات					
2	يمكنني التحقق من رسائل البريد الإلكتروني					
3	يمكنني تصفح الإنترنت					
4	يمكنني القيام بالتسوق عبر الإنترنت					
5	يمكنني القيام باعمال النصوص والصوت والفيديو و الدردشة					
6	يمكنني إعداد العروض التقديمية (باوربوينت)					
7	يمكنني إعداد جداول البيانات					
8	يمكنني إنشاء قواعد بيانات					
9	يمكنني القيام باعمال البرمجة					

7. الرجاء اختيار خيار واحد فقط من الجدول التالي والذي يوضح فيه نوعية جهاز الكمبيوتر المستخدم لديك:

		لاتستخدم أبدا	قليل ماتستخدم	تستخدم بعض الاحيان	غالبا ماتستخدم	تستخدم دائماً
1	اللاب توب					
2	الاجهزه اللوحية (تاب لت)					
3	الجوالات الذكية					
4	الكمتبيوتر المكتبي					
5	أخرى					

❖ **القسم الثالث: الانترنت واستخدامته**

8. منذ متى وأنت تستخدم الانترنت؟

☐ مايقارب سنة واحدة فقط ☐ من سنتين الى 3 سنوات ☐ من 4 الى 5 سنوات
☐ من 6 الى 7 سنوات ☐ أكثر من 7 سنوات

9. الرجاء اختيار خيار واحد فقط من الجدول التالي والذي يوضح فيه نوعية اتصال الانترنت المستخدم لديك:

		لاتستخدم أبدا	قليل ماتستخدم	تستخدم بعض الاحيان	غالبا ماتستخدم	تستخدم دائماً
1	خط الهاتف مباشره					
2	النطاق العريض (برود باند)					
3	النطاق العريض للمحمول (موبايل برود باند)					
4	الدي سي ال					
5	الالياف البصرية					
6	أخرى					

10. الرجاء اختيار خيار واحد فقط من الجدول التالي والذي يوضح فيه مدى معرفتك بالأنترنت:

		لا أوافق أبداً	لا أوافق	لا أوافق نوعاً ما	محايد	أوافق نوعاً ما	أوافق	أوافق بشدة
1	أنا لا أعرف الكثير عن الإنترنت							
2	أنا لا أعتبر الانترنت مفيد او مهم							
3	الإنترنت ليس متوفر في المنطقة التي أعيش بها							

11. تقريبا، ماهو الوقت الذي تنفقه في التسوق عبر الانترنت أسبوعياً؟

☐ تقريبا ساعه واحد في الاسبوع ☐ من ساعتين الى 3 ساعات أسبوعيا
☐ من 3 الى 5 ساعات أسبوعياً ☐ من 6 الى 10 ساعات أسبوعياً
☐ أكثر من 10 ساعات أسبوعياً

12. كم عدد المرات التسوق عبر الإنترنت (شهريا) العام الماضي؟

- ☐ مرة في الشهر
- ☐ من 6 الى 10 مرات شهرياً
- ☐ من 16 الى 20 مرة شهرياً
- ☐ من مرتين الى 5 مرات شهرياً
- ☐ من 11 الى 15 مره شهرياً
- ☐ أكثر من 20 مرة شهرياً

13. كم معدل ما أنفقت على التسوق عبر الإنترنت (شهريا) العام الماضي؟

- ☐ من ريال الى 10 ريال شهرياً
- ☐ من 100 ريال الى 500 ريال شهرياً
- ☐ من 1000 ريال الى 5000 ريال شهرياً
- ☐ اكثر من 10000 ريال شهرياً
- ☐ من 11 ريال الى 100 ريال شهرياً
- ☐ من 500 ريال الى 1000 ريال شهرياً
- ☐ من 5000 ريال الى 10000 ريال شهرياً

❖ **القسم الرابع : التجارة الالكترونية والتسوق الالكتروني**

14. الرجاء اختيار خيار واحد فقط من الجدول التالي والذي يوضح فيه بعض العوامل المهمه عن التسوق الالكتروني والتجارة الالكترونية

			لا أوافق أبداً	لا أوافق	لا أوافق نوعاً ما	محايد	أوافق نوعاً ما	أوافق	أوافق بشدة
التجارب السابقة	1	أقوم بالشراء عبر الانترنت وذلك بحكم خبرتي السابقه حول التسوق الالكتروني عندما كنت في أحدل الدول المتقدمة							
	2	أقوم بالشراء عبر الانترنت وذلك بسبب وجود تفاوت بالاسعار وكثرة الخيارات							
	3	أقوم بالشراء عبر الانترنت وذلك لأنه بامكاني شراء بعض المنتجات الممنوع بيعها في الاسواق المحلية							
	4	من خلال خبرتي بالتسوق الالكتروني أيوجد هناك مشاكل كبيره في الاستبدال والاسترجاع عند الشراء عبر الانترنت.							
جودة خدمة العملاء	1	أنا راض عن خدمة العملاء المقدمة من المتاجر الالكترونية عبر الانترنت							
	2	هناك محدودية كبير للتجار التجزئة عبر الانترنت							
	3	أعتقد أن المتاجر الالكترونية لاتوفر خدمة العملاء الكافية عبر الانترنت							
	4	أعتقد أن المنتجات لاتسلم للعميل كما هو موضح عند الشراء							
أمان الدفع و الاطمئنان	1	هناك محدودية كبيره للطرق الدفع عبر الانترنت							
	2	أنا لست راضً تماما عن أمان الدفع عبر الانترنت							
الثقة والمصداقية	1	أنا لا أثق مجدداً بالمتاجر الالكترونية وذلك بسبب موقف مسبق مع أحد المتاجر							
	2	أنا متخوف جدا من سرقة الملعومات الخاصه بي من أحد المتاجر عبر الانترنت							

البنية التحتية للتسوق	1	أنا راضٍ تماما عن البنية التحتية للتجارة الالكترونية في المملكة العربية السعودية								
	2	أرى هناك خلل كبير في البنية التحتية للتجارة وذلك بسبب ارتفاع اسعار الشحن								
	3	أرى ان أغلب المتاجر الالكترونية المرغوبة غير مدعمة باللغة العربية								
الاستمتاع الملحوظ	1	أرى أن التسوق عبر الانترنت ممل ومضيعة للوقت								
	2	أنا لا أرى أي متعة للتسوق عبر الانترنت								
	3	معرفتي القليلة بالتسوق عبر الانترنت قد تكون هي سبب عدم استمتاعي بالتسوق الالكتروني								
	4	أنا أفضل الذهاب الى الاسواق المحلية بدل من التسوق الالكتروني								
	5	أرتفاع أسعار المنتجات في المتاجر الالكترونية تحد من رغبتي بالتسوق الالكتروني								
	6	أنا أقوم بالشراء عبر الانترنت وذلك لحفظ الوقت								
كفاءة نظام البريد	1	أواجه مشكلة كبيره في استلام المنتجات التي اقوم بشرائها عبر الانترنت								
	2	لا أستطيع استلام المنتجات التي أقوم بشرائها عبر عنوان منزلي								
	3	لا أستطيع استلام المنتجات التي أقوم بشرائها عبر عنوان عملي								
توفر المنتجات	1	أرى أن هناك محدوية كبيرة في المنتجات عبر الانترنت								
	2	أعتقد أن المنتجات لاتسلم للعميل كما هو مطلوب								

شكرا هذه نهاية الأستبانة

APPENDIX D: INFORMATION SHEET FOR INTERVIEW

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ADELAIDE • AUSTRALIA

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CRICOS Provider No. 00114A

INFORMATION SHEET

Title: 'Factors influencing of e-commerce usability in Saudi Arabia. '

Investigators:
Mr Abdullah Alqahtani
School of Computer Science, Engineering and Mathematics
Flinders University, Australia
Ph: (+61 4) 01220339
Email: alqa0037@flinders.edu.au

Description of the study:
E-Commerce is the financial backbone in a modern Internet-based economy. The successful adoption of E-Commerce services is necessary for the continuing progress of the economy of any country. as E-commerce provides many new opportunities. The opportunities of E-Commerce are available to individuals and small to large businesses impact positively, as a whole, on the national economy of any country.

There are many services, tools and technologies that work as the ingredients of E-Commerce and are used for the proper adoption of E-Commerce. They range from related legislation to online payments mechanisms, buyer/seller trust management, shipping services etc. The availability and smooth adoption of these E-Commerce services is the key for the success of E-Commerce in any country.

In many countries tremendous improvements have been made in the adoption of E-Commerce services. In Saudi Arabia, E-Commerce is still in its preliminary stage and there is the need of a comprehensive analysis of the adoption of E-Commerce to establish the exact current stage of E-Commerce adoption. Such analysis will have two advantages. First, it will help to identify the obstacles and challenges for the adoption of E-Commerce in Saudi Arabia. Secondly, it will allow recommendations to be made on how E-Commerce can be implanted smoothly in Saudi Arabia.

Purpose of the study:
It is expected that the outcome of the research will enable to individuals, small to large businesses in Saudi Arabia to be more confident when adopting E-Commerce. It will also help the government in designing policies to promote E-Commerce that will have a positive impact on the national economy overall. Lastly, this research work will also be useful for other countries (especially in Middle East with similar traits) in providing guidelines for the adoption of E-Commerce.

What will I be asked to do?
You are invited to attend a one-on-one interview with a PhD student or an online survey who will ask you a few questions the main internal factors in the assessment of e-commerce in developing countries and particularly in Saudi Arabia and what do you think about strong/weak points regarding E-commerce adoption in Saudi Arabia. The interview will take about 30 minutes and online survey will be of 3-4 minutes. The interview will be recorded using a digital voice recorder to help with looking at the results. Once recorded, the interview will be transcribed (typed-up) and stored as a computer file and then destroyed once the results have been finalised. The recording is voluntary.

What benefit will I gain from being involved in this study?
The sharing of your experiences will improve the e-commerce adoption in Saudi Arabia. We are very keen to identify obstacles and challenges which are as useful as possible to be resolved for e-commerce adoption. The results of the study will help all parties in e-commerce adoption to assess their e-commerce readiness by using the suggested recommendations.

Will I be identifiable by being involved in this study?
We do not need your name and you will be anonymous. Once the interview has been typed-up and saved as a file, the voice file will then be destroyed. Any identifying information will be removed and the typed-up file stored on a password protected computer that only the Investigator (Abdullah Alqahtani) will have access to. Your comments will not be linked directly to you.

Are there any risks or discomforts if I am involved?
Other group members may be able to identify your contributions even though they will not be directly attributed to you.
The investigator anticipates few risks from your involvement in this study. If you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the investigator.

How do I agree to participate?
Participation is voluntary. You may answer 'no comment' or refuse to answer any questions and you are free to withdraw at any time without effect or consequences. A consent form accompanies this information sheet. If you agree to participate please read and sign the form.

How will I receive feedback?
Outcomes from the project will be summarised and given to you by the investigator if you would like to see them.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

APPENDIX E: THE STUDY COVER LETTER AND INTERVIEW QUESTIONS — ENGLISH VERSION

Flinders UNIVERSITY
ADELAIDE • AUSTRALIA

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8 April 2013 **LETTER OF INTRODUCTION**

Dear Sir/Madam,

This letter is to introduce **Mr. Abdullah Alqahtani** who has a scholarship from the Ministry of Higher Education in Saudi Arabia and currently a PhD student in the School of Computer Science, Engineering and Mathematics at Flinders University in Australia.

He is undertaking research leading to the production of a thesis and other publications on the subject of " Study of the Adoption of E-Commerce Services in the Kingdom of Saudi Arabia".

He would be most grateful if you would volunteer to assist in this project, by allowing him to meet you to complete this interview questions which covers certain aspects of this topic. This interview aims to investigate organizational and technological requirements that will be necessary for the adoption of e-commerce to resolve the delay of e-readiness in public sector organizations.

If you are interested you will be requested to answer some questions. This interview will not take more than half an hour of your time to complete. A summary of the results will be sent by email to interested respondents.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting thesis, report or other publications. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on (+61 8) 8201 3113, by fax on (+61 8) 8201 2904 or by email to (Robert.goodwin@flinders.edu.au).

Thank you for your attention and assistance.
Yours sincerely

Dr. Robert Goodwin
Senior Lecturer
School of Computer Science, Engineering and Mathematics - University of Flinders, Australia

- **Qualitative interviews of the users:**

1. What your idea about internet shopping for your need in Saudi Arabia? (the present situation, good-bad-moderate)
2. How frequently you use e-shopping in a month/year? How much average money spent per month/year?
3. Do you think for online shopping in-depth knowledge of computer and internet is required or any person can use online shopping? If not all can use online shopping, what kind on computer and internet knowledge required you think?
4. If you ever used online shopping? If yes, what are the reasons for buying online? Please specify at least 3-5 reasons with your explanation in brief.
5. What kind of products you usually buy online?
6. Do you think the products you are looking available online? What are the underlying reasons for their availability or unavailability comparing with shopping center?
7. Do you always have good experience with online shopping or did you face some bad experience in dealing with online shopping? If always good, does it motivate you to use e-commerce? If you have bad experience, does it discourage you to go online shopping?
8. How would you explain your level of trust on e-commerce site? Do they provide what they promise? Are they trustworthy?
9. What payment system is most available for your online shopping? Do you think current payment system is safe and efficient for online shopping in Saudi Arabia?
10. How would you rate the current delivery system of e-commerce sites in Saudi Arabia? Do you have satisfaction on delivery system at present?
11. In your opinion, what facilities can make online shopping more successful, attractive and efficient for customers?
12. If there any recommendations you want to give about e-commerce and computer knowledge…….

- **Qualitative interviews of the managers:**

❖ **General information**

1. Who are the target customers for you company? (i.e. Male, Female, both gender, Young people age less than 24 year, middle aged people etc)
2. From which gender group (Female, male) you got most of the orders?
3. What are the most popular goods that you sell?
4. Do you have any type of marketing strategies to promote your business? If yes, please state what kind of marketing (i.e. Social media, local newspaper) you used for your online store?

❖ Computer and internet

5. What is your idea and concerns about people having internet access in Saudi Arabia? Do you think majority of the people got the internet access and they can use it easily with efficiency?
6. Do you think Saudi people have adequate knowledge about online shopping that can make your business more acceptable and successful?
7. For online shopping in-depth knowledge of computer and internet is required or any person can use online shopping?

❖ Devices and Applications

8. From which kind of devices (i.e. Smartphone, Laptop/PC, and Tablet) you got most of the order?
9. Do you have any record of the IP/Computer address of the users?
10. Does your company have any cell-phone application (i.e. Play Store or IOS) for online shopping that people can use on their Smartphone?

❖ Payment System

11. What kinds of payment methods does your company accept from the users?
12. If, credit card is an option for payment of your store, do you think people adopt this method or they want to prefer other methods such as cash or bank transfer? If people are not willing to use credit card, is security and trust are the issues?
13. Do you think security of payment information is one of the major obstacles for online shopping business in Saudi Arabia?
14. Do you consider more payment methods (i.e. PayPal, ATM, and SADAD) should introduce to make the payment more secure and efficient?
15. Do your company trusts the online payment system available or they want cash in hand?

❖ Delivery System

16. What kinds of delivery methods does your company use?
17. For different kinds of products, does your company have different delivery systems?
18. Do you charge for the delivery of the products? If yes, on an average how much do you charge? And do you think this delivery cost is bit higher or lower for the customers? What amount the customers willing to pay for delivery on an average?
19. Do you use third party delivery system such as FedEx, DHL, Post or mailing services? If yes, how do you pay for such delivery system? Are there any contracts between your company and third party delivery system?
20. On an average what time does your company take to deliver products? Do you think the current delivery system is efficient for the customers?
21. What challenges your delivery department faces from different customers?

❖ Trusts

22. Does your company have repeat customers or loyal customer groups? What is your perception about trust people have on your company?
23. Do you think gaining trust of the customers is a major issue for online business?
24. Does your company can provide the products people demand online? Does your product availability meet the customers' need?
25. Does your company have any post purchase servicing system? Does your company provides support and services to the customers more frequently as per their demand (i.e. exchange the product)

❖ Support of Government

26. Do you have any legislative support and other support from Saudi Government to make you business more smooth?
27. Do you think government support for online shopping can help to gain trust and more customers?
28. In your opinion what are the main obstacles of e-commerce in Saudi Arabia (give at least 5 reasons in order 1st to 5th)
29. If there any recommendations you want to give about e-commerce and computer knowledge that can make online shopping more efficient and acceptable to all.

APPENDIX F: THE STUDY COVER LETTER AND INTERVIEW QUESTIONS — ARABIC VERSION

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CRICOS Provider No. 00114A

خطاب تعريف

المحترم/ة

عزيزي/عزيزتي
السلام عليكم ورحمه الله وبركاته ..... وبعد

هذا الخطاب لتعريف عبدالله القحطاني المبتعث من برنامج خادم الحرمين الشريفين والذي تم ترشيحه لدرجة الدكتوراة في كلية علوم الحاسب الآلي والهندسة والرياضيات في جامعة فلندرز في استراليا.

يقوم المرشح حاليا بإجراء بحث في الجامعة عن خدمات التجارة الألكترونية في المملكة العربية السعودية.

سوف يكون ممتن جداً لو تفضلتم بالتطوع بمساعدتة في هذا المشروع البحثي من خلال السماح له مقابلتكم لإكمال اسئلة المقابلة التي تغطي جوانب معينة من هذا البحث.هذه المقابلة ستحقق في المتطلبات المنظماتية والتقنية الضرورية لتبني التجارة الإلكترونية وذلك بالنظر الى المشاكل الأساسية المؤديه الى تأخير فعالية عملها بالشكل المطلوب في المملكة العربية السعودية وتحسين المنظور الأساسي لها.

إذا كنتم مهتمين بالمساعدة في هذا البحث, سوف يُطلب منكم الإجابة على اسئلة المقابلة عدد صفحاتها 5 صفحات. هذه المقابلة لن تأخذ من وقتكم الثمين أكثر من ساعة لإكمالها. ملخص نتائج البحث سيُرسل إليكم بواسطة الإيميل إن أردتم ذلك.

كونوا متأكدين من أن أي معلومات مقدمة منكم ستُعامل في سرية تامة وأنه لن يتم تحديد أو تمييز أياً من المشاركين في البحث بشكل فردي في نتائج الرسالة أو التقارير أو غيرها من الأبحاث المنشورة.

يحق لكم بالطبع التوقف عن المشاركة في هذا البحث في أي وقت تشاءون كما يحق لكم أيضاً رفض الإجابة عن أسئلة معينة في المقابلة.

إذا كان لديكم أيه استفسارات بخصوص هذا البحث, الرجاء التواصل عن طريق العنوان أعلاه او عن طريق الهاتف 8201 3113(8 61+) او عن طريق الفاكس 8201 3113(8 61+)او عن طريق ارسال بريد البكتروني الى (Robert.goodwin@flinders.edu.au).

أشكركم على اهتمامكم ومساعدتكم,,,
تقبلوا فائق تحياتي واحترامي,,,

د. روبرت قوودوين
محاضر اول
كلية علوم الحاسب الآلي والهندسة والرياضيات - جامعة فلندرز, استراليا

أسئلة الباعة:

1. من وجهة نظرك كيف تجد التجارة الألكترونية في المملكة العربية السعودية مرضية أم غير مرضية ؟

2. ماهو معدل استخدامك للتسوق الالكتروني أسبوعيا أو شهريا أو سنويا؟ وكم معدل ماتنفقه عبر التسوق الالكتروني أسبوعيا أو شهريا أو سنوياً؟

3. هل تعتقد أن التسوق الالكتروني يحتاج الى الالمام بشكل كبير على مهارات الكمبيوتر والانترنت أم لايحتاج الى ذلك؟ في كلا الحالتين من وجهة نظرك مامقدار مايحتاجة الشخص الى معرفة بالكمبيوتر والانترنت للتعامل مع التسوق الالكتروني؟

4. ماهي الاسباب التي تجعلك تقوم بالتسوق عبر الانترنت ؟ الرجاء كتابة على الاقل خمسة أسباب ؟
5. ماهي المنتجات التي غالبا تقوم بشرائها من الانترنت؟
6. هل تعتقد أن أغلب المنتجات التي ترغب بشرائها موجودة في الأنترنت بشكل دائم؟ وماهو سبب توفرها او عدم توفرها في الاسواق المحليه في المملكة؟ وماهو سبب الذي يجعلك تقوم بشرائها من الانترنت اذا كانت متوفرة في الاسواق المحلية؟
7. هل واجهتك أي تجارب سيئه او جيده مع التسوق الالكتروني؟ اذا كانت التجارب جيده ماهو مدى تأثيرها الايجابي هل مثلا كانت دافع للاستمرارية للتسوق عبر الانترنت بشكل أكبر ؟ واذا كانت التجارب سيئة ماهو مدى سلبيتها هل مثلا توقفت او قل استخدامك للتسوق الالكتروني؟
8. كيف تقيم مستوى الثقة والمصداقية من خلال تسوقك عبر الانترنت في المملكة هل مرضيه أم غير مرضية؟ وهل فعلا دائما تجدهم صادقين أم هناك تحايل بشكل كثير؟
9. ماهي طرق الدفع التي تستخدمها غالبا عند قيامك بالتسوق الالكتروني في المملكة العربية السعوديه؟ وهل ترى انها فعاله وكافيه أم هناك ملاحظه في وسائل الدفع من وجهة نظرك؟
10. كيف تقيم نظام التوصيل والاستلام من قبل جهة البريد السعودي وشركات البريد الاخرى في المملكة؟ وهل ترى أنها فعالة أم لا ؟ أكتب وجهة نظرك بشكل عام حول هذا النظام؟
11. من وجهة نظرك، ما هي التسهيلات التي من الممكن أن تجعل التسوق عبر الإنترنت أكثر نجاحا وفعالية لديك؟
12. أخيرا هل لديك أي توصيات أو أفكار حول التجارة الالكترونية او أستخدام الكمبيوتر والانترنت في المملكة العربية السعودية ؟ الرجاء ذكرها

أسئلة المتاجر الالكترونية

❖ معلومات عامة

1. من هي الفئة المستهدفة لديك في تجارتك الالكترونية؟ ذكور أم أناث أم كلاهما؟ وكم تتراوح أعمارهم تقريبا (أطفال - شباب - كبار السن - أم الجميع)؟
2. اذا كانت تجارتك الالكترونية تستهدف الذكور والأناث معاً, من هم الاكثر شراءً وطلباً الذكور أم الاناث؟
3. ماهي أكثر المنتجات مبيعاً لديك عبر تجارتك الالكترونية؟
4. ماهي الوسائل المستخدمة لديك للاعلان عن منتجاتك وتسويقها؟

❖ الكمبيوتر والانترنت

5. هل تعتقد أن غالبية المجتمع السعودي لديهم خدمة الأنترنت ؟ وهل تجد أنهم يمتلكون المهارة الكافية للتعامل مع الانترنت بسهولة؟
6. من وجهة نظرك هل ترى أن غالبية المجتمع السعودي لدية المعرفة الكافية بشكل عام حول التسوق الالكتروني والتجارة الالكترونية في المملكة العربية السعودية؟
7. من وجهة نظرك هل ترى أن التسوق عبر الانترنت يتطلب من عامة الناس الالمام بمهارات كبيره حول كيفية أستخدام الكمبيوتر والانترنت ؟

❖ الأجهزه والتقنية المتبعة

8. هل متجرك الالكتروني متاح للأجهزة والجوالات الذكية أيضا أم فقط عبر الأجهزة المكتبية والمحمولة؟ اذا كان متجرك متاح لأغلب الاجهزة ماهو أكثرها استخداما وطلباً للمنتجاتك من قبل عملائك؟ الرجاء ذكر أي معلومات حول ذلك؟
9. هل يمتلك متجرك الإلكتروني خاصية حفظ عنوان الاتصال(IP address) ؟
10. هل هناك تطبيق خاص بالجوالات الذكية تستخدمة لتسويق منتجاتك الخاصة بك؟

❖ نظام الدفع

11. ماهي وسائل الدفع المستخدمة لديك في تجارتك الالكترونية؟
12. هل وسيلة الدفع بأستخدام بطاقة الائتمان (Credit Card, Visa) متاحة لديك في تجارتك الالكترونية؟ اذا كان الجواب بنعم , هل ترى غالبية العملاء تُفضِل هذة الوسيلة ؟
13. من وجهة نظرك هل ترى أن ضعف أمن المعلومات هي أحد عقبات محدودية وسائل الدفع وتأخر اعتماد التجارة الالكترونية في المملكة العربية السعودية؟
14. من وجهة نظرك هل ترى أن تعدد وسائل الدفع في التجارة الالكترونيه (مثلاً: خدمة سداد , PayPal وأجهزة الصراف الالي ATMوغيرها) قد تزيد من الاقبال على الشراء عبر الانترنت في المملكة العربية السعودية؟
15. هل تفضل استخدام وسائل الدفع عبر الانترنت أم تفضل التحويل البنكي والكاش ؟ ولماذا؟

❖ نظام الاستلام والتسليم

16. ماهي الوسيلة الاساسيه لديك في تجارتك الالكترونية لتوصيل البضائع للعملاء بعد الشراء؟
17. هل تختلف وسائل توصيل البضائع لديك حسب نوعية المنتج المشتراء منك أم أن جميع منتجاتك يتم توصليها للعملاء بنفس الطريقة؟
18. هل هناك رسوم للتوصيل عند الشراء من متجرك ؟ وكم معدل متوسط رسوم التوصيل؟ وهل ترى أنها ذات تكلفة كبيره أم ضئيلة على العميل؟ وهل ترى أنها أحد العوائق للتجارة الالكترونية وعدم رضاء العملاء بسبب تكلفة التوصيل العالية؟
19. هل تتعامل مع شركات خاصة للارسال واستلام البضائع أم أنك تتعامل مباشره مع شركات التوصيل في المملكة (مثلا: DHL - FedEx - البريد السعودي) وهل هناك اتفاقيات خاصة أو عقود بينك أنت وشركات التوصيل لتسهيل الارسال والاستلام وتخفيض التكلفة الماديه؟
20. هل هناك وقت معين أو مجدول لديكم لأرسال البضائع للعملاء في الاسبوع أو في الشهر؟ وهل ترى أن خدمات التوصيل في المملكة مرضية لك وللعملاء أم لا؟
21. ماهي التحديات والعقبات التي تواجة التجارة الالكترونية في المملكة من ناحية خدمات التوصيل والاستلام؟

❖ **الثقة والمصداقية**

22. هل لديك أي عملاء متميزين VIP يتم التواصل فيما بينكم باستمرار ؟ اذا كان الجواب نعم كيف تكونت هذا الثقة فيما بينكم ؟
23. من وجهة نظرك هل ترى أن عامل الثقة هو أحد المؤاثرات الاساسية في التجارة الالكترونية في المملكة العربة السعودية؟
24. هل منتجاتك تتوافق مع مايرغبة ويطلبه المجتمع السعودي أم أنك تحاول التمييز في عرض منتجاتك حتى ولو كنت لا تعلم مدى ضمان الربح أوالخساره في المنتج الجديد ؟
25. هل يوجد لديكم نظام لخدمة العملاء بعد الشراء مثلا استرداد المنتج أو تبديلة أو غيرها ؟

❖ **الانظمة والقوانين**

26. هل تتلقى أي تسهيلات أو اهتمام من الجهات المعنية في المملكة لحفظ حقوقك أو تطوير تجارتك؟
27. هل تتوقع أن الدعم الحكومي أو الدعم من الجهات المعنية في المملكة قد تأثر ايجاباً على اعتماد التجارة الالكترونية في المملكة العربية السعودية؟
28. في رأيك ما هي العقبات والتحديات الرئيسية التي تواجهها التجارة الإلكترونية في المملكة العربية السعودية الرجاء ذكر خمسة أسباب وأكثر حول ذلك؟
29. إذا كان هناك أي توصيات أو أفكار تعلم أنها قد تفيد في إعتماد التجارة الالكترونية في المملكة و تريد اضافتها الرجاء ذكرها ولك جزيل الشكر والعرفان.

APPENDIX G: RECOMMENDATIONS

Given the problem of the low adoption rate of e-commerce and online shopping in Saudi Arabia, the present research sought the factors that positively influence the growth of e-commerce and the factors that negatively affect e-commerce adoption for potential users in Saudi Arabia. Therefore, in this section, possible strategic solutions are provided as recommendations for the government of Saudi Arabia and e-commerce organisations in order to increase the pace of e-commerce adoption.

Recommendations for Saudi Arabia's government

Improving the payment system. The present research found that the payment system had a significant impact on the adoption of e-commerce in Saudi Arabia. Analysis of the data, both qualitative and quantitative, indicated that the payment system did not operate safely or securely enough to encourage the uptake of e-commerce activity, even if the individual knew how to use online facilities.

The government could make a considerable contribution to improved systems of payment for online commerce simply by extending the current government e-payment system to e-commerce businesses and organisations. SADAD is used for all kinds of bill payment in Saudi Arabia. It is a well functioning and secure payment system, and interview analysis showed that both e-commerce managers and users want SADAD to be an option for e-commerce payment.

In addition, the government could take action through the Ministry of Finance in order to provide shopping cards, or debit cards using the banks. Issues related to credit cards could be reduced through targeted restrictions on the use of debit or shopping cards.

Mailing address and mail box facilities. The lack of an efficient and convenient method for delivering what is ordered online was found to be a negative factor for e-commerce growth in Saudi Arabia. Currently, there are no mailing addresses or mail box systems in the kingdom. It is therefore very difficult to receive packages since a description of the neighbourhood is required to direct deliveries.

The government of Saudi Arabia should improve this situation by ensuring that citizens in the Saudi Arabia have an address or mail box facilities. Saudi Post should introduce accurate geo-information (geo-code) assigning a location and address for each parcel of land and make them publicly available and clear to all. As a part of government, Saudi Post should improve and use modern technologies so that people can easily use mail box facilities to receive deliveries from e-stores.

Legislative framework development. The government should set clear rules and regulations for e-commerce business organisations and users in Saudi Arabia, and makes them publicly available through their website. At present no clear act or rules have been developed for e-commerce. The lack of a proper legal framework makes it difficult for online businesses.

It would be helpful if the government could form an e-commerce section as a part of the Ministry of Communication to collaborate with the Ministry of Finance and private organisations, as well as the Chamber of Commerce. A separate department of e-commerce would help to construct a more professional, business-aware, helpful environment for e-commerce. Furthermore, the e-commerce department could also manage reforms that would address the issues of trust, reliability and privacy for e-commerce stores. It is anticipated that government provisions around these issues would encourage more interest in the adoption of e-commerce among Saudi Arabian citizens.

Help building trust. Trust was found to have a positive impact on e-commerce adoption in Saudi Arabia. However, users and potential users as yet do not feel they can trust online businesses. In these circumstances, the government can play a vital role. If there were separate departments for e-commerce or if the Ministry of Communication could review existing e-commerce sites and verify the trustworthiness of the businesses, then they could provide a 'Trust Mark' for those e-stores complying with business regulations to boost the confidence of potential and active e-commerce users.

Some e-commerce organisations have come together and formed a trust mark website, called the 'Mothoq Site'. This site vouches for the honesty of some e-stores, but is not related to government. The government could adopt the 'Mothiq Site' or even create a trust mark, like the

government of the United Arab Emirates (UAE), where a national electronic trust mark aimed at improving consumer confidence in e-commerce has been developed by a government organisation. This 'Mothiq Site' (Figure 9.1) is available on the websites of the UAE e-businesses, allowing shoppers to see that the UAE government has verified the organisation, and that the e-commerce vendor can be trusted.

Figure 9.1: Trust mark of UAE government (UAE government website)

Assist in infrastructure development. Developing ICT infrastructure would increase the adoption of e-commerce in the Saudi Arabia, and the national government could introduce many initiatives. The infrastructure for online commerce is nothing the users can do anything about by themselves. Good infrastructure is totally dependent upon the government.

At present ADSL is available to most internet users in large cities in Saudi Arabia. It is provided by a public-private partnership, which is mostly supported by government. Outside the large cities, however, the small towns and villages do not get coverage. Investment to spread the ADSL network might increase the growth of e-commerce, but only the government can take the decision to make such a large investment.

In addition to ADSL for internet connections, Saudi Arabia has a 3G telephone network, but support is not widely available. In many rural areas, even a 2G network is not provided by cell phone operators. Given this situation, the government could mandate that cell phone operators at least provide 2G to all areas, and increase the coverage of 3G as soon as possible. To encourage the growth of the internet, the government could also reduce the price of bandwidth and allow more operators to have licences in order to create a competitive market for internet facilities.

Education and awareness. The study found that a lack of knowledge about ICT had a negative impact on the growth of e-commerce. In addition, the lack of interest in e-commerce among the male population hinders the growth of online commerce in general. It is suggested that the

government develop and implement programs, or support teachers to develop and implement programs, to teach students ICT from secondary school level, and make ICT courses compulsory at higher levels of study.

In this context, educational programs or technical courses can be developed by the Ministry of Education, and the Saudi Arabia Ministry of Communication and Information Technology (MCIT) can develop awareness campaigns by organising annual conferences, competitions, or media campaigns. The government can also convey messages about e-commerce and the benefit of going online to shop by using government websites to encourage people to use e-commerce, online facilities.

Recommendations for e-commerce organisations

Ensure product quality and availability. It was found that people care for quality, and the availability of the product has a positive impact on the adoption of e-commerce in Saudi Arabia. The current e-commerce organisations should make more progress in providing better quality products, as well as making sure they update their inventory regularly, so that people can be sure of what they will receive and when it will be delivered.

The e-stores should be more consistent with the descriptions of the products they show online and deliver the products as offered, not a substitute. Ensuring the originality and quality, and keeping a supply of a popular product on hand would enhance the user's experience of e-commerce.

Ensure service quality. Service quality has a direct connection with prior experience, which in turn affects the adoption of e-commerce. Thus, e-commerce organisations should improve service quality in Saudi Arabia. They should have post-purchase services, have call centre facilities to take orders any time and respond to the problems the customer is experiencing. In addition, the e-commerce vendors should organise regular customer satisfaction surveys to assess their performance, and research what the customers want.

Networking. The e-commerce vendors of Saudi Arabia should form a strong network to advocate for themselves, to promote the online environment and make online shopping acceptable and desirable. The e-stores should create a common platform to discuss common issues and connect with local Chambers of Commerce to in order to secure legal and institutional

support. Additionally, they can make networking with the Minister of Communication and Information Technology (MCIT) a priority in order to discuss their problems and possible prospects.

E-commerce vendors also need to form connections with third party support system providers, such as *Paypal* or *MasterCard* to facilitate online payment for goods and services. For a delivery system, they should form connections with DHL or FedEX and Saudi Post.

The networking would enhance their capacity and increase the acceptability of online commerce at different levels.

Introducing better and updated technology. The study found people in Saudi Arabia are now mostly using the internet from their smartphones to access internet sites which are user friendly. Considering the strength of this trend, e-commerce vendors should develop applications for the smartphone and make them widely available to all. They should use more advanced web-development techniques to create business websites can be used on various types of media and easily browsed by cell phones with low internet speeds. Online business providers can already use established systems such as Magento and Shopify for efficient e-commerce design and management, and should consider these as platform options. In addition, considering the cultural aspect of online business, the websites should offer both Arabic and English pages that reflect the traditional needs and expectations of the people of Saudi Arabia.

Advertising. Advertising (a very strong marketing tool) might boost e-commerce adoption in Saudi Arabia by encouraging people to participate in online business activity. Businesses with an online footprint can advertise different deals and offers via online advertising. In addition, advertisements in traditional media might attract new clientele, here their web address of their business should be promoted. As found in the present study, social media marketing, such as Facebook advertising, Twitter tags and Instagram can be very effective ways of reaching vast numbers of internet users and encouraging them to visit their websites.