Mobile Commerce Innovation in the Airline Sector:

An Investigation of Mobile Services Acceptance in Saudi Arabia

A Thesis Submitted for the Degree of Doctor of Philosophy

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Abstract

The advancement of Information Technology (IT) has changed the business landscape in many industries and especially the airline sector. Modern Information Communication Technologies (ICT) provide powerful tools for organizations and can significantly influence their operation, structure, and strategy. The emergence of mobile technologies has created a new innovation for airline companies by increasing the availability, frequency, and speed of communication between the company and their customers.

This research aims to investigate the factors influencing the customers behavioural intention to adopt and utilize mobile services during their travel process. Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) provide the theoretical basis for explaining how consumers perceive mobile services which they access and operate by their mobile handset.

To achieve that, this research employed a mixed method of quantitative and qualitative approaches with a dominant quantitative method. A consumer web-based survey was conducted in the Saudi Arabia travel sector with respect to mobile services usage in airline sector , 307 valid questionnaires were received and analyzed by using SPSS (V.18), correlation, regression and factor analysis tests were conducted .

The findings of this research revealed that, perceived usefulness, mobility and compatibility are loaded to be one predictor of behavioural intention to use mobile services in Saudi Arabia. The reason behind it may be interpreted as customers nowadays have seen mobility and compatibility as attributes of perceived usefulness. Further, social influence, perceived ease of use and personal innovativeness were found to significantly influence the behavioural intention .whereas, perceived risk was found not to be a predictor to the behavioural intention to use mobile services in Saudi Arabia.

Finally, the model analysis and survey evaluation enable airline companies to make mobile commerce service provision decision, these findings contribute to a road map for airline companies to encourage their customers to adopt mobile services and keep them engaged during the overall travel life cycle.

Dedication

To my precious parents may Allah protect them

To my fabulous brothers and sisters

To my beloved wife Majdah, my son Turki, my daughters Talah and Taleah

for their ultimate support

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In the name of Allah the most gracious and the most merciful

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List of Publications

Journals:

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- Algethmi, M. and De Coster, R. (2011). Leveraging customer value through m-services: a proposed framework of consumer acceptance of m-services in the airline sector. Case study: Saudi Arabian Airline, 1st International Colloquium on Global Design and Marketing, 8-9/12/2011,Lincoln University, UK.

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- Algethmi, M. and De Coster, R. (2013). Individual behavior towards mobile services acceptance in the airline sector: A survey in Saudi Arabia, Academy of Marketing 20th Doctoral Colloquium, 08/07/2013, South Wales University, Cardiff, UK.

Table of Contents

Abstract **I**
Acknowledgements **III**
List of Publications **IV**
Table of Contents **V**
List of Abbreviations **VII**
List of Tables **VIII**
List of Figures **X**
Chapter One: Introduction
1.1 Research Background. **1**
1.2 Research Motivations. **6**
1.3 Research Aim and Objectives. **8**
1.4 Thesis Structure. **9**
Chapter Two: Literature Review
2.1 Airline Industry. **13**
2.2 Technology Acceptance Theories. **29**
2.3 Mobile Commerce (m-commerce). **39**
2.4 Mobile Banking (m-banking). **47**
2.5 Chapter Conclusion. **52**
Chapter Three: Conceptual Framework
3.1 The Conceptual Framework. **53**
3.2 Construct Measures. **60**
3.3 Research Hypothesis. **61**
3.4 Research Questions. **65**
3.5 Chapter Conclusion. **65**
Chapter Four: Research Methodology
4.1 Research Paradigms. **66**
4.2 Research approach within technology adoption. **71**
4.3 Research Approaches Applied in this Study. **73**
4.4 Timeline for Data Collection. **76**
4.5 Ethical Consideration. **76**
4.6 Translation. **77**
4.7 Questionnaire Design. **77**
4.8 Pilot Study. **78**
4.9 Research Design. **82**
4.10 Supplementary Qualitative Interviews. **84**
4.11 Chapter Conclusion. **84**

Chapter Five: Survey Outcomes
5.1 Introduction. **85**
5.2 Sample Profile. **86**
5.3 Travel Characteristics. **89**
5.4 Effect of Demographics, Internet Knowledge and Travel Characteristics on Behavioural Intention (BI) in Saudi Arabia. **113**
5.5 Chapter Conclusion. **122**
Chapter Six: Model Testing
6.1 Introduction. **123**
6.2 Data Screening. **123**
6.3 Test of Normality. **124**
6.4 Testing for Multicollinearity. **125**
6.5 Test of Reliability. **126**
6.6 Results from Correlation Analysis. **127**
6.7 Results from Factor Analysis. **129**
6.8 Model Testing Using Multiple Regression Analysis. **132**
6.9 Hypothesis Test Results. **134**
6.10 Revised Model. **135**
6.11 Discussion of the Findings. **138**
6.12 Results Validation. **143**
6.13 Chapter Conclusion. **147**
Chapter Seven: Conclusion
7.1 Thesis Summary. **148**
7.2 Managerial Implications. **151**
7.3 Academic Implications. **153**
7.4 Research Contribution to Knowledge. **154**
7.5 Achieving Objectives. **155**
7.6 Answering Research Questions. **156**
7.7 Limitations and Direction for Future Research. **158**
7.8 Chapter Conclusion. **159**
References **160**
Appendices **184**

List of Abbreviations

AACO	Arab Air Carriers Organization
BI	Behavioral Intention
COM	Compatibility
DOI	Diffusion Of Innovation
EOU	Ease Of Use
GDS	Global Distribution System
IATA	International Air Transport Association
IDT	Innovation Diffusion Theory
MOB	Mobility
PI	Personal Innovativeness
PR	Perceived Risk
SI	Social Influence
SITA	Societe Internationale de Telecommunications Aeronautiques
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology

List of Tables

Table 2.1: Differences between low cost carriers and full service airlines. 18
Table 3.1: Factors included in the preliminary conceptual model 59
Table 3.2: Construct measures source. 61
Table 4.1: Approaches within the two main paradigms. 67
Table 4.2 : The major differences between deductive and inductive. 68
Table 4.3: Quantitative vs. qualitative research. 70
Table 4.4: Differences between developed and developing countries. 72
Table 4.5 : Sample profile for the pilot study. 79
Table 4.6 : Travel attitude for the pilot study. 80
Table 4.7: Current mobile usage for the pilot study. 80
Table 4.8: Measurement scales reliability for the pilot study. 81
Table 5.1: Sample profile for the main study. 86
Table 5.2: General computer knowledge and internet usage for the main study. 87
Table 5.3: T-test for gender effect on the behavioral intention (BI). 114
Table 5.4 : T-test for nationality effect on the behavioral intention (BI). 114
Table 5.5 : One- way Anova test for the effect of age group on the behavioral intention (BI). 115
Table 5.6: Tukey post hock comparison for age group. 116
Table 5.7: One- way Anova test for the effect of educational level on the behavioral intention (BI). 117
Table 5.8: One- way Anova test for the effect of internet knowledge on the behavioral intention (BI). 118
Table 5.9 : Tukey post hock comparison for internet knowledge. 118
Table 5.10 : One- way Anova test for the effect of travel distance on the behavioral intention (BI). 119
Table 5.11: Tukey post hock comparison for travel distance. 119
Table 5.12: One- way Anova test for the effect of travel frequency on the behavioral intention (BI). 120

Table 5.13: Tukey post hock comparison for travel frequency. 120
Table 5.14: T-test and one way Anova significance differences summary. 121
Table 6.1 : Shape of data distribution based on Skewness and Kurtosis values. 125
Table 6.2 : Multicollinearity test. 126
Table 6.3 : Reliability analysis. 126
Table 6.4 : Correlation matrix. 128
Table 6.5: Initial assumption of factor analysis. 129
Table 6.6: Eigenvalues and variance extracted by each component. 130
Table 6.7 : Rotated matrix (factor loading). 131
Table6.8 : Overall model significant. 132
Table 6.9 : Model summary. 133
Table 6.10 : Multiple regression analysis. 133
Table 6.11 : Hypothesis test summary. 135
Table 6.12: Key finding summary for the independent factors on the dependant factor behavioral intention. 136
Table 6.13: Interviewee profile. 145
Table 7.1: T-test and one way Anova significance differences summary. 150

List of Figures

Figure 1.1: Mobile's impact across the travel lifecycle. 2

Figure 1.2: Mobile phone subscription. 4

Figure 1.3: Mobile penetration rate by geographic regions. 4

Figure 1.4: Thesis structure. 9

Figure 2.1: Airline ownership around the world. 15

Figure2.2: Forces driving industry competition. 16

Figure 2.3: Low cost carrier seats share between 2000-2010. 17

Figure 2.4: Traditional airline model. 18

Figure 2.5: Virtual airline model. 19

Figure 2.6: E-business driven airline management. 20

Figure 2.7: Internet world users in the world by geographic regions. 23

Figure 2.8: Internet penetration rate worldwide. 23

Figure 2.9: Airlines total operating cost breakdown. 26

Figure 2.10: Airline investment in IT over the coming three years. 27

Figure 2.11: Theory of reasoned action (TRA). 30

Figure 2.12: Technology acceptance model (TAM). 31

Figure 2.13: Adaptor categories on the basis of innovativeness . 34

Figure 2.14: Innovation-decision process. 36

Figure 2.15: Theory of planned behaviour. 37

Figure 2.16: Unified theory of acceptance and use of technology (UTAUT). 38

Figure 2.17: Mobile commerce value attributes. 41

Figure 2.18 : Framework of the value creation in mobile commerce. 42

Figure 2.19: Mobile commerce characteristics. 43

Figure 3.1: The primarily conceptual model. 59

Figure 4.1: The primarily conceptual model. 78

Figure 4.2: Study research design. 82

Figure 5.1: Current mobile phone ownership. 88
Figure 5.2: Current mobile usage. 88
Figure 5.3: Travel purpose. 89
Figure 5.4: Travel purpose based on age groups. 90
Figure 5.5: Travel purpose based on gender. 91
Figure 5.6: Travel purpose based on educational level. 92
Figure 5.7: Travel purpose based on travel frequency. 93
Figure 5.8: Travel purpose based on travel distance. 94
Figure 5.9: Travel frequency per year. 97
Figure 5.10: Travel frequency based on gender 98
Figure 5.11: Travel frequency based on age groups 99
Figure 5.12: Travel frequency based on educational levels 100
Figure 5.13: Travel frequency based on internet knowledge 101
Figure 5.14: Travel distance 102
Figure 5.15: Preferred channel for completing travel process 103
Figure 5.16: The preferred channel to complete travel process based on age group 104
Figure 5.17: The preferred channel to complete travel process based on gender. 105
Figure 5.18: The preferred channel to complete travel process based on educational level. 106
Figure5.19: The preferred channel to complete travel process based on internet knowledge. 107
Figure 5.20: The preferred channel to complete travel process based on travel frequency. 108
Figure 5.21: The preferred channel to complete travel process based on travel distance. 109
Figure 5.22: The preferred channel to complete travel process based on travel purpose. 110
Figure 5.23: Customer satisfaction with mobile services provided by airline companies in Saudi Arabia. 111
Figure 5.24: Model factors differences based on age group. 112

Figure 5.25: Model factors differences based on gender. 113
Figure 5.26: Model factors differences based on educational levels. 114
Figure 5.27: Model factors differences based on internet knowledge. 114
Figure 5.28: Behavioural intention differences based on age groups. 115
Figure 5.29: Behavioural intention differences based on gender. 116
Figure 5.30: Behavioural intention differences based on educational levels. 117
Figure 5.31: Behavioural intention differences based on internet knowledge. 118
Figure 6.1: Proposed model. 132
Figure 6.2: Revised model based on regression results and factor analysis (FA). 137
Figure 7.1: Final revised model based on the regression test. 149

Chapter One: Introduction

1.1 Research Background

The business landscape nowadays has been changed by changes in information technology, especially in the airline sector. Modern information communication technologies (ICT) provide powerful tools for organizations and can significantly influence their operation, structure, and strategy. Internet proliferation, as a communication media, has enforced many organizations in general, and the travel industry and airline companies particularly, to change the way they do business by focusing their strategies on technology innovations to improve their competitive positions and to think how they can reorganize their business processes. In the airline industry, a number of tasks and functions, such as operation managements, in-flight entertainment, and customer service, depend on information communication technologies (ICTs).Thus, information communication technologies (ICTs) are used heavily by airlines and a great deal of capital has been invested in this field (Buhalis, 2004). Furthermore, Venkatesh et al. (2003) argued that a significant expansion of computer and information technologies in today's organization has occurred. Since the 1980s, it is estimated that 50 per cent of new capital investment in organizations has been in information technology.

It is argued that a number of industries are likely to be significantly changed by the emergent of mobile technologies, and this technology will force companies to reassess their strategies (Barnes, 2002). According to Scharl et al (2005), mobile devices have increased the availability, frequency, and speed of communication between customers and corporations. So, a new prospect has been created, via mobile gadgets, to provide new services for existing and potential customers (Lubbe and Louw, 2010).

Moreover, Kim et al., (2005) suggested that mobile commerce should be seen by airline companies as a new and more interactive method of doing business. Further, Smartphone's and tablets make passengers detached from their desktop PC and give them anywhere and anytime access , also the technology of mobile has impacted all stages of the travel life cycle figure (1.1) and offers the opportunity for continuous engagement (Amadeus, 2011).

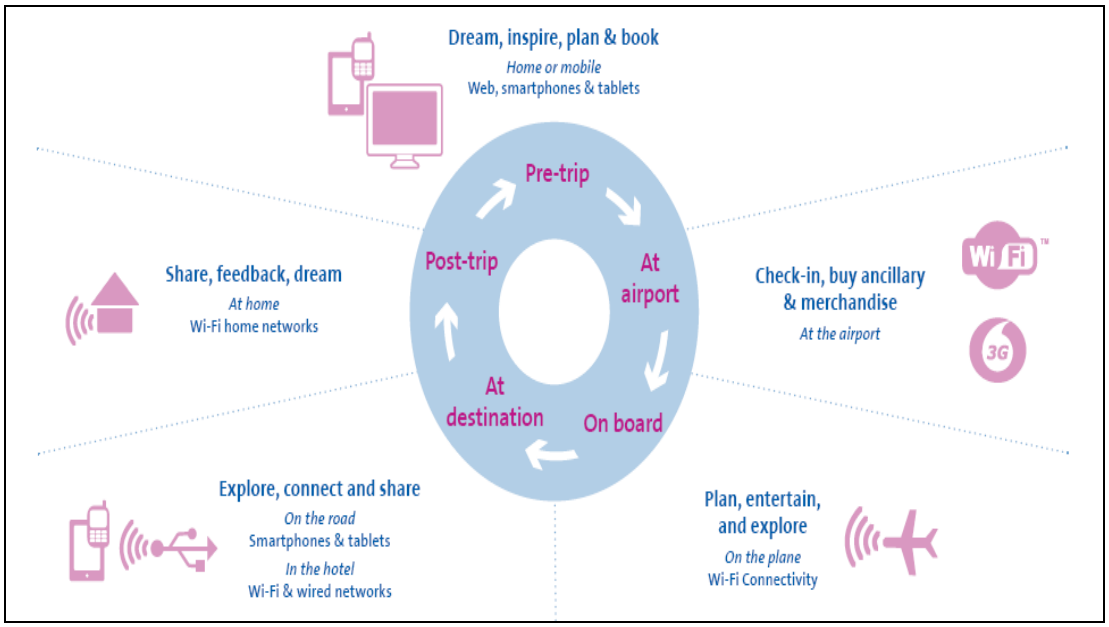


Figure 1.1: Mobile's impact across the travel lifecycle, source: Amadeus, 2011.

Mobile commerce (m-commerce) has been defined by Abu Bakar and Osman (2005) as the exchange of goods and services via mobile phones. Varshney and Vetter (2002) have viewed m-commerce as a type of e-commerce using wireless devices. Others, such as Kalakota and Robinson (2002), define mobile commerce as the use of wireless devices (mostly mobile phones) to perform electronic business transactions, including product orders, money transfers, and ticket purchases. Balasubramanian et al. (2002) defined mobile commerce as any mobile electronic business that takes place; anywhere and anytime.

Khalifa and Shen (2008) argued that m-commerce is likely to experience a significant growth for a number of reasons, including the wide increase in mobile device adoption and the clear advantages of 'anytime, anywhere' connectivity. Moreover, the positive advantage of m-commerce is driven by its unique features and characteristics, which can provide customers with added value (Siau et al, 2001; Sharma and Deng, 2002; Tang and Veijalainen, 2001) that does not exist in traditional e-commerce. These features include ubiquity, access, personalization, flexibility, localization, and the ability to access desired information. Also, delivering value-added, interactive, and location-based services through mobile phones to customers is important for gaining a competitive place in the mobile market by strengthening relationships with customers (Wang et al., 2006).

In addition, Buhalis and Egger (2008) stated that nowadays four trends control the economy and society: communication, mobility, globalization, and virtuality. Mobile communication has affected the tourism sector as it has became part of daily life and it offers a lot of promises in the B2C and B2B area. Furthermore, the tourism sector has been revolutionized by mobile technologies, as present-day passengers expect to get up-to-date, personalized information to improve their travel experience.

According to an airline trend survey (SITA, 2012), 70 per cent of respondents who are airline companies believe that smart phones will be one of the two dominant sales channels. Furthermore, airlines are expected to achieve $70 billions of mobile sales by 2016, representing 10.3% of total sales (airline trend survey by SITA, 2013).

The International Telecommunication Union's (ITU) 2013 report showed that, mobile phone subscriptions have been increased dramatically from 2 billion in 2005 to 6.8 billion in 2013 as illustrated in figure (1.2).

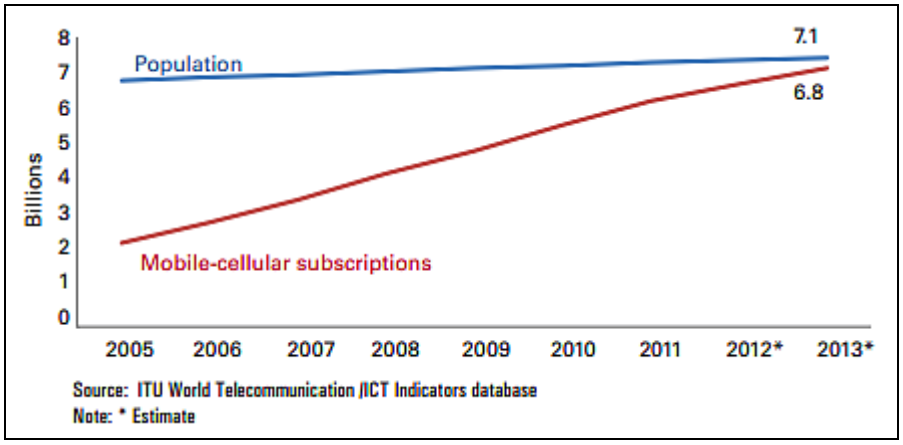


Figure 1.2: Mobile phone subscription. Source: International Telecommunication Union (ITU), 2013.

Furthermore, the International Telecommunication Union (ITU) report 2013, demonstrated that, the average penetration rate in the world is 96% but it varies in different parts of the world as illustrated in figure (1.3)

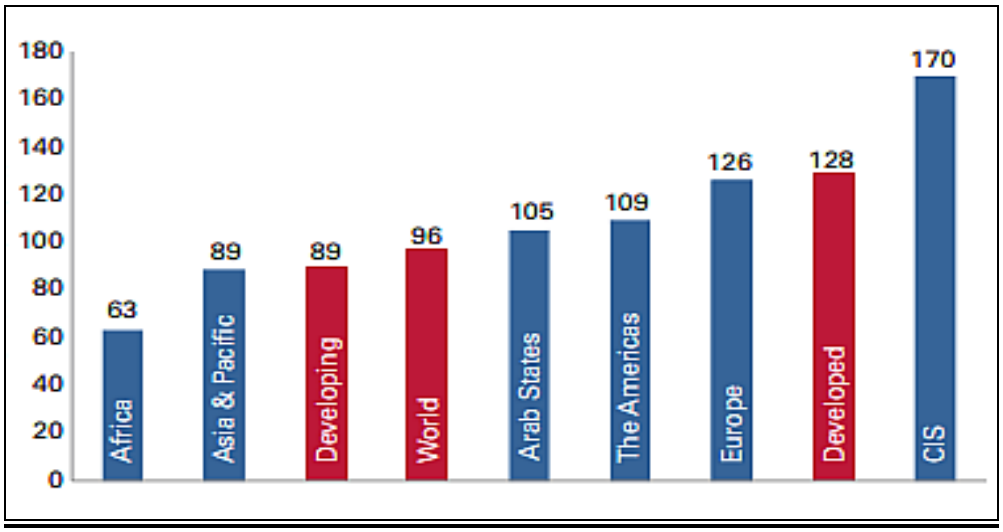


Figure 1.3: Mobile penetration rate by geographic regions. Source: International Telecommunication Union (ITU), 2013

Wu and Wang (2005) stated that, despite the wide spread of mobile technologies and applications which developed for mobile commerce, insufficient user acceptance of new information technology seems to be a barrier to the successful adoption of such new technologies. Furthermore, scholars have an anxiety about the acceptance of new information technology by consumers ,so a number of proposed theoretical models have been conducted by many researchers to clarify and to know better the personal attitudes and behaviours to new information technology (Lin, 2011). These models contain the theory of reasoned action(TRA; Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975), the technology acceptance model (TAM; Davis, 1989; Davis et al., 1989), the theory of planned behaviour (TPB; Ajzen, 1985, 1988; Ajzen and Madden, 1986), and innovation diffusion theory (Rogers, 1995).

1.2 Research Motivations

Over the past years a number of academic studies have been conducted on e-commerce. However, those focusing on the air transport industry are still rare (Shon et al, 2003). Moreover, Berne et al. (2012) and Werthner and Ricci (2004) argued that e-commerce has changed the structure of the tourism industry, and it provides an important example of this change. Thus, the tourism industry is an interesting field of research which will be the focus of this research .

In addition, Lubbe and Louw (2010) stated that there was inadequate analysis on the airline industry regarding mobile technology application and the way customers perceive its value and significance. Chang and Yang (2008) also claimed that previous studies have pointed out that the widespread application of technology-based services has benefited consumers. Yet, consumers still do not have affirmative thoughts toward them (Parasuraman and Grewal, 2000).

It is argued that starting new and innovative travel products and services is an interesting area for both academics and practitioners. However, not all new products and services are likely to succeed. Therefore, understanding the factors that influence customers to adopt new innovative technology, and understanding the travellers acceptance to adopt mobile services (i.e. check-in, seat selection, flight information) with a higher level of uncertainty to evaluate the new services in advance, is predicted to be of a significant value for practitioners (Christou and Kassianidis, 2010).

According to IATA annual review 2013, the emerging markets in Asia, Latin America, and Africa showed strong economic growth during 2012, which in turn has an impact on the increase of passenger traffic. This economic growth has supported the growth of air travel. In international markets, 65% of the passenger numbers occurred in markets connected with emerging economies, with more than half of this growth accounted for in Asia. Moreover, in 2013 it is expected that annual passenger numbers will reach three billion.

Furthermore, the Arab air transport market grew by 5.7% in 2011, reaching 133 million passengers and is expected to reach 140 million passengers in 2012 (AACO annual report, 2012).

Additionally, within the Arab world, the Saudi Arabian market is considered one of the largest domestic travel markets, with approximately 22.6 million passengers in 2011 (AACO annual report, 2012). Air travel is the favoured mode of travel chosen by Saudis since there is no consistent public transportation system. In 2012, the value of air transport sales in Saudi Arabia reached SR29 billion (1SR=3.75 $). Also, more sales value is predicted to be created in air travel as a result of the entrance for Qatar Airways and Gulf Air as domestic airline operators in the Saudi market. These two Gulf companies won licenses from Saudi Arabia's General Civil Aviation Authority in 2012 to operate domestically and internationally and to compete with two airlines that served the Saudi market, currently Saudia and Nasair (Euromonitor International report, 2013).

In Saudi Arabia, mobile commerce is still in its early stages, although the penetration rate for mobiles is high, at 181.6% with 53 million subscribers (ICT Indicators in Saudi Arabia , 2012). Previous studies, conducted to explore the constructs which affect m-commerce adoption, were mostly tested in USA, China, and Taiwan (Wei et al, 2009).

From the previous argument, the purpose of this research is to fill the present research gap in the middle east region in general, and in the context of Saudi Arabia in particular, by practically proposing and testing a model to clarify the constructs affecting the adoption of mobile commerce in Saudi Arabia, especially in the airline sector. Wei et al. (2009) claimed that there is a general lack of empirical research that gives details about models of the mobile commerce acceptance and adoption by customers.

This investigation will help to identify some of the main factors which influence airline travellers in Saudi Arabia to adopt mobile commerce. These factors could help in improving the mobile services provided by airline companies and to accelerate the adoption process.

1.3 Research Aim and Objectives

Research Aim:

To investigate customer acceptance of mobile services focusing on travel process in Saudi Arabia in order for airline firms to enhance and encourage customer usability of mobile services.

This research aim can be achieved by performing these objectives:

i. To investigate, and if possible to develop, a conceptual framework for mobile commerce adoption and the associated Saudi consumer characteristics in the airline sector.
ii. To investigate the differences of the demographics on behavioural intention to adopt mobile service technology.
iii. To empirically identify the factors affecting behavioural intention of customer acceptance of mobile services during their travel process.
iv. To attempt to validate the conceptual framework by conducting interviews.

1.4 Thesis Structure

This thesis is divided into seven chapters. These chapters are presented in figure (1.4).

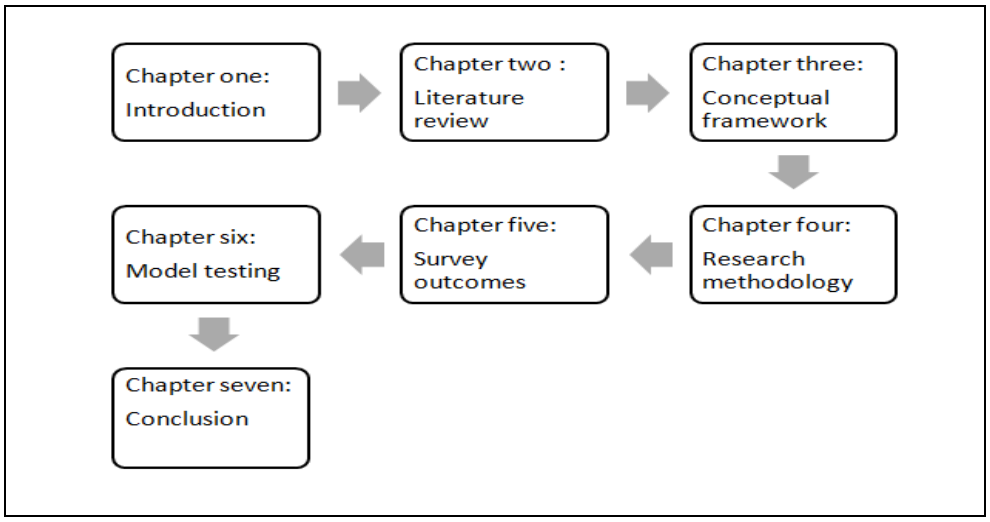


Figure 1.4: Thesis structure

> Chapter one is the introduction which includes the research motivation, aims and objectives, research contribution, and the thesis structure.

> Chapter two reviews the related literature in the field of the airline industry, mobile commerce, mobile banking, and technology acceptance models.

> Chapter three shows the conceptual framework and the factors which were extracted from the related mobile commerce and mobile banking literature, and also provides the related hypothesis.

> Chapter four presents the different research paradigms, research methodologies, the questionnaire design, the sample size, the pilot study, the research design, and the related research procedure.

> Chapter five presents the survey outcomes: including the sample profile; the travel characteristics; the effect of age, gender, and educational level; and internet knowledge on the model factors. Also, it presents the effect of age, gender, educational level, and internet knowledge on the behaviour intention.

> Chapter six presents the model testing, which includes data screening, normality test, and reliability test. Also, the different data tests conducted, such as correlation, factor analysis, and regression analysis.

> Chapter seven presents the research conclusion, implications, limitation, and suggests future work.

Chapter Two: Literature Review

Introduction

This research seeks to look at the consumer acceptance of mobile services in the airline sector in Saudi Arabia. Different theories of technology adoption and acceptance have been used in a number of studies to examine the consumer acceptance of new technologies in the fields of e-shopping, e-commerce, mobile banking, and mobile commerce. These theories include Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned (TPB), and Innovation Diffusion Theory (IDT).

Furthermore, Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) will provide the theoretical bases for explaining how consumers perceive the emergence of new technologies, such as mobile services where people access and operate mobile services via their mobile phones. Previous studies have found that Ease of use and Usefulness, as well as personal characteristics, play an important role for consumers in developing positive attitudes towards a technology acceptanc . Thus, this research utilizes the extent literature in the two research areas of mobile commerce and mobile banking to investigate the personal and contextual antecedents of behavioural intention towards mobile services.

This chapter will be divided into four sections: Section 2.1 will focus on the airline industry and the significant changes occurring in this industry such as deregulation; privatization; the emergence of low cost carriers; IATA initiatives to simplify the business; the impact of ICT and the internet on the sector; and the impact of mobile phones on the sector.

In Section 2.2, the different acceptance models and theories and the related augmented factors will be discussed to show, predict, and understand the influence of these models and theories on individuals' acceptance and adoption of new technologies. These theories and models include technology acceptance model (TAM) by Davis, 1986; diffusion of innovation (DOI) by Rogers, 1995; theory of reasoned action (TRA) by Fishbein and Ajzen's,1975; and other augmented factors.

Section 2.3 will highlight the mobile commerce literature, in general, including mobile penetration, mobile value, and mobile characteristics.

Finally, in Section 2.4 the focus will be on the development within the banking sector, particularly mobile banking, and how mobile communication has changed the business landscape in this sector.

2.1 Airline Industry

2.1.1 Deregulation

The aviation world is full of contradiction, with airline companies operating internationally. However, governments and countries fiercely regulate domestic services, and in terms of ownership and manage it is entirely nationally-controlled (Doganis, 2006).

According to Shaw (2007), governments and politician used to be in charge of the airline industry around the world. They controlled the airline operation routes, capacity, frequency, planning, and pricing strategies. Moreover, for many years the governments were involved in the airline industry as the airlines used to effectively belong to them. Thus, the domestic travel markets were highly regulated until recent years, with the United States of America and Australia being extreme examples of this.

In 1978, the regulation changed after the United States of America approved the Deregulation Act. As a result of this, airlines in America had the choice and the opportunity to fly to new destinations, without any capacity or pricing restrictions. Nowadays, many countries have followed the United States of America's transformation in the airline regulations and deregulated their domestic markets (Shaw, 2007).

It is argued that, the most important aims for the Deregulation Act 1978 are : the removal of restrictions on capacity, frequency, and flying operation rights; and opportunities for more competitive pricing (Doganis, 2006).

In the early 1980s, liberalization started to take place in many parts of the world after the Deregulation Act 1978 in the United States of America. This Act permitted the appearance of new domestic and international airlines, which had the right to compete with the national flag carriers (Doganis, 2006). These actions considerably

changed the aviation market, and many countries have now liberalized their aviation market as a result of public pressures and changes in government attitude towards greater competition in the market.

2.1.2 Privatization

In the past, government ownership was an essential issue for the airline industry. Throughout the industry maturity, people believed public ownership was more appropriate than private ownership, as governments focused not only on profits but on a wider set of objectives (Shaw, 2007).

During the 1980s, Shaw (2007) stated that nearly all the world's key airlines were owned by governments. The shift in economics and politicians has changed the situation towards the importance of efficiency that comes from private ownership rather than public ownership. Also, the airline industry has become more developed, allowing many state-owned airlines to be fully privatized, thus reducing the percentage of government ownership to the minimum.

It has been suggested that public-owned airlines experienced warning signs, such as: financial problems; over staffing; poor service in general; government involvement; missing clear strategy; and bureaucracy. Thus, to deal with these symptoms governments acknowledged privatization as a means to solve them. Privatization in the airline industry had many aims: liberalizing the top management from government restrictions; increasing efficiency; and attracting new capital to reduce company debts and to support fleet upgrading (Doganis, 2006).

Before privatization begin in the 1980s, Hanlon (2007) claimed that many governments still owned their airlines, and many countries gave generous government aid to their airlines. From 1985 to 2002, the situation changed as around 130 countries announced privatization plans, or showed their intention to privatize, and airlines found themselves in the process of being fully, or partly, privatized .

The privatization pace is different based on parts of the world, as illustrated in figure (2.1).

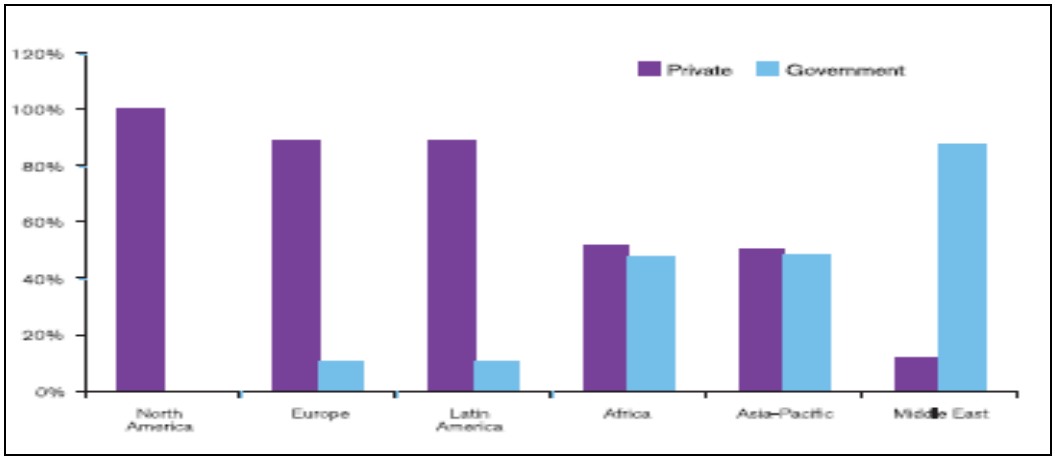


Figure 2.1: Airline ownership around the world .Source :IATA vision 2050.

2.1.3 Emergence of low cost carriers

The emergence of low cost airlines is a result of the Deregulation Act 1978, which removed the restrictions that were characteristics of the United States airline industry. Additionally, the liberalization within Europe enabled new airlines to enter the market by offering reduced fares on popular itineraries (Gilbert et al, 2001). The internet and information technology tools have empowered low cost carriers, and a number of innovations have been introduced in the airline industry, such as: electronic ticketing, clear and obvious pricing, online promotions, and financial incentives for online booking (Buhalis, 2004).

Porter (1980) suggested that competition in any industry depends on five competitive forces including: (1) the potential threat of new entrants which brings new capacity to the market and gaining a market share; (2) rivalry among existing competitors as a result of improving one competitors positions by using strategies such as price reduction, advertising battles, and product introductions; (3) pressure from substitute products by searching for products that can make the same role of the existing

product; (4) bargaining power of buyers in terms of reducing products prices, and improving the products quality or improving the service; (5) bargaining power of suppliers such as threatening the industry to increase or decrease the quality of purchased goods and services which can affect the profitability of the industry.

Figure (2.2) illustrated Porter five forces for competition in the airline industry.

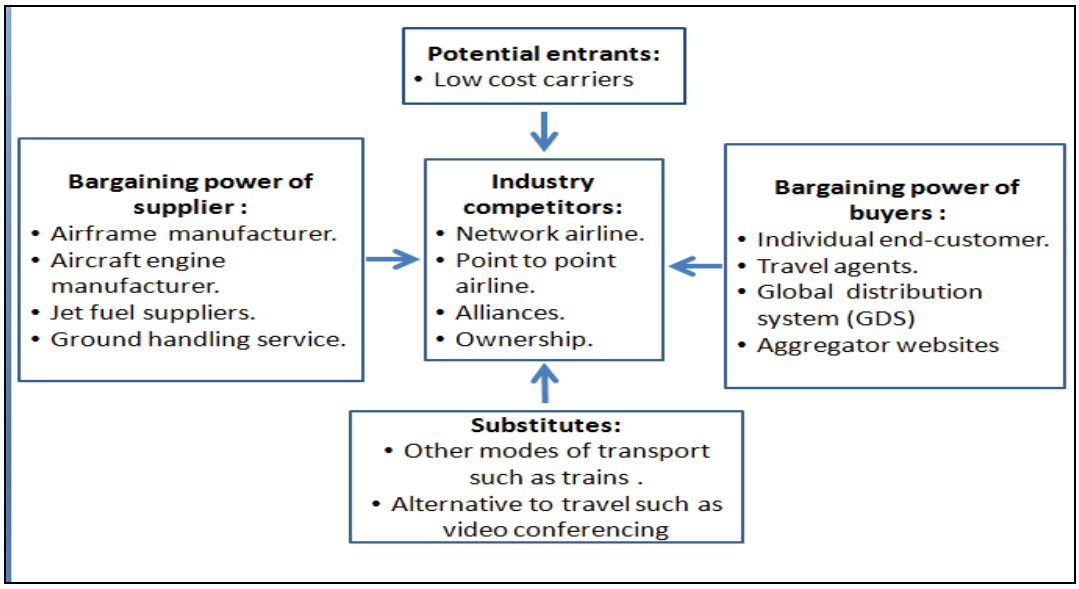


Figure 2.2: Forces driving industry competition. Source: (Porter, 1980,p.4) and IATA Vision 2050.

According to Hanlon (2007), simplifying the business is the key concept in a low cost model. A simple product is produced through straightforward operation. However, full-service airlines are to a great extent more complex.

In the United States of America, southwest airline is distinctive amongst many new US airlines which have implemented the low cost concept since the early 1970s. In Europe, Ryanair and easyJet were new low-cost entrants in the mid-1990s. They were the leading low-cost carriers in Europe. Since 2000, low-cost carriers were spread around the world after the success of southwest, Ryan air, and easy Jet.

Furthermore, between 2002 and 2004, twenty new low-cost carriers were established in Europe, and at the same time, Go in Brazil , Air Asia in Malaysia and Kulula in South Africa were doing well. In 2004, three new low-cost carriers were launched in Singapore and some others were considered for India (Doganis, 2006; Gilbert et al., 2001). In the IATA Vision 2050 report, it was revealed that low-cost carriers supplied almost one quarter of scheduled seats worldwide for the period from May 2000 to May 2010, as in figure (2.3).

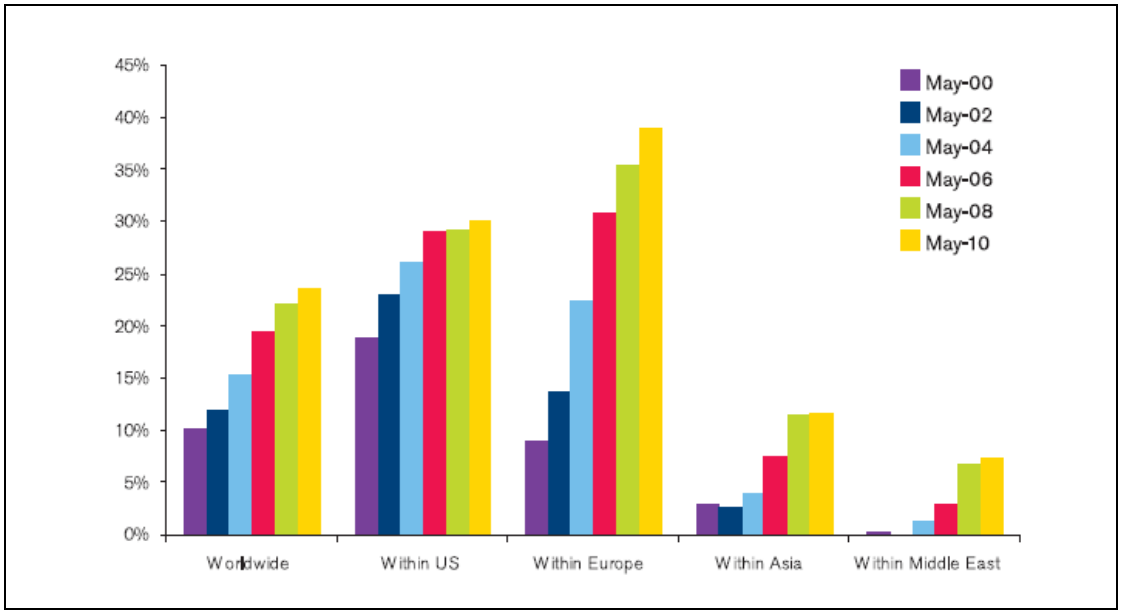


Figure 2.3: Low cost carrier seats share between 2000-2010.Source:IATAvision 2050.

Table (2.1) illustrates the main characteristics of the low-cost carriers concept in comparison with full national service airlines.

Characteristics of low-cost carriers	Characteristics of full service airlines
Point-to-point service	Hub and spoke service
Regional or secondary airports to be used	Principal and major airports of the country to be used
Reservation through telephone or by internet	Reservation usually through travel agents
Ticketless check- in	Tickets produced for each booking
Single type of aircrafts	A large fleet of different sized aircrafts
Single class configuration	Cabins are usually divided into two or three classes
No complimentary in-flight meal service	Complimentary in-flight meals and drinks
High aircraft utilization	Lower aircraft utilization
Only operate core activities, and outsource most operations	Less outsourcing of operations

Table 2.1: Differences between low cost carriers and full service airlines. Source. Adapted from Gilbert, et al ,2001.

In addition, Doganis (2006) identified two airline models. On one hand, the traditional airline model which is based on the airline which provides most of its service and functions in-house (i.e. different departments dealing with engineering, catering, ground handling, sales and marketing), as represented in figure (2.4).

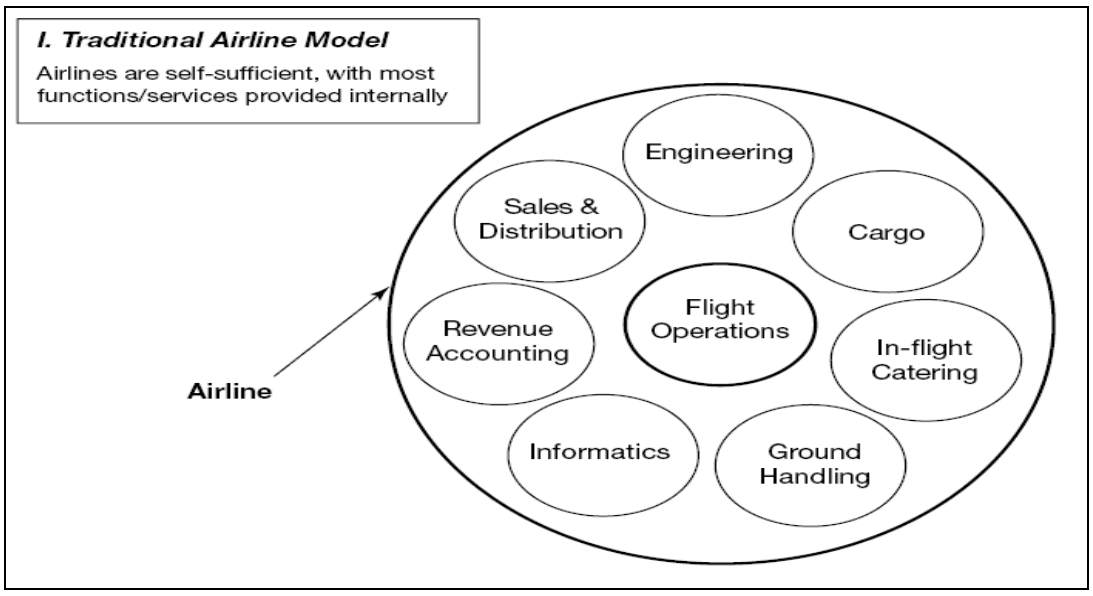


Figure 2.4: Traditional airline model. Source: Doganis, 2006.

On the other hand, the virtual airline which has a simple concept based on the airline focusing on core operation activities, and outsourcing other non-core activities. By implementing this strategy, costs could be significantly decreased. Figure (2.5) demonstrates the virtual airline concept followed by low-cost carriers.

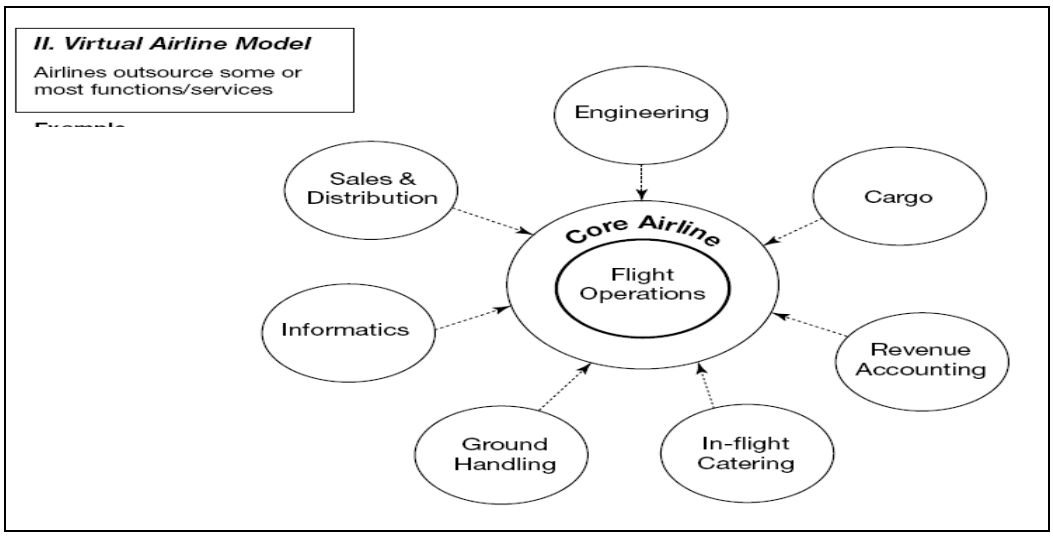


Figure 2.5: Virtual airline model. Source: Doganis, 2006.

2.1.4 The impact of information technology (IT) on the airline industry

The growth of the tourism market is obviously as a result of information communication technologies. The geographical obstacles were cancelled out by using information communication technologies, which have affected the global tourism market in areas of supply and demand.

On the supply side, the company operations become global, and they can reach remote customers easily by using information communication technologies, which means reduction in transaction costs, and fewer obstacles for entry to and exit from the market. On the demand side, information communication technologies have offered both customers and travel agencies an access to a global marketplace. This global marketplace gives the customers a much greater range of products and supplier options, alongside very low transaction costs.(Berne, et al, 2012).

Jarach (2002) suggested the wider potential impacts of e-business on airline operation in four areas: redefining the relationship with the customer; redefining the product/service profile; redefining the distribution policies and firm–customer contracts and the impact on processes within the supply chain; and redefining the e-procurement system. Figure (2.6) demonstrates these four areas of potential impact of e-business on airlines.

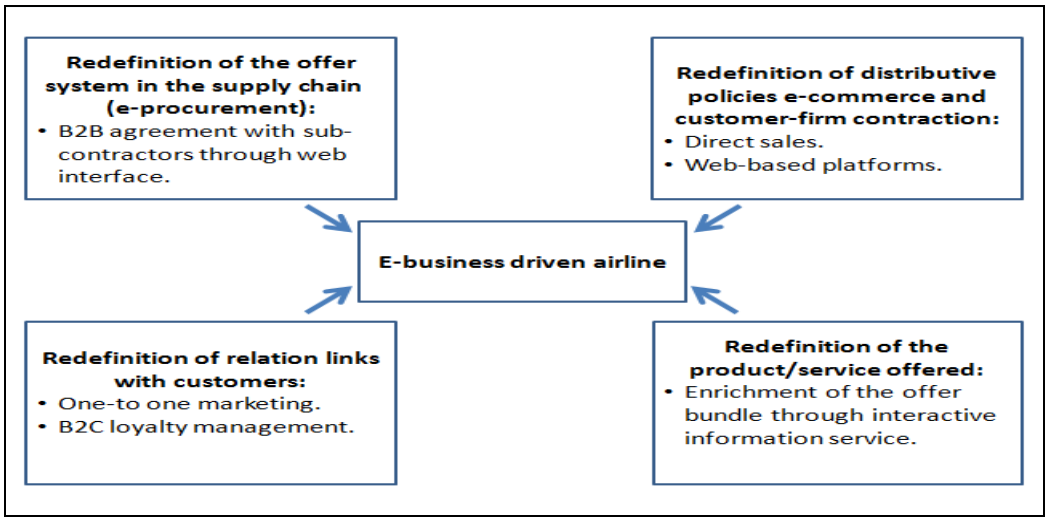


Figure 2.6: E-business driven airline management. Source: Jarach (2002).

According to Chang and Yang (2008), airlines are working in a competitive global market full of challenges. To face these challenges, airlines should restructure their companies by adopting new information technology which engages innovations in their areas of operation.

In addition, Buhalis (2004) suggested that in the business world essential changes can be produced by adopting new applications and information technologies. An extensive series of strategic implications in general, as well as in the travel and airlines industry specifically, have been created by the emergence and the expansion of the internet technology. According to Porter (1986), business can be changed by adopting new information communication technologies that can improve productivity, efficiency, and overall organization systems.

The appearance of the internet in the mid 1990s forced airline companies to change their strategy to improve their competitive position. The airlines realized that the internet was a key factor in reducing distribution costs. Later, a new business model has emerged as a result of the internet involving low-cost carriers, and they took advantage of the internet to communicate with their customers and to encourage them to book and purchase tickets through the airlines' websites (Buhalis, 2004).

According to Wynne et al. (2000), online services are forming an innovative channel to conduct business in many industries; also, it is clear that the internet has become a new direct channel which links buyers with sellers. Thus, the customer does not have to look for company opening hours or to drive to them, or even seek their sales representative. In addition, the internet provides a channel for clients that facilitates booking air tickets quickly, easily, and with large price savings, thus giving more power to customers (Ruiz-Mafe et al., 2009).

According to Yoon et al. (2006), airlines put huge investment into developing e-commerce platforms to attract customers to book and to purchase tickets through their websites. The airline IT trend survey, conducted by SITA 2012, revealed that the top two investment priorities focus on improving customer service and passenger experience, and reducing the cost of business operations by recognizing the value of technology in improving operational efficiency.

Law and Leung (2000) highlighted three reasons why the airlines have been investing capital in their websites: firstly, the internet offers a 24/7 store; secondly, it welcomes clients all over the world without any physical or geographic barriers; and, finally, it enables customers to access related information, whenever and wherever the users want.

Furthermore, Doganis (2006) argued that airlines were pushed to exploit further the e-commerce due to four main reasons. Firstly, to reduce the distribution costs. Secondly, the new trends of bypassing the travel agents and other intermediaries. Thirdly, to maximize internet benefits, such as marketing the airline services worldwide in a cheap and effective way. Finally, to increase the dynamics of pricing strategies and make these react promptly to different market conditions.

Chu (2001) stated that due to rapid changes in technology, many airline companies have been working hard to develop their own websites to smooth the progress of e-business transaction. Therefore, online airlines and other travel players must develop a product that can simplify the buying procedure and go beyond the value of conventional products and services. Likewise, Meuter et al. (2003) argued that retailers have begun to utilize a large variety of technologies in addition to the internet in order to permit customers to make and consume services electronically without needing to get in touch with company staff.

2.1.5 The internet as a distribution channel

Internet technology in the 1990s led to a revolution in the airline industry, in terms of changing the marketing opportunities, promotional activities, and pricing through airlines' websites (Shaw, 2007).

According to the internet world stats 2012, the total number of internet users reached 2.5 billion worldwide, divided by geographic regions as shown in figure (2.7).

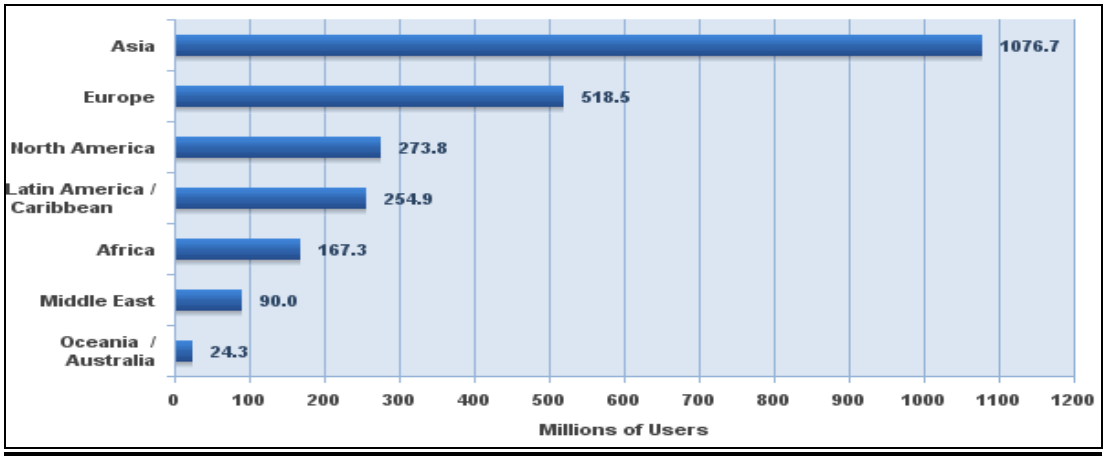


Figure 2.7: Internet world users in the world by geographic regions. Source: internet world stats (2012)

More to the point, figure (2.8) represents the average internet penetration rate worldwide, which stands at 34.3%, and is different around the world, according to the internet world stats reports 2012.

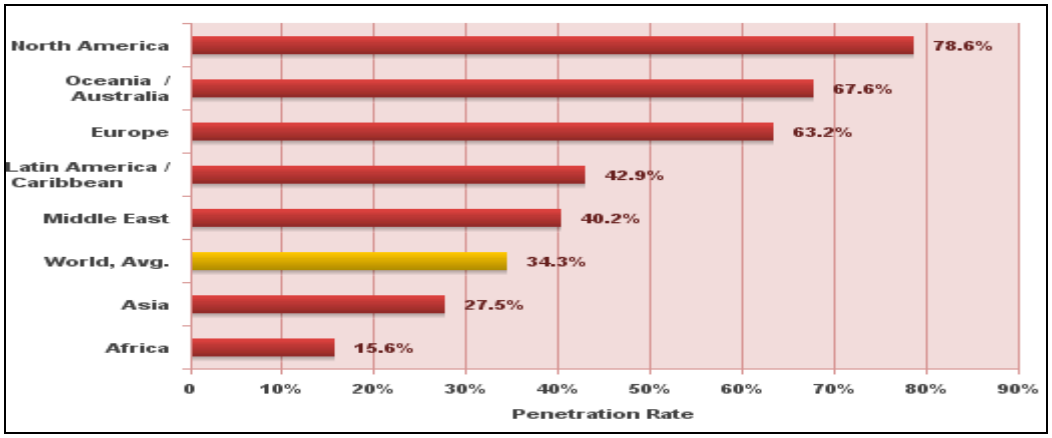


Figure 2.8: Internet penetration rate worldwide. Source: internet world stats (2012).

In the 1990s, Doganis (2006) stated that customer services had improved and that customers were impressed by the rapid growth and progress in the information technologies provided by airlines, which at the same time helped to reduce the costs. In addition, the airline companies tried hard to decrease their distribution costs, but to do so they needed to develop a solid e-commerce and information technology plan. These effective strategies will have a significant impact on all airline operations areas, including revenue improvement and cost reduction. In addition, simplifying passenger travel is a result of information technology refurbishment, in terms of e-ticketing, automated check-in, and self-service kiosks (Doganis, 2006).

It is clear that the internet has played an essential role in the business world, especially as connection and distribution channels between clients and suppliers. Furthermore, the travel industry, as with other industries, has been affected by the internet because it provides a direct channel between the airlines and their customers without the need to contact travel agents or computer reservation systems (Law and Leung, 2000).

Similarly, the internet has made a significant impact on the travel industry as a distribution channel for air travellers. Thus, buying airline tickets through the internet is now common in travel markets (Buhlais and Licata, 2002). For example, many travel firms, such as easyJet and Ryanair have launched their own websites selling their tickets directly to the customers (Kamarulzaman, 2007).

Alamdari and Mason (2006) suggested that, airlines tend to cut their distribution cost by presenting the lower prices on their own websites. Thus, airlines can boost the percentage of sales that are made online by offering incentives for customers to book directly through their websites, thus discouraging them from making their bookings through travel agents and GDSs. Correspondingly, airlines always look for ways to reduce the cost of distribution, which can amount to 20 per cent of the airline total expenses.

This 20 per cent is made up of 10 per cent travel agents' commissions , 2-3 per cent ticket cost, 2 per cent global distribution systems (GDS) charges and credit card processing costs a further 2-3 percent. Therefore, using internet technology is a possible alternative that can change ways of dealing for different distribution channels (Mason, 2002).

A study, involving 309 internet users in Spain, was conducted by Ruiz-Mafe et al (2009) to identify the main drivers and barriers affecting the use of the internet to purchase tickets. Results revealed that perceived risk and perceived usefulness have a direct effect on airline ticket purchasing intentions, while perceived ease of use has an indirect influence through perceived usefulness.

Chu (2001), in his study, tried to identify internet users' needs and expectations of airline/travel websites in Hong Kong. Five focus groups were conducted, each with a group of seven respondents. Results showed that ideal airline/travel website should be informative, interactive and attractive.

Another study was conducted by Cheng and colleagues (2006) to determine consumer acceptance of the internet as a channel of distribution in Taiwan, based on technology acceptance model (TAM). A systematic sampling of students was used in three Taiwan universities and results revealed that consumer’s perceived ease of use and the perceived playfulness would influence perceived usefulness when utilizing online channel functions. Perceived usefulness would then influence attitudes and intentions.

Additionally, Kim et al. (2009) stated that, for strategic reasons, airline companies have implemented electronic commerce (eCommerce) to achieve long-term competitive advantage and global competitiveness by enhancing customer satisfaction as well as marketing effectiveness and managerial efficiency. In their study, they extended technology acceptance model (TAM) by adding subjective norms and electronic trust (eTrust) into the model in order to identify their

significance to the acceptance of airline business-to-customer (B2C) e-Commerce websites. The results of a survey of customers of two airline companies in South Korea (KAL and ASIANA) provided general support for an extended TAM, and also confirmed its robustness in predicting customers' intention to reuse airline B2C e-commerce websites.

2.1.6 IATA initiatives to simplify the business

Airline success and profitability was affected by two main factors: namely, the recent recession in the global economy; and rising costs of fuel, which accounts for one quarter of the total operation costs, as shown in figure (2.9).

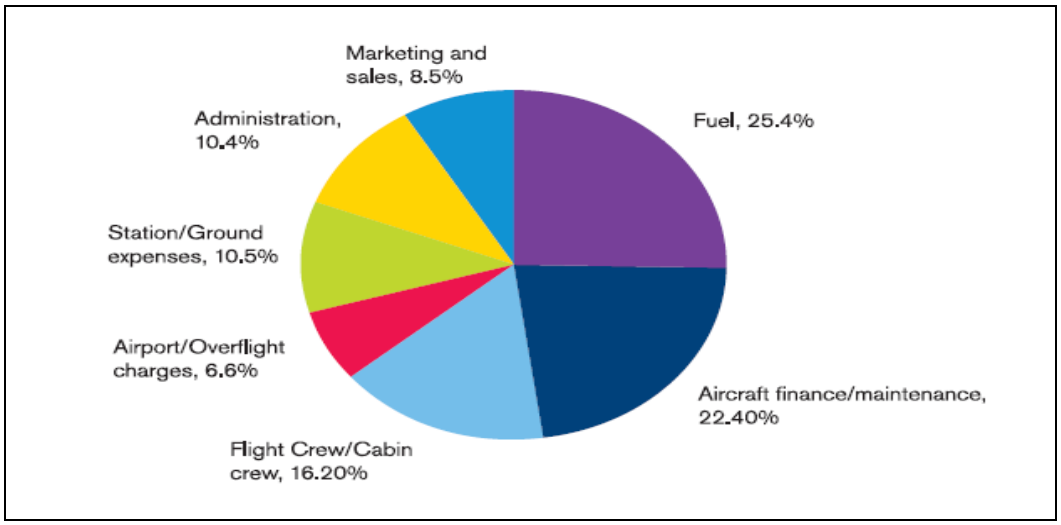


Figure 2.9: Airlines total operating cost breakdown. Source: IATA vision 2050.

In terms of improving the quality, efficiency, and effectiveness, the International Air Transport Association (IATA) has launched an initiative called simplifying the business, consisting of electronic ticketing, self-services kiosks, bar-coded boarding passes, radio frequency identification, and paperless cargo. These five innovation initiatives are able to help reduce the operation costs and enhance the passenger travel experience. (Chang and Yang, 2008; IATA Pressroom, 2004).

2.1.7 Mobile devices in the airline sector

Mobile commerce and mobile communication has provided a direct channel for companies to communicate to their customers through mobile phones, anytime and anywhere. So, a new opportunity has been created, via mobile devices, to provide new services for existing and potential customers (Lubbe and Louw, 2010). Furthermore, Kim et al. (2005) suggested that mobile commerce should be seen by airline companies as a new and more interactive method of doing business.

In the 2013, the Airline IT Trends survey about airline investments in information technology (IT) over the coming three years revealed that 66% of airlines were planning to make a significant investment to provide passengers with information via mobile devices, as exemplified in figure (2.10).

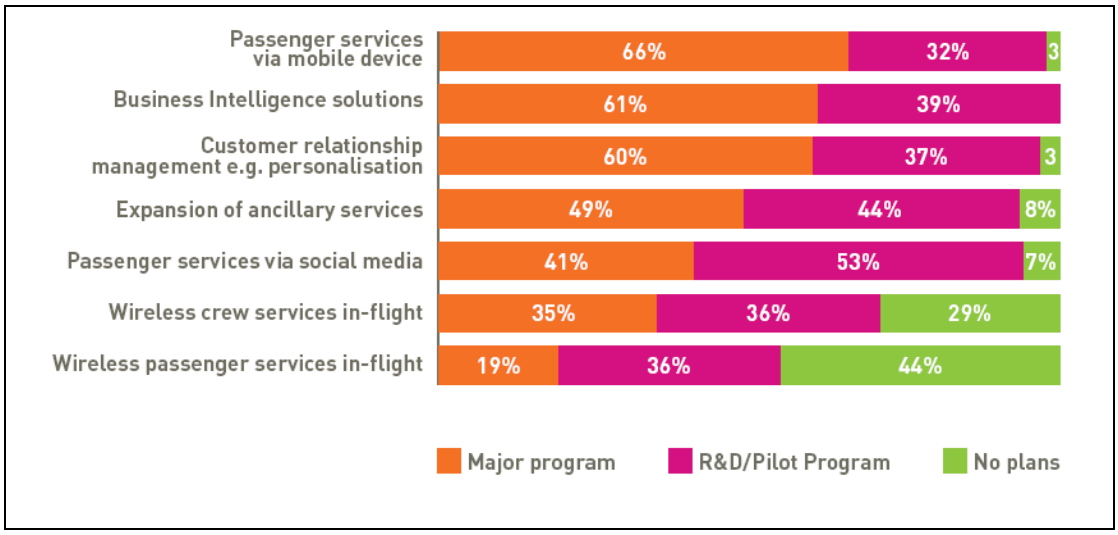


Figure 2.10: Airline investment in IT over the coming three years. Source: SITA 2013.

In addition, a survey conducted by SITA in 2012 about airline IT trends showed that mobile phones and websites will be the two main channels for processing passengers beyond 2015. Moreover, 90% of airlines are planning to sell tickets through mobile phones, as a main distribution channel, by 2015. Also, as mobile connectivity increases, customers expect real-time notification of any delays that occur in the flight schedule (IATA, 2013).

Furthermore, mobile phones will impact the air travel experience in six ways: keeping passengers informed by notifying them with any flight changes; mobile self-service applications will offer passengers greater control throughout their journey; making travel paperless; enabling m-payment; marketers will be able to send targeted content to passengers' mobile devices; and passengers will increasingly use mobile devices to create their own personal entertainment system for use on board by downloading contents from the internet before their flight (SITA, 2009).

2.2 Technology Acceptance Theories

Venkatesh et al. (2003) argued that many challenging models have been described in information technology acceptance research with different acceptance determinants sets, which explained between 17 per cent and 53 per cent of the variance in user intentions to use information technology. There are eight particular models to be considered: the theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, a model of PC utilization, the innovation diffusion theory and the social cognitive theory.

According to Wei et al. (2009), in order to clarify the factors or determinants influencing the acceptance of technology in the consumer context, a range of models and frameworks have been used in previous studies, the majority of which are based on theories such as technology acceptance model (TAM) (Davis, 1989), theory of planned behaviour (TPB) (Ajzen, 1991), and diffusion of innovation (DOI) (Rogers, 1995).

In the information system field, research has resulted in several theoretical models that explain over 40 per cent of the variance in individual intentions to use technology. Researchers are faced with a variety of models and find themselves either opting for a preferable model or selecting some of the constructs across the models (Venkatesh et al., 2003).

2.2.1 Technology acceptance model (TAM)

Davis (1986) introduced the technology acceptance model (TAM), which was derived from the theory of reasoned action (TRA). Fishbein and Ajzen (1975) stated that the theory of reasoned action (TRA) defines relationships between beliefs, attitude, intentions, and behaviour.

Figure (2.11) shows the two constructs of the theory of reasoned action:
Attitude toward behaviour: refers to the degree to which a person has favourable or unfavourable views of the behaviour in question.
Subjective norm: refers to the perceived social pressure to perform, or not to perform, the behaviour.

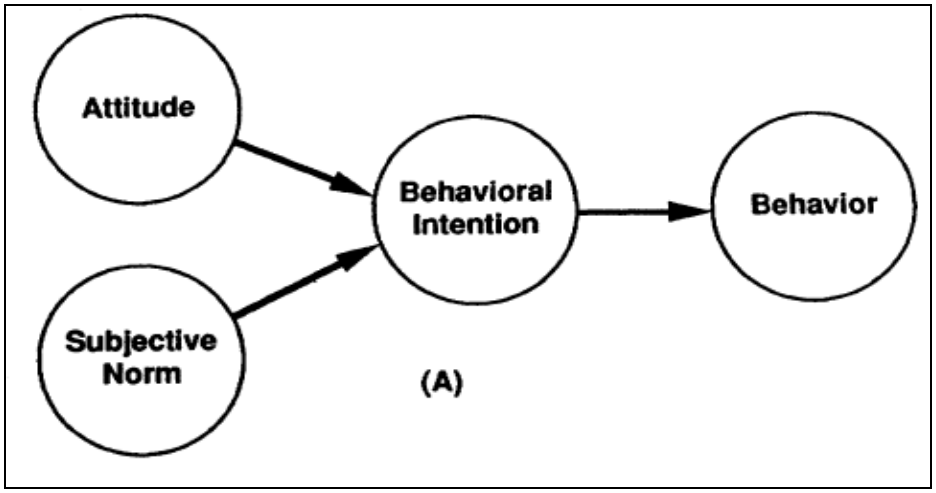


Figure 2.11: Theory of reasoned action (TRA). Fishbein and Ajzen (1975)

Conversely, the technology acceptance model (TAM) predicts user acceptance of any technology, and is determined by two factors:
Perceived usefulness: the degree to which a user believes that using the system will enhance his or her performance.
Perceived ease of use: the degree to which the user believes that using the system will be free of effort.

According to Davis et al. (1989), a key purpose of the technology acceptance model is to offer an explanation for user behaviour of computer acceptance, in general. Additionally, it provides a model that can predict user acceptance, so that the researchers and practitioners can recognize why a particular system may be unacceptable and follow appropriate corrective steps.

It is argued that computer usage in the technology acceptance model (TAM), as presented in figure (2.12), is determined by behavioural intention (BI), and behavioural intention (BI) in turn is jointly determined by the person's attitude toward using the system (A) and perceived usefulness (U) (Davis et al., 1989).

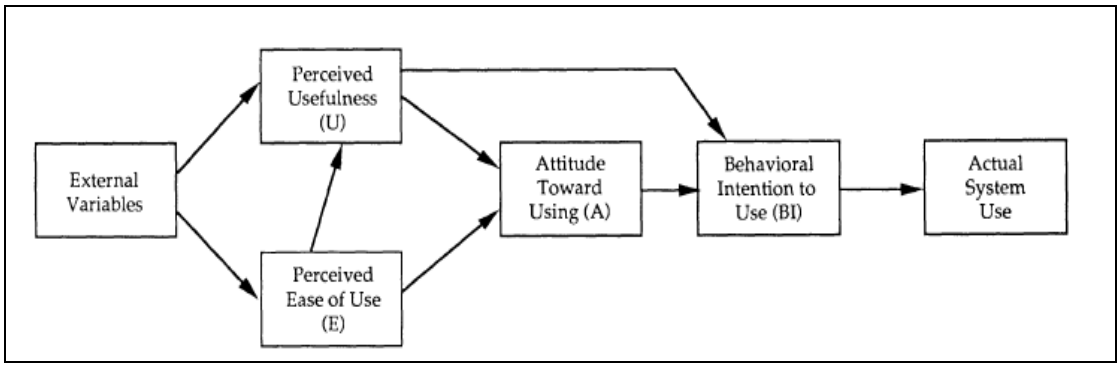


Figure 2.12: Technology acceptance model (TAM). Davis, 1989

Furthermore, Davis et al. (1989) stated that the technology acceptance model (TAM) was developed to predict and explain the acceptance of computer technology by individuals. They also claimed that the adoption of an application by individuals is due to two reasons: the performance and the function of the new technology, and how easy or difficult the system is.

The technology acceptance model (TAM) is the most popular theory amongst the models developed for predicting individuals' acceptance behaviour because of its simplicity structure and acceptable explanatory power of 40 per cent in behavioural intention . It is, however, criticized for its failure to explain the remaining 60 per cent variance in behavioural intention (Abbasi et al., 2011). Also, Lee et al. (2003)

emphasized the low explanation of variance by reference to some studies that did not incorporate external variables in the original TAM.

Moreover, the lack of barriers that hinder the individual from using an information system, if they decide to use it, is a limitation noted by Mathieson et al. (2001). A further limitation suggested (Chen et al., 2002; Moon and Kim, 2001) was ignoring the social influence on the technology acceptance model (TAM). Abbasi et al. (2011) argued another limitation is the model's generalisablity and reliability across the cultures, as the technology acceptance model is constrained within the north-American and western countries cultural context.

2.2.2 Diffusion of innovation (DOI)

According to Rogers (1995), diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. The definition consists of four main elements in the diffusion of innovations: (1) the innovation which is defined as an idea, practice, or object that is perceived by an individual or other unit of adoption as new; (2) communication channels which are defined as means by which messages get from one individual to another; (3) time involved in diffusion in the innovation-decision process, innovativeness, and an innovations rate of adoption; and (4) the social system which is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, or organizations.
In addition, many innovations need a long time to be adopted, even though their advantages are clear and obvious. Thus, for organizations and individuals it is a frequent problem to try to increase the rate of diffusion of innovation (Rogers, 1995).

2.2.2.1 Innovation attributes

Rogers (1995) argued that five attributes of innovation help to explain how individuals perceived these attributes and predict the rate of adoption.

1- Relative advantage: is the degree to which an innovation is perceived as better than the idea it supersedes.
2- Compatibility: is the degree to which an innovation is perceived as being consistent with the existing values, past experience, and needs of potential adopters.
3- Complexity: is the degree to which an innovation is perceived as difficult to understand and use.
4- Trialability: is the degree to which an innovation may be experimented with on a limited basis.
5- Observability: is the degree to which the results of an innovation are visible to others.

Furthermore, innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations.

2.2.2.2 Characteristics of innovators

Rogers (1995) stated that in the social system individuals do not adopt an innovation at the same time. Additionally, they can be categorized on the basis of their innovativeness, which is defined as the degree to which an individual (or other unit of adoption) adopts new ideas more rapidly than the other members of a system.

The five adaptor categories, illustrated in figure (2.13), include:

(1) Innovators: they are active people seeking information about new ideas, they play an important role in the diffusion process and can cope with a high degree of uncertainty about an innovation at the time of adoption.

(2) Early adopters: they are role models for many members of a social system as potential adaptors look to early adaptors for advice and information about the innovation. Also, they decrease uncertainty about a new idea by adopting it.

(3) Early majority: they adopt new ideas just before the average members of a system, thus their adoption decision is longer than the innovators and the early adopters.

(4) Late majority: they adopt new ideas just after the average member of a system, thus they feel safe to adopt new ideas as uncertainty is removed.

(5) Laggards: they are the last to adopt an innovation in a social system, thus their innovation decision process is relatively lengthy.

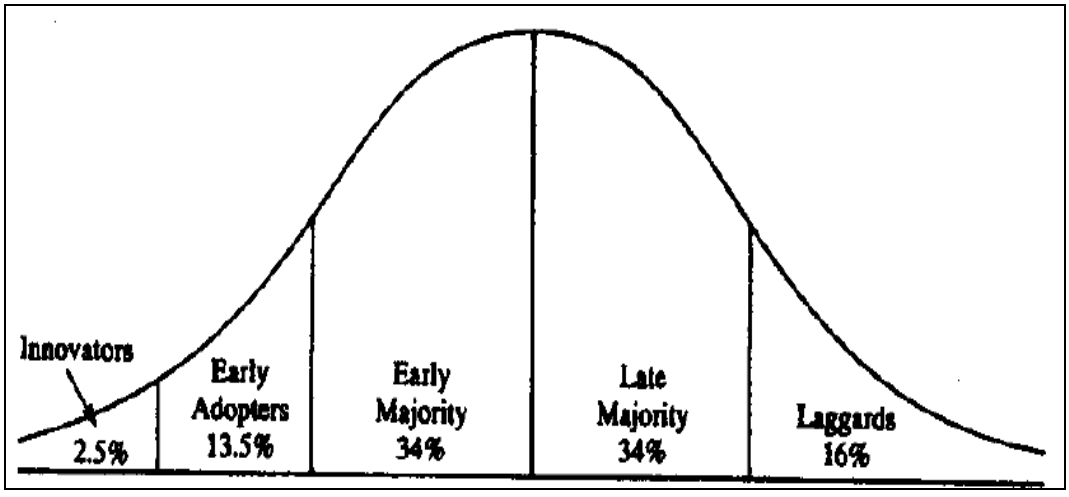


Figure 2.13: Adaptor categories on the basis of innovativeness , (Rogers,1995,p.262)

2.2.2.3 Innovation – decision process

Rogers (1995) defined the innovation-decision process as *"the process through which an individual passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision"*. This duration of this process is the length of time required to pass through these five steps:

(1) Knowledge which refers to the individual's awareness of the innovations existence and understanding of how it works. There are three types of knowledge according to Rogers (1995): awareness-knowledge is looking for information about innovation existence; how-to-knowledge is searching for information necessary to use an innovation properly; and principles-knowledge is seeking information dealing with the functioning principles underlying how an innovation works.

(2) Persuasion which means that individuals will form a favourable or unfavourable attitude toward the innovation during the persuasion stage as the perceived attributes of an innovation, such as relative advantage, compatibility and complexity, are important.

(3) Decision occurs when an individual engages in activities that lead to adoption or refection of an innovation.

(4) Implementation means the individual agree to use the innovation.

(5) Confirmation is based on an individual's experience of using an innovation, and whether or not he/she is satisfied (Rogers, 1995).

Figure (2.14) shows the innovation-decision process.

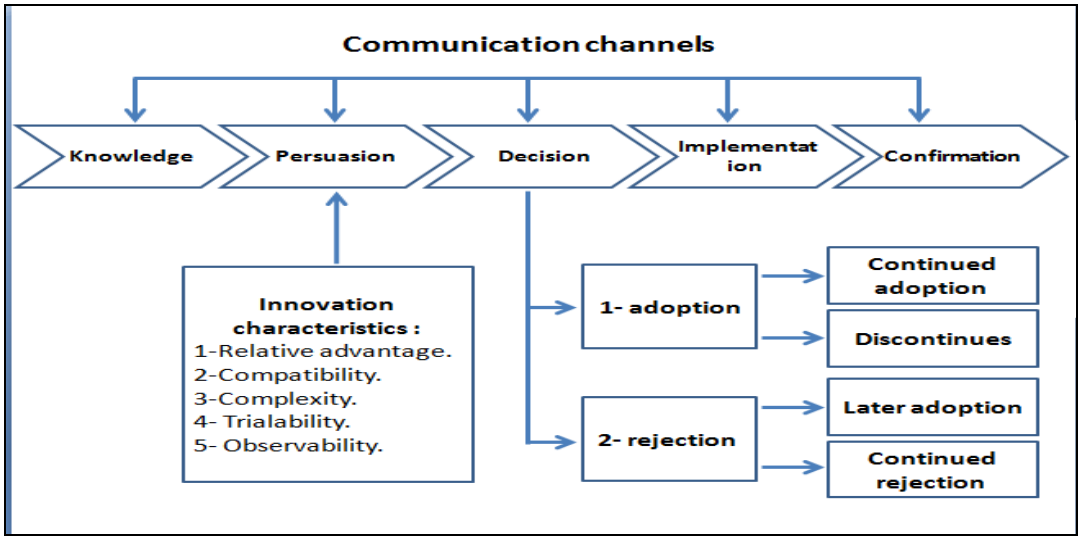


Figure 2.14: Innovation-decision process. Source: Rogers, 1995.

In general, diffusion of innovation aims to present the innovation decision process, factors determining the rate of adoption, and groups of adopters. However, scholars have argued that there are some limitations, such as how attitudes are changing and developing when making accept or reject decisions, and how innovation attributes fit into the decision process (Karahanna et al., 1999; Chen et al., 2002).

2.2.3 Theory of planned behaviour (TPB)

The theory of planned behaviour was extended from the theory of reasoned action. It postulated that the behavioural intention to perform an activity is determined by attitude, perceived behavioural control, and subjective norm (Khalifa and Shen, 2008; Wei et al., 2009). Attitude is defined as the individual positive or negative feeling about performing a behaviour (Fishbein and Ajzen, 1975). Perceived behavioural control is defined as how easy or difficult it is to perform the behaviour (Ajzen, 1991). Subjective norm is defined as "*the person's perception that most people who are important to him think he should or should not perform the behaviour*" (Fishbein and Ajzen, 1975). Figure (2.15) demonstrates the theory of planned behaviour.

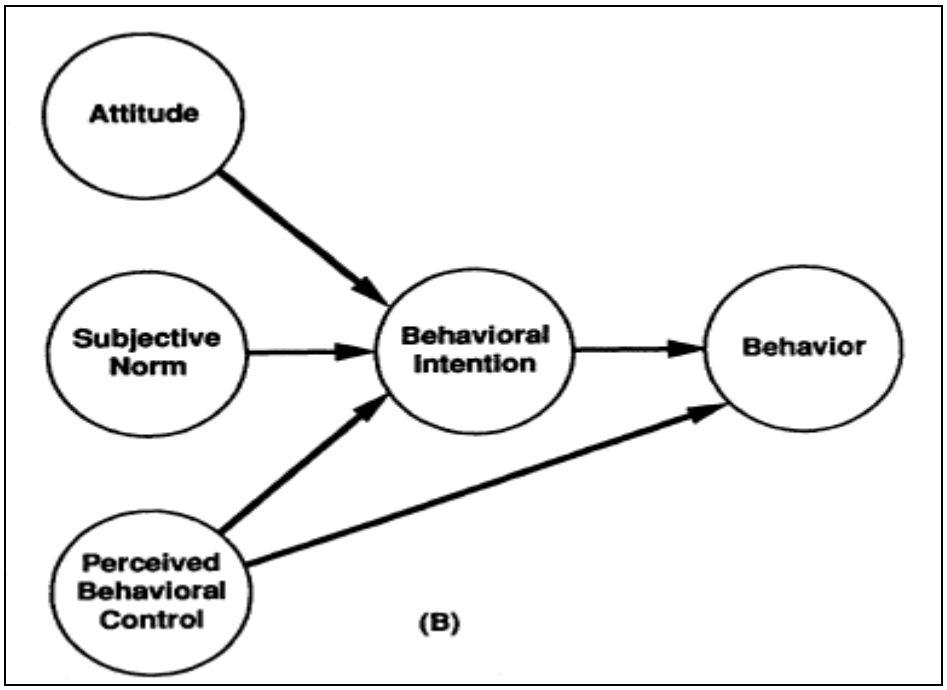


Figure 2.15: Theory of planned behaviour. Source: Madden et al.,(1992).

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

Venkatesh et al. (2003) stated that user acceptance and usage behaviour are determined directly by four factors: performance expectance, defined as the person believes that using the system will enhance his/her job; effort expectance, defined as the degree of ease associated with the use of the system; social influence, defined as how important others believe it is that he/she should use the new system; and facilitating conditions, defined as the belief that organizational and technical infrastructures exists to support use of the system. In addition, the role of the key moderators of gender, age, experience, and voluntariness of use as illustrated in figure (2.16) below.

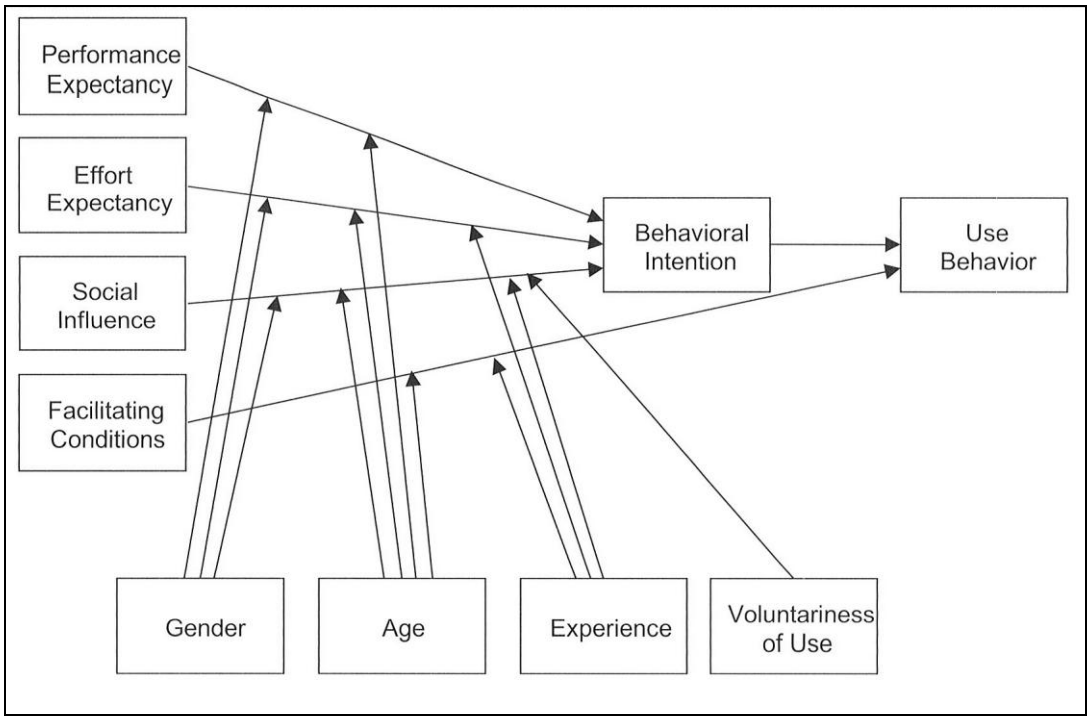


Figure 2.16: Unified theory of acceptance and use of technology (UTAUT). Source: Venkatesh et al. (2003).

2.3 Mobile Commerce (m-commerce)

According to Al-maghrabi et al. (2011), the emergence of the internet with its low cost offers a new powerful tool for communication with and information for customers and organizations. Electronic commerce and internet advances have reduced business borders and restrictions, as well as producing opportunities for organizations to contact their customers directly around the world.

Furthermore, Rose et al. (2011) stated that new opportunities have been produced for organizations to interact with customers as a result of the emergence of the internet as communication and distribution channel. These interactions happen when a customer is searching for information about a product, or when a customer uses a banking service, or is involved in social networking.

An extensive body of literature has been produced on electronic commerce in terms of website quality, online customer behaviour activities (i.e. online research and online purchase), and online service experience (Rose et al., 2011).

Nowadays, the emergence of mobile technology, and corresponding access to the internet through mobile handsets, has provided many opportunities for customers in the form of immediate information access, online purchases, downloading services, and various educational and entertainment services(Rose et al. ,2011)

The growth in numbers of mobile device users was a result to the advances in mobile technologies (Kim et al., 2008). This has enabled consumers to do many activities via their mobile devices, such as making online purchases, downloading appropriate information, engaging in educational and entertainment services, and communicating with each other (Rose et al., 2011). Also, mobile devices have increased the availability, frequency, and speed of communication (Scharl et al., 2005).

Mobile commerce, known as m-commerce, has been defined by Balasubramanian et al. (2002) as any business that occurs on the basis of anywhere and anytime. Others, such as Kalakota and Robinson (2002), defined mobile commerce as the use of wireless devices (mostly mobile phones) to perform electronic business transactions, such as product ordering, money transfer, and ticket purchasing.

Abu Bakar and Osman (2005) also defined m-commerce as exchange of goods and services via wireless mobile phones, whilst Varshney and Vetter (2002) have seen m-commerce as an e-commerce over wireless devices. Gary and Simon(2002) referred m-commerce to any financial dealings done over mobile devices. In addition, Alsultanny (2012) argued that mobile commerce, including airline ticket purchasing, hotel booking and reservation, and mobile banking, is a subset of electronic commerce.

Khalifa and Shen (2008) argued that m-commerce is likely to experience a significant growth for a number of reasons, such as the wide spread adoption of mobile devices and the clear advantages of anytime-anywhere connectivity. Zwass (2003) stated that the strength of m-commerce is mainly due to the anytime-anywhere connectivity of mobile devices, which presents massive opportunities for business process innovation and location-sensitive services.

Kim et al. (2007) argued that m-commerce is becoming one of the most promising and profitable growth markets, with the main characteristics that distinguish it from other forms of e-commerce being mobility and reach as users can start real-time contact with commercial and other systems wherever they take place (mobility). With m-commerce, people can be reached at any time(reach). These are the same characteristics which Ngai and Gunasekaran (2007) identified when they stated that m-commerce applications have two major characteristics: mobility (or portability) which users can conduct business real time via mobile devices; and broad reach, which means that people can be reached at any time via their mobiles.

In addition, Siau et al. (2001) discussed the promises and challenges of mobile commerce and its impact on business environment, identifying four unique characteristics of mobile communication which differentiates it from traditional e-commerce:

1. Ubiquity: through mobile devices, business firms are able to contact customers at anyplace at any time.
2. Personalization: as customers appreciate the ability to receive information that is relevant to their needs via mobile.
3. Flexibility: means that customers can still receive information while they are carrying out transactions.
4. Dissemination: providing information to a large consumer population.

Similarly, Clarke (2001) demonstrated that mobile commerce has four value proposition attributes over traditional e-commerce, as shown in figure (2.17). These are convenience, personalization, ubiquity and localization.

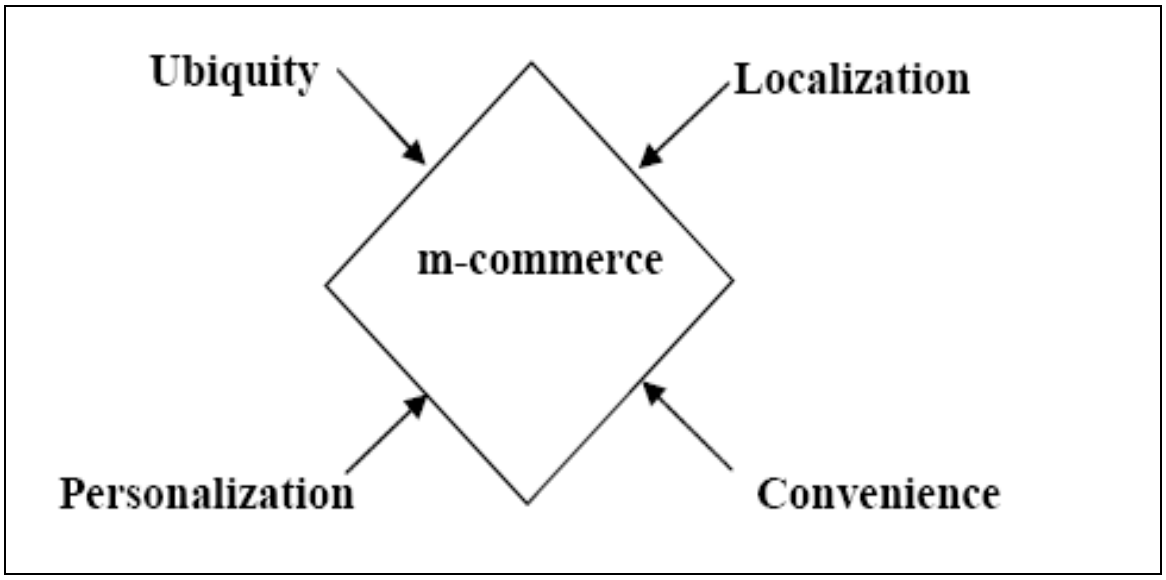


Figure 2.17: Mobile commerce value attributes. Source, Clarke (2001, p,137)

Moreover, the positive prospect of m-commerce is driven by its unique features and characteristics that can provide customers with added value (Siau et al., 2001;Sharma and Deng, 2002; Tang and Veijalainen, 2001) that does not exist in traditional e-commerce. These features include ubiquity, anytime-anywhere access, personalization, flexibility, localization, and the ability to access the needed information . Wang et al (2006) believe that delivering value-added, interactive and location-based features through mobile technology to customers is important for gaining a competitive place in the mobile market by strengthening relationships with customers. In addition, Lumpkin and Dess (2004) considered that value has been enhanced by mobile technology as it becomes more convenient and efficient. Leung and Antypas (2001) suggested that business efficiency can be improved through mobile commerce by distributing information to the staff remotely and by presenting new channels on which to interact with customers.

Anckar and d'Incau (2002), in their research into the value creation in mobile commerce, listed five different factors for wireless services which provide mobile value, as illustrated in figure (2.18).

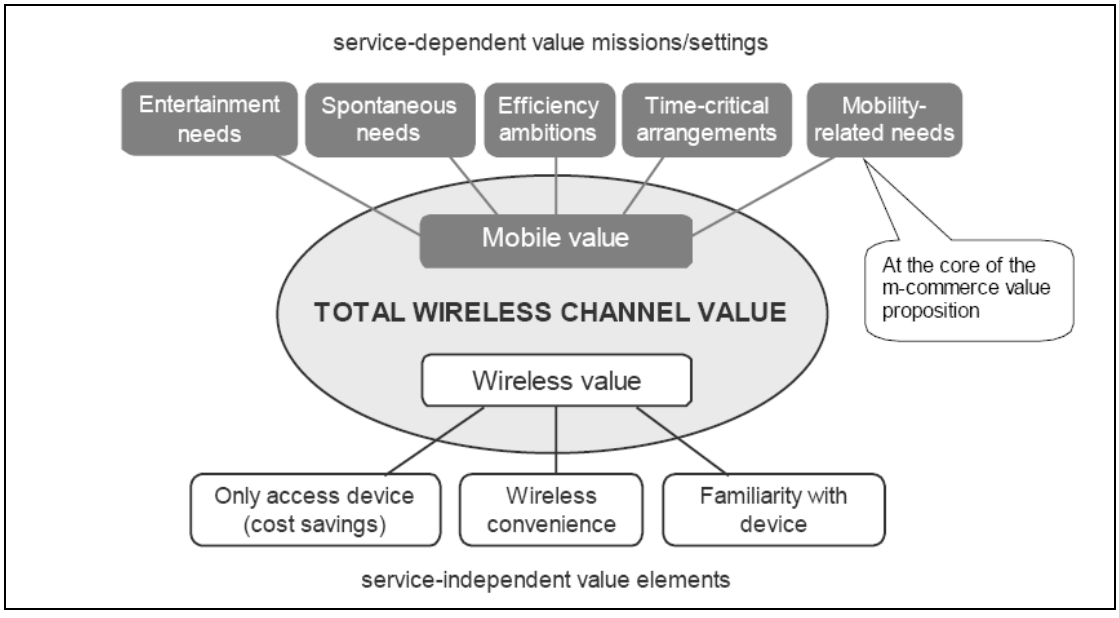


Figure 2.18 : Framework of the value creation in mobile commerce. Source: Anckar and d'Incau (2002).

These mobile value factors are defined as follows:

1. Time-critical needs and arrangements where immediate action is necessary or at least preferable.
2. Spontaneous needs and decisions where plans are not important.
3. Entertainment needs such as digital music and games.
4. Efficiency needs and ambitions, as customers nowadays are looking for more well-organized ways to do simple everyday activities, and as a timesaver for practical activities such as mobile banking and making travel reservations.
5. Mobility-related needs such as routing and tracking/pinpointing, roadside services, and location-based services.

In addition, Dholakia and Dholakia (2004) stated that mobile commerce as it evolves is dissimilar from established e-commerce in many dimensions. Figure (2.19) demonstrates some of these dimensions.

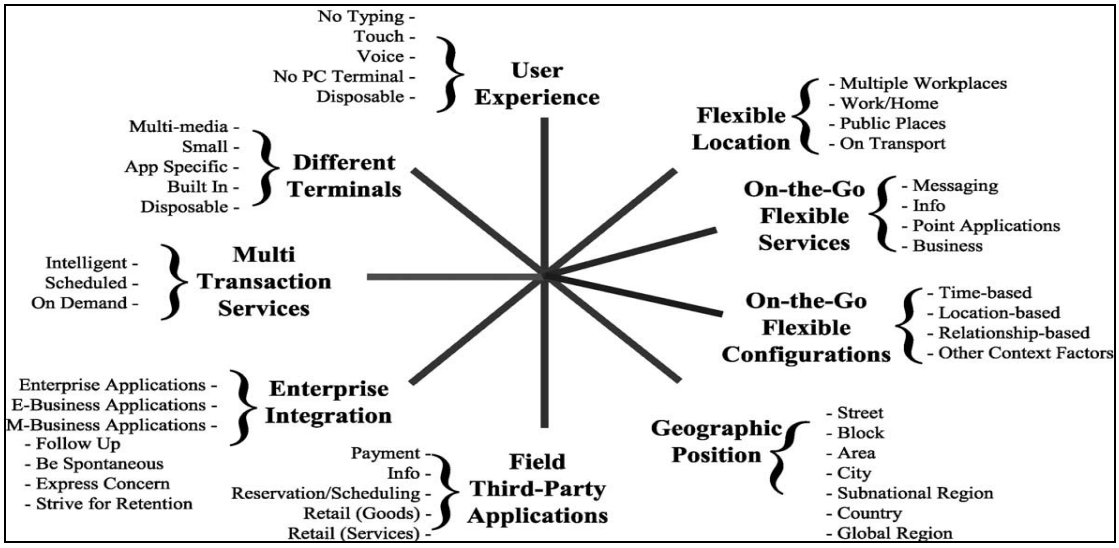


Figure 2.19:Mobile commerce characteristics .Source: Dholakia and Dholakia (2004).

The study of Lubbe and Louw (2010) explored the perceived value for m-commerce, finding that it offers a direct channel of communication with consumers via a mobile device, at any time and at any place. Mobile devices produce an opportunity to distribute new services to present customers and to attract new ones. Firms should, therefore, perceive mobile communication and commerce as an innovative and more interactive technique of doing business. As innovation creates marketing opportunities and challenges, mobile media for example exceed traditional communication and support one-to-one, many-to-many, and mass communication (Hoffman and Novak, 1996; Jee and Lee, 2002).

Bhatti (2007) sought to address factors that influence the intention of users to adopt mobile commerce. The study revealed that subjective norms, perceived usefulness, perceived ease of use and behavioural control are strong factors of intention to adopt mobile commerce.

Khalifa and Cheng (2002) investigated the role of exposure in the adoption of mobile commerce. Exposure, contains trials of new devices, communication and observation, the result found out that exposure and its subset have a considerable influence on customer's decision to adopt mobile commerce.

A study conducted by Wei (2009) and colleagues aimed to practically test the factors that influence consumer intention to use mobile commerce in Malaysia. Five factors were examined in this study: perceived usefulness, perceived ease-of-use, social influence, perceived cost, and trust. The sample size was 222 and multiple regression analysis and correlation were used to analyze the data. The results of this study indicated that perceived usefulness, social influence, perceived financial cost and trust are positively linked with consumer intention to use m-commerce in Malaysia. Moreover, perceived ease of use and trust were found to have an irrelevant effect on consumer intention to use m-commerce in Malaysia.

Mallat et al. (2006) investigated mobile ticketing services for public transportation. The study found that intention to use mobile services is influenced by use situation conditions, such as availability of alternatives and time pressure in the service use situation. This shows that the benefits of mobile services are dependent on the situation in which they are used.

Yang (2005), in his research, tried to explore how Singaporeans are influenced to adopt the m-commerce. The study implements the technology acceptance model (TAM) to examine factors affecting Singaporeans attitudes toward emerging mobile technology and applications. 866 Singaporeans students were surveyed. The study reflects consumer perceived usefulness influence attitude toward using m-commerce. It is also found that consumer innovativeness, past adoption behaviour, technology cluster adoption, age, and gender affect their adoption behaviour. The majority of positive relationships between perceived usefulness, perceived ease of use, innovativeness, adoption behaviour, and demographics are supported by the empirical data.

Lee and Jun (2005), in their study, seek to predict the consumer acceptance of mobile commerce by adding a new construct which is contextual perceived usefulness to the technology acceptance model. The findings of the study suggested that contextual perceived usefulness is an important factor in consumer acceptance of m-commerce, perceived usefulness has a significant effect on behavioural intention to use mobile commerce, and perceived playfulness has a significant effect on behavioural intentions.

Khalifa and Shen (2008) conducted a study in Hong Kong to examine specific factors related to the individual adoption of B2C transactional mobile commerce by using the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB). The survey in this study involved 202 mobile phone users who had not adopted mobile commerce at the time. Results showed the important role of perceived usefulness, self-efficacy, subjective norms, and individual characteristics variables which influence intentions to adopt mobile commerce.

A study was conducted by Wu and Wang (2005) to investigate what determines user mobile commerce acceptance in Taiwan. The proposed model was built on the extended Technology Acceptance Model (TAM) that integrates Innovation Diffusion Theory (IDT), perceived risk and cost into the TAM. 310 completed questionnaires were returned. The study findings indicated that all variables except perceived ease of use significantly affected users' behavioural intention.

Li et al. (2008) investigated the impact of gender differences on the adoption and use of mobile commerce. The model proposed that gender, age, ease of use, usefulness, price, and wireless trust will influence mobile commerce adoption , as shown by a sample of 372 respondents enrolled in a business college in the Northeast United States. The findings revealed that ease of use, and usefulness of mobile commerce services were significant. However, gender was insignificant in distinguishing between adopters and non-adopters of mobile commerce services.

Mahatanankoon and Vila-Ruiz (2007) conducted a study to examine barriers that delay the adoption of mobile commerce applications in the United States of America. A web-based survey was sent out to students enrolled at a large state university in the Midwest, 215 respondents were received. The results showed the following factors that slow down the process of mobile commerce: unawareness, device inefficiency, conventional transactions, and personalization needs.

2.4 Mobile Banking (m-banking)

According to Selvan et al.(2011), the service industry has witnessed dramatic changes in the last few years in their business operations. The service distribution has become more convenient because of the emergence of new technologies such as automatic teller machines (ATM), self-service kiosks, internet-based services, and phone-based services for voice and text. Among the service industry, the banking sector exploits these self-service technologies to maximum degree as customers can get any banking service through one or more channels mentioned before. Also, by adopting these self-services technologies, customers can get the benefits of time and cost. Similarly, banks will decrease their operation costs and get direct access with their customers.

Furthermore, Laukkanen (2007) stated that the technology innovations in the banking sectors (i.e. self-services, internet and m-banking) have reshaped their business and led to added value for the clients. Thus, the consumers moved from visiting the branches to deal with the electronic channels which are more convenient and 24/7 (Coelho and Easingwood, 2003) as a better digital alternative to other traditional bank channels, such as internet banking and automated teller machines (ATMs). Mobile banking, with its high potential, is considered as a natural evolution of internet banking (Meuter et al., 2005).

These considerable changes, which the retail banking sector witnessed in the most recent era, came as result of the interaction between the three factors of customer needs, competitive pressure, and technological innovation. The remarkable shift of customers toward technology-based self-service as an alternative to the traditional inter-personal service encounter is considered as an evolution in service delivery. As a rich proposal for automated banking and other financial services which offer much expanded functions, mobile phone banking, or m-banking, emerged as an attribute of electronic banking that provides “anytime, anywhere” access to banking services. Through this exclusive feature, mobile phone banking, as a wireless service delivery channel, offers increased value for customers (Lee and Chung, 2009).

Riquelme and Rios (2010) defined m-banking as conducting financial services via the customer's mobile. Currently mobile banking services improve customer convenience by performing all transactions anytime and anywhere. For example, checking account balances, money transfer, stock exchange, and to know the latest transaction (Laukkanen, 2007).

Moreover, Wessels and Drennan (2010) argued the significant changes that the banking sectors have experienced by implementing the technological innovation practice, in particular the movement towards self-services instead of the traditional face to face contact between the bank and their clients. As a result of this transformation, banks reduced their costs and customers increased convenience (Farquhar and Panther, 2007) .

In spite of the advantages, the use of the m-banking dealings has remained small. There seem to be some inhibitors that reduce the speed of using mobile channels in banking business. Previous studies indicate that perceived financial cost (Luarn and Lin, 2005) and perceived complexity (Lee et al., 2003) inhibits the use and adoption of mobile banking services. Furthermore, security issues are argued to be among the greatest concerns in the adoption of mobile banking (Brown et al., 2003; Luarn and Lin, 2005).

Laukkanen (2007), in his study, tried to explore customer value perceptions in internet and mobile banking, by comparing customer perceived value and value creation between the internet and the mobile bill paying service. The results tend to measure positive and negative value perceptions of customers that let them transfer via the internet and mobile phones. The location-free access to the service and the display of the device is considered as the most striking differences between these two channels. Mobile banking seems to be a significant contributor related to the ability of using the service wherever it is wanted, thus it became capable for immediate action and time savings in service consumption.

Whereas in the use of the PC the case seems to be reversed, the keyboard and the display of the device clearly contribute in inhibiting the use of the mobile bill paying service. Changes in the current situation and improvement in wireless service consumption, closely linked with technological development, such as 3G, appeared in the mobile sector, which improved significantly displays of the devices.

Research conducted by Koenig-Lewis (2010) and colleagues, seeks to fulfil three objectives. First, it aims to shed light on the factors that lead consumers to show intention to use m-banking services. Second, from a methodological perception, the study aims to investigate the Technology Acceptance Model (TAM) and the Innovation Diffusion Theory (IDT) as the most widely used bases for adoption of forecasting technology, and as a consequence, the study tries to develop and test a better model which has the ability to predict consumers' intention to use an innovative technology - m-banking service in this case. Third, the study tries to integrate potential risk and trust into these already established models. The study suggested that both concepts are vital to the successful adoption of m-banking, even though they are not yet explored in the literature in the context of m-banking in the way desired.

The new model tends to extend the TAM model by further examination of the effects of credibility, compatibility, trust, potential risk and cost on behavioural intention. The data, which was collected from an online survey with responses from a total of 263 young German people during August/September 2009, were analyzed using structural equation modelling. The results of the study demonstrated that compatibility, perceived usefulness, and risk are found to be key indicators for the adoption of m-banking services. Compatibility had a strong direct effect on the adoption of m-banking services and, additionally, it was an important antecedent for perceived ease of use, perceived usefulness and credibility. Reducing the overall perceived risk of m-banking is performed mainly by trust and credibility, which are considered as crucial in such issues.

The study of Riquelme and Rios (2010) investigated the effect of gender in Singapore as one of the moderating variables that can influence adoption of mobile banking among users of internet banking. As the mobile phone has become an essential tool for consumers to such an extent that they carry it everywhere, the study aimed to assess the moderating influence of gender on the intention of using a mobile device for banking transactions, as well as the perception of several other factors. The study suggested in its findings that the most relevant factor in predicting intention to use is the perceived usefulness of the device, followed by social standards and perception of risk, which negatively affects the intention to use, as expected. This means that consumers' intentions to adopt the technology are less when the perception of risk of the device is high. Through its influence in social norms, perception of ease of use and perception of usefulness, gender mediates the effect of intention to adopt mobile banking.

The sample chosen in this study are limited to people who are currently using the internet for banking transactions, while mobile banking innovators may not come only from current users of internet banking. As gender plays a moderate role in the perception of ease of use, social norms and relative advantage, it can be used and targeted by companies in their communication tactics to change the perception of users towards m-banking. Whilst relative advantage is more important for males, social norm and ease of use are considered to be of greater importance to females.

Akturan and Tezcan (2010) tried to determine the effect of innovation characteristics on mobile banking adoption intention. The eight characteristics of innovation (i.e. relative advantage, compatibility, complexity, image, result demonstrability, visibility, trialability, and voluntariness) are represented and their effect on adoption intention investigated. A questionnaire was used to collect the data, using a five-point Likert scale, from 311 undergraduate and graduate college students. The results of this study revealed that there is a relationship between relative advantage and compatibility, and mobile banking adoption. However, image, result demonstrability, complexity and trialability were not statically significant to the adoption intention.

A study conducted by Lin (2011) surveyed 368 participants to examine the effect of innovation characteristics (perceived relative advantage, ease of use and compatibility and knowledge-based trust) on attitude and behavioural intention about adopting or continuing to use mobile banking within possible and repeat customers. The results showed that perceived relative advantage, ease of use, compatibility, competence and integrity significantly influence attitude, and lead to behavioural intention to adopt or continue to use mobile banking. In addition, the results found that the antecedents of attitude toward mobile banking differ between potential and repeat customers.

Mohd Daud et al. (2011) examined factors that influence the adoption of mobile banking in Malaysia using the extended Technology Acceptance Model (TAM). A survey was used to collect data from 300 banking users about their perceptions of mobile banking. The findings of this study exhibited that perceived usefulness, perceived credibility and awareness about mobile banking have significant influence on user's attitude and influence the intention toward mobile banking.

Wessels and Drennan (2010) sought to address the key motivators and inhibitors for consumer acceptance of m-banking, especially those that influence customers feelings towards, and intention to apply, self-service banking technology. A web-based survey was conducted by sending 3000 email invitations in Australia, and 314 responses were received. Results revealed that perceived risk, perceived usefulness, cost and compatibility were found to affect consumer acceptance of m-banking. Particularly, perceived usefulness and compatibility were both found to have a strong positive influence on attitude and intention to use m-banking.

Some other previous studies have addressed the factors that determine the adoption of m-banking. For instance, perceived risk (Chung and Kwon, 2009), security and interaction (Yu and Fang, 2009), perceived uncertainty (Laukkanen, 2007), perceived usefulness, ease of use, credibility, self efficacy, perceived system quality (Kleijnen et al., 2004; Luarn and Lin, 2005), experience (Chung and Kwon, 2009) and financial cost (Yang, 2005),and time saving (Laukkanen, 2007; Yang, 2005).

2.5 Chapter Conclusion

In this chapter the researcher highlighted the developments that have occurred in the airline industry from deregulation to privatization, to the emerging of the low cost carriers, and finally how the information technologies and the emerging of the internet as distribution channels have changed the competitiveness roles in the airline industry. Furthermore, technology acceptances models, such as the technology acceptance model (TAM), innovation diffusion theory (IDT), and theory of reasoned action (TRA), have been reviewed to extract the related factors which may influence customers to adopt a new technology, especially the literature which focused on mobile commerce and mobile banking to provide greater understanding of the phenomena.

The next chapter will focus on building the conceptual framework, based on the literature reviewed in this chapter. It will also show the construct measures for the model and the related hypothesis for the research.

Chapter Three: Conceptual Framework

3.1 The Conceptual Framework

According to Khalifa and Shen (2008), historically three theories have been used to investigate the adoption of information technology by individuals. These theories are the theory of innovation diffusion (DOI; Rogers, 1995), the technology acceptance model (TAM; Davis, 1989; Davis et al., 1989) and the theory of planned behaviour (TPB; Ajzen, 1991). Each theory focuses on a specific aspect, and the focal point of the diffusion of innovation theory is the five perceived attributes of innovations: relative advantage; complexity; compatibility; triability; and observability. Only relative advantage, compatibility and complexity have been found empirically to be related to innovation adoption (Agarwal and Prasad, 1998).Whereas, the technology acceptance model (TAM) focuses on the technology characteristics, such as perceived usefulness and perceived ease of use.

The adoption of mobile commerce is influenced by individual and social factors as well as the previous technology characteristics and the innovation attributes. Moreover, producing a stronger model would the result of the integration of these theories rather than each of them alone. Therefore, an integrative approach would be implemented to investigate mobile services adoption in the airline sector in Saudi Arabia by augmenting technological, social, and individual factors into consideration (Khalifa and Shen, 2008).

The development of the conceptual framework for this research is extracted from different technology adoption theories, which was highlighted in the previous chapter.

This framework is built primarily using the technology acceptance model (TAM), integrating factors from diffusion of innovation (DOI),and theory of reasoned action (TRA). The technology acceptance model (TAM) was chosen to be the fundamental basis for the framework because it has an explanatory power of 30-40%, and it is a well known and often cited theory in social science (Venkatesh and Davis, 2000).

In the m-commerce context, Mallat et al. (2006) argued that the adoption of mobile technologies has been tested in some research by integrated TAM and IDT, which present significant explanation for mobile services adoption and use (e.g. Lee et al., 2003; Kleijnen et al., 2004; Hung et al., 2003).

This research uses TAM and IDT as fundamental theories for the proposed model and incorporates them with some other factors from the literature, such as social influence, personal innovativeness, mobility, use situation, and perceived risk. These factors will be reviewed in the following sections (from 3.1.1 to the end of 3.1.5).

3.1.1 Perceived risk

According to Daud et al (2011), a potential decision to adopt, or to reject the adoption of new technology is affected by the perceived risk which relates to a new innovation. Pavlou (2003) identified perceived risk as the belief of individuals about the probability of suffering a failure in achieving a target. Also, Featherman and Pavlou (2003) stated that perceived risk refers to feeling uncertain about the potential negative consequences which may occur during the use of a product or service.

Lovelock et al. (2001) presented the negative correlation between willingness and service technology adoption, where the highest adoption occurs when the risk is low. It has been confirmed that high perceived risk has a negative effect on the adoption of new technology. A study conducted in mobile commerce by Wu and Wang (2005) found that perceived risk affecting the intention to use mobile commerce in Taiwan is statistically significant.

Riquelme and Rios (2010) acknowledged that the risk associated with mobile phone applications may also be perceived as greater because of the potential for loss or theft of a mobile device. Aldas-Manzano et al (2009) argued that perceived risk occurs when customers are uncertain and cannot predict their purchase decision consequences. Therefore, in the case of internet banking, perceived risk can weaken the customer perception of the consequences of the adoption.

In information technology research, perceived risk was examined, particularly in internet banking. According to Wu and Wang (2005), people are concerned about the different forms of risks presented when engaging in online activities or transactions due to the high penetration rate of internet application. In the past, primary perceived risks were regarded as fraud and product quality, but today perceived risk refers to types of risk such as financial, product performance, social, psychological, physical, or time when consumers make transactions online.

3.1.2 Personal innovativeness

Agarwal and Prasad (1998) have noticed that some individuals are ready to adopt new information technologies, while others reject them, Thus, they adapted personal innovativeness from the diffusion of innovation (DOI) in the information technology domain and defined it as the willingness of an individual to try new information technology.

Rogers (1995) stated that highly innovative people were identified as active information seekers regarding new ideas. They have a positive intention toward technology acceptance because they can cope with different uncertainty levels. Moreover, the construct of innovativeness imitates the individual's degree of adoption of ideas and products which are new to their experience, and it is linked to the new product adoption process, which has received a considerable attention from researchers (Aldas-Manzano, 2009). Innovativeness, as a personality construct, was used to predict how likely the individuals are to adopt a new innovation technology (Yang, 2005).

In addition, individuals' beliefs about new technology were developed by combining and gathering information from different media. Positive beliefs about new technology were estimated to be developed by individuals with higher personal innovativeness (Agarwal and Prasad, 1998). Also, Lu et al (2005) suggested that individuals with higher personal innovativeness tend to be more risk taking and are expected to develop more positive intention toward technology adoption.

Previous literature has examined the effect of personal innovativeness on the behavioural intention (e.g. Lu et al., 2005; Hung and Chang, 2005; Lian and Lin, 2008; Thompson et al., 2006; Fang et al., 2009). According to Limayem et al (2000) consumer attitude and intention for internet shopping was influenced by innovativeness. All these results support the association between innovativeness and new services

3.1.3 Social influence

Social influence is an equivalent to subjective norm, which is studied in both theory of reasoned action (TRA) and theory of planned behaviour (TPB) as an important determinant to explain system adoption (Wei et al., 2009). According to the theory of reasoned action (TRA), behavioural intentions are formed based on the individual's attitude towards the behaviour and on perceived subjective norms. Subjective norms capture the individual's perceptions of the influence of significant others (e.g. family, peers, authority figures and media) (Fishbein and Ajzen, 1975). Also, social influence is further acknowledged in the UTAUT besides performance expectance, effort expectance, and facilitating conditions to have a direct effect on the behavioural intention to use the technology (Venkatesh et al., 2003).

In the technology acceptance literature, social influence as subjective norm was referred to the perceived social pressure about whether to adopt a specific behaviour. Social pressure can be applied by family, friends or relatives (Ajzen, 1985). Lu et al (2005) defined social influence as social network pressure about conducting or not conducting a certain behavioural decision when belonging to different social circles.

Moreover, Riquelme and Rios (2010) defined social influence as the significant influence of others, such as family, relatives or friends, in the decision whether or not to use a product or service. Wei et al, (2009) defined it as individual belief about whether significant others think that one should engage in the activity.

In addition, social media can be classified into two types: mass media influence (which includes television, internet, radio, magazine, and newspaper) and interpersonal influence (which comes from social networks such as friends, and peers) (Rogers, 1995; Wei et al., 2009). Almaghrabi and Dennis (2011) argued that individual behaviour can be affected by social influence in different ways and in different societies depending on the culture in that society.

Furthermore, Venkatesh and Morris (2000) confirmed that an important role was played by social influence to determine user acceptance and behaviour of adapting new information technologies. Pedersen and Ling (2002) suggested that social influence cannot be ignored in any adoption model because of its role in adoption behaviour, in general. Besides, it is found that subjective norm is an important predictor of intention to use mobile commerce .

Moreover, Chang (2004) found that social influence can enhance the validity of the technology acceptance model (TAM) in intranet usage. Khalifa and Cheng (2002) also found that social influence had a strong effect on consumer intention to use mobile commerce. Social influence has been validated in the previous literature, such as e-mail usage (Karahana and Limayem, 2000), wireless finance adoption (Kleijnen et al., 2004), internet banking (Chan and Lu, 2004), and internet usage (Chang, 2004).

3.1.4 Mobility

Mobility is defined as the capability of accessing services anytime and anywhere, via cell phones or any other wireless networks and devices (Mallat et al., 2006; Coursaris and Hassanein, 2002). In the traditional e-commerce, customers use their computers and laptops to conduct the necessary transactions, whereas mobile phones enable users to access different services and information with no need to physically go to a place which provide internet access (May, 2001; Mallat et al., 2006).

Kakihara and Sorensen (2002) divided mobility into three dimensions of human interaction: spatial, temporal and contextual. These three dimensions have been significantly mobilized by intensive use of information communication technologies. The spatial and temporal dimensions relate to anytime and anywhere, while the contextual dimension extends the definition further. Contexts in which people reside continuously reframe their interaction with others, including people's cultural background, and face-to face interaction among people. Kleinrock (1996) suggested that mobile technologies provide the benefits of anytime and anywhere, and that these two benefits are the most common dimensions of mobility. Mallat et al. (2006) employ the term 'mobility' to state the benefits of 'anytime-anywhere' service access.

3.1.5 Use situation

Perry et al. (2001) argue boundaries that use situations cause to the ubiquitous computing. Particularly, the anytime and anywhere access relies on the technical and social situation of the use environment; the necessary technological infrastructure, such as network connections required for ubiquitous computing, are not offered in all places, and social situations are not all sufficient for mobile computing. Consumer behaviour literature has studied the effect of use situation, which is a significant determinant for consumer behaviour (Mallat et al., 2006; Dabholkar and Bagozzi, 2002; Gehrt and Yan, 2004). A study conducted by Mallat et al. (2006) has considered use situation as a separate factor, representing the particular conditional situation that users face when they move around and use mobile services in different places at different times.

3.1.6 conceptual framework selected factors

This study extends the technology acceptance model (TAM) which conceptualizes the technology characteristics as perceived usefulness and perceived ease of use by incorporating six additional factors mentioned previously: compatibility, personal innovativeness were extracted from the innovation diffusion theory (IDT). Mobility, use situation were taken from mobile value provision. Social influence was extracted from theory of reasoned action (TRA). Finally, perceived risk was taken from mobile banking literature.

The rationale behind choosing these factors is to include different aspects to predicts consumers intention to adopt mobile commerce. These aspects include: the technological aspects such as perceived ease of use and perceived usefulness; innovation and individual attributes such as compatibility and personal innovativeness; social aspects such as social influence; mobile value characteristics such as mobility and use situation; and perceived risk to investigate the association between risk and adoption rate as demonstrated in table (3.1).

As mobile service is new in Saudi Arabia, the investigation of intention to use mobile commerce is chosen to examine the adoption of m-commerce instead of actual use in this study, and the attitude factor has been removed from the model. As Wei et al. (2009) suggested to improve the prediction of usage intention of mobile commerce and at the same time maintain the model simplicity.

Acceptance theories	Factors selected
Technology acceptance model (TAM)	Perceived ease of use, perceived usefulness
Innovation diffusion theory (IDT)	Compatibility, personal innovativeness
Theory of reasoned action (TRA)	Social influence
Mobile value provision	Mobility, use situation
Mobile banking	Perceived risk

Table 3.1: Factors included in the preliminary conceptual model

The new extended TAM in this study is shown in Figure (3.1).

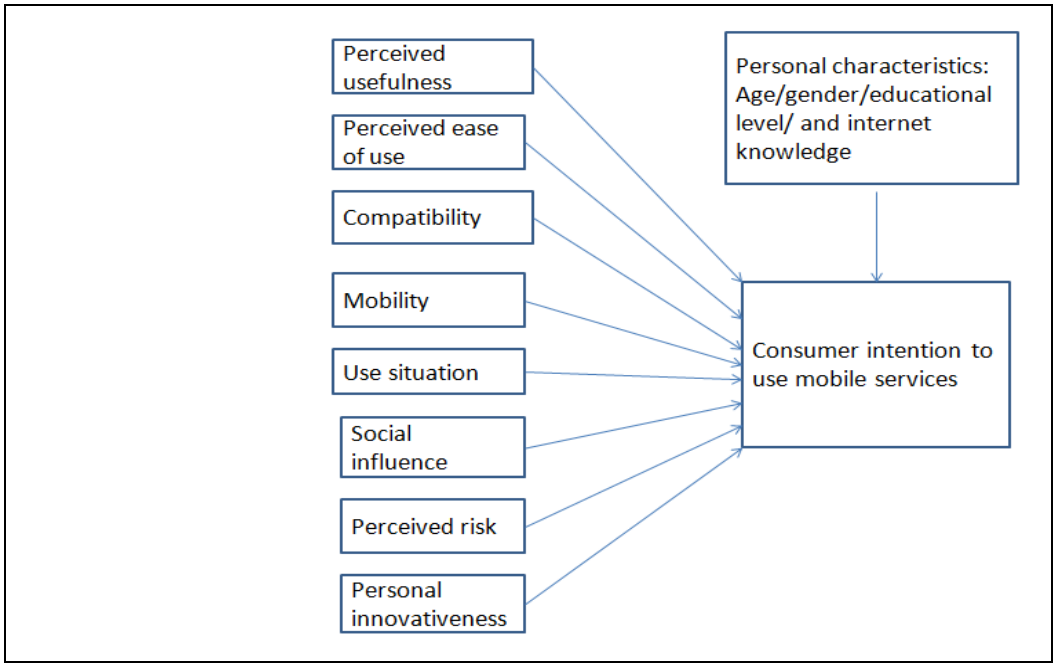


Figure 3.1: The preliminary conceptual model

3.2 Construct Measures

The constructs in this research were developed from the related literature and modified to the context of mobile commerce, where needed. Perceived ease of use, perceived usefulness, and compatibility items are from Davis (1989), Moore and Benbasat (1991), Taylor and Todd (1995) and Mallat et al. (2006). Mobility is drawn from Kleinrock (1996), Kakihara and Sörensen (2001). Use situation is provided from Dabholkar and Bagozzi (2002) and Belk (1975). Personal innovativeness measurements are adapted from Agarwal and Prasad (1998). Social influence is derived from Campbell (2007). Perceived risk items were taken from two previous studies: Zhang and Prybutok (2005) and Sweeney et al. (1999). Behavioural intention items were taken from Thompson et al (1994), Taylor and Todd (1995) and Venkatesh et al (2003) as demonstrated in table (3.2).

Construct	Source adapted
Ease of use	Davis ,1989;Moore and Benbasat ,1991;Taylor and Todd ,1995;Mallat et.al,2006
Usefulness	Davis ,1989;Moore and Benbasat ,1991;Taylor and Todd ,1995;Mallat et.al,2006
Social influence	Campbell,2007
Compatibility	Davis ,1989;Moore and Benbasat ,1991;Taylor and Todd ,1995;Mallat et.al,2006
Mobility	Kleinrock,1996; Kakihara and Sörensen,2001
Use situation	Dabholkar and Bagozzi,2002; Belk,1975
Personal innovativeness	Agarwal and Prasad,1998
Perceived risk	Zhang and Prybutok ,2005; Sweeney et al.,1999
Behavioral intention	Thompson et al 1994; Taylor and Todd 1995 ; Venkatesh et al 2003

Table 3.2: Construct measures source.

3.3 Research Hypothesis

3.3.1 Perceived usefulness

Davis (1989) identified perceived usefulness as the extent to which an individual believes that using a specific system would improve his or her job performance. Several studies have validated the consequence of perceived usefulness on intention to use new technologies (Lin and Wang, 2005; Luarn and Lin, 2005). A study conducted by Wong and Hiew (2005) recommended that the usefulness of mobile services is a strong driver for m-commerce usage, including localization, ubiquities and personalization. Therefore, as (Ho and Kwok, 2003) demonstrated, this factor not only helps to enhance the individual's performance on a daily actions, it also can help the users to achieve effectiveness and efficiency. Therefore, we hypothesise that:

H1. Perceived usefulness has a positive effect on consumer intention to use mobile service.

3.3.2 Perceived ease of use

Davis (1989) defined perceived ease of use as the level to which a person thinks that using a particular system would be free of effort. Wei et al. (2009) stated that previous studies have considered perceived ease of use as a significant determinant in information technologies adoption, such as online banking (Jahangir and Begum, 2008; Guriting and Ndubisi, 2006), wireless internet (Lu et al., 2003), and m-commerce (Luarn and Lin, 2005; Wang and Barnes, 2007; Mallat et al., 2006; Lin and Wang, 2005; Kurnia et al., 2006). As perceived ease of use means free of physical and mental effort, m-commerce should be easy to learn or to use (Wei et al., 2009). Therefore, we hypothesise that:

H2. Perceived ease of use has a positive effect on consumer intention to use mobile service.

3.3.3 Compatibility

According to Rogers (1995), compatibility is defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters". Several studies have incorporated compatibility into the TAM model in the context of m-commerce (Wu and Wang, 2005), m-payment (Chen, 2008). It is argued that the compliance of an innovation with the way of life of users results in a faster adoption rate (Rogers, 1995). Therefore, we hypothesise that:

H3. Compatibility has a positive effect on consumer intention to use mobile service .

3.3.4 Social Influence

It is argued that social influence is an equal factor to subjective norm which is added in both the theory of planned behaviour and theory of reasoned action , both theories speculate that social influence can be perceived as a significant determinant in the usage and technology acceptance (Lu et al., 2003; Rao and Troshani, 2007). According to (Ajzen , 1991), subjective norm is defined as " the perceived social pressure to perform or not to perform the behaviour". Referring to the innovation diffusion theory, social influence consists of interpersonal influence and mass media (Rogers, 1995).

Interpersonal influence usually comes from social networks, such as friends and peers. Mass media includes television, magazines, radio, internet and other appropriate media (Rao and Troshani, 2007). Also, Khalifa and Cheng (2002) found that social influence had a strong effect on consumer intention to use m-commerce.

Therefore, we hypothesise that:

H4. Social influence has a positive effect on consumer intention to use mobile service.

3.3.5 Mobility

Mobility is defined as the capability of accessing services anytime and anywhere, via mobile phones or any other wireless networks and devices (Mallat et al., 2006; Coursaris and Hassanein, 2002). In traditional e-commerce, customers use their computers and laptops to conduct necessary transactions, whereas mobile phones enable users to access different services and information with no need to find a dedicated site which provides internet connection (May, 2001; Mallat et al., 2006).
Mallat et al. (2006) suggest that the mobility expression can be used to state the benefits of anytime-anyplace access to services. Therefore, we hypothesise that:
H5: Mobility has a positive effect on consumer intention to use mobile service.

3.3.6 Use situation

Perry et al. (2001) argued that use situations may cause boundaries for ubiquitous computing. Particularly, the anytime-anywhere access relies on technical and social situations of the use environment; the necessary technological infrastructure, such as network connections required for ubiquitous computing, are not available in all places and social situations are not all sufficient for mobile computing. Consumer behaviour literature has studied the effect of use situation, finding it to be a significant determinant for consumer behaviour (Mallat et al., 2006; Dabholkar and Bagozzi, 2002; Gehrt and Yan, 2004). Mallat et al. (2006) have considered use situation as a separate factor which represents the particular conditional situation that users face when they move around and use mobile services in different places at different times. Therefore, we hypothesise that:
H6: Use situation has a positive effect on consumer intention to use mobile service.

3.3.7 Personal innovativeness

Personal innovativeness is defined as the individual's willingness to attempt to adopt and use new technology or new information systems for achieving particular aims (Rao and Troshani, 2007; Bhatti, 2007). Further diffusion researches have reported that innovativeness is linked to the behaviour of customer adoption (Bhatti, 2007). Citrin et al. (2000) reported, in their research, that consumer adoption of internet shopping is influenced by personal innovativeness. Rogers (1995) stated that highly innovative people are more able to deal with different levels of uncertain situations and may have greater positive intention to acceptance. This study incorporated this factor for the reason that it is predicted to affect the adoption of mobile commerce by individuals. Therefore, we hypothesise that :

H7: Personal innovativeness has a positive effect on consumer intention to use mobile service.

3.3.8 Perceived risk

Pavlou (2003) identified perceived risk as the belief of individuals about the probability of suffering a failure in achieving a target. It has been discussed that high perceived risk has a negative effect on the adoption of new technology, such as wireless finance (Kleijnen et al., 2004), and m-commerce (Wu and Wang, 2005). Evidence presented from previous studies has demonstrated that the individual's awareness of risk is a significant factor when adopting a new technology or service (Yang, 2009; Laforet and Li, 2005).

Lovelock et al. (2001) presented the negative correlation between the willingness and the service technology adoption, where the highest adoption occurs when the using risk is low. A study conducted in mobile commerce by Wu and Wang (2005) found that perceived risk is statistically significant, affecting the intention to use mobile commerce in Taiwan . Therefore, we hypothesise that :

H8: Perceived risk has a negative effect on consumer intention to use mobile service.

3.4 Research Questions

After conducting the extensive literature review in the areas of technology acceptance model, mobile banking, and mobile commerce from which the conceptual framework was formulated and the related relationships in the framework were hypothesised. This research attempts to answer the following questions:

1. What are the characteristics of Saudi consumers in terms of the acceptance of new technologies, particularly in the airline sector ?
2. Is there any age, gender, educational level, and internet knowledge differences in terms of the behavioural intention to use mobile services by travellers in Saudi Arabia?
3. What are the predictors of the behavioural intention to use mobile services by airline travellers in Saudi Arabia?

3.5 Chapter Conclusion

In this chapter the conceptual framework was formulated, based on the technology acceptance models literature. All the factors in the model were extracted from the related mobile commerce and mobile banking literature, which provide the base to design the questions contained in the questionnaire. Furthermore, the chapter developed the different hypotheses in the proposed model which will be tested in Chapter Six to check whether these hypotheses are supported or not.

The next chapter will provide an explanation of the different approaches and methods for conducting the research, and how data was collected and analyzed.

Chapter Four: Research Methodology

This chapter aims to describe the methodology and approach to collect and analyze data adopted by this research. The philosophical basis of the research in the area of social science, and the research design are explained .

In this chapter, Section 4.1 starts with the definition of research paradigm including the two main paradigms in social science and information technology, i.e. positivism and interpretivisim, a comparison of deductive and inductive approaches and compares qualitative and quantitative research approaches in the social science field. Section 4.2 shows the different research methods within technology adoption, while Section 4.3 discusses the research methods adopted by this study. 4.4 presents the timeline for data collection. Section 4.5 presents the ethical consideration. Section 4.6 describe the translation process and Section 4.7 describes the questionnaire design. Section 4.8 shows the pilot study, while Section 4.9 presents the research plan. section 4.10 explains the supplementary qualitative interviews. Finally, 4.11 the chapter conclusion.

4.1 Research Paradigms

According to Collis and Hussey (2009), a research paradigm is a philosophical frame that defines how to conduct research based on people's assumptions of the world and the nature of knowledge. A paradigm provides a framework that includes an accepted set of theories, methods, and ways of defining data (Hussey and Hussey, 1997). Extensive literature on research approaches and paradigms within social sciences was used for the study of contrasting information systems, such as inductive versus deductive, positivist versus interpretivist, and quantitative versus qualitative, (Fitzgerald and Howcroft, 1998).

4.1.1 Positivism versus interpretivisim

The two most distinguished research paradigms within social sciences (Blumberg et al, 2008; Collis and Hussey, 2009) are positivism and interpretivism. Positivism is a research philosophy adopted from natural science. Blaikie (2000) argued that the main concerns for positivism is to examine the essential patterns or associations in social life. Moreover, it is associated with very structured quantitative methods such as experiments and questionnaire surveys.

Interpretivism, on the other hand, proposes that social sciences require a different research philosophy and it believes that the social world cannot be understood by applying research principles adopted from natural science. (Blumberg et al, 2008; Collis and Hussey, 2009). An interpretivist would claim that statistical patterns or correlations cannot be understood on their own. For that reason, disclosing what meaning people provide for the actions that direct such patterns is a necessity. Furthermore, the interpretive approach is linked with unstructured qualitative methods, as well as participants' observation studies and in-depth-interviews (Blaikie, 2000).

Collis and Hussey (2009) summarized the approaches within the main two paradigms in Table (4.1):

Approaches within the two main paradigms:	
Positivism	**Interpretivism**
Quantitative	Qualitative
Objective	Subjective
Scientific	Humanist
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is highly specific and precise	Data is rich
Deductive	Inductive

Table 4.1: Approaches within the two main paradigms, adopted from Collis and Hussey (2009,p.58) , Hussey and Hussey (1997,p. 54)

4.1.2 Deductive versus inductive

Hussey and Hussey (1997) stated that research is classified according to its logical move from general to specific, or vice versa. It can be described thus:

Deductive research: *"...is a study in which a conceptual and theoretical structure is developed and then tested by empirical observation. So, the deductive method is referred to as moving from the general to the particular"* (Collis and Hussey, 2009).

Conversely, inductive research*:"...is a study in which theory is developed from the observation of empirical reality. So ,it involves moving from the specific to the general "* (Collis and Hussey, 2009).

Saunders et al. (2009) summarize the major differences between deductive and inductive approaches to research in Table (4.2):

Deduction	**Induction**
Scientific principles	Gaining an understanding of the meanings humans attach to events
Moving from theory to data	In-depth knowledge of the topic
The collection of quantitative data	The collection of qualitative data
Highly structured approach	More flexible structure to change research emphasis

Table 4.2: The major differences between deductive and inductive, adapted from Saunders et al (2009,p.127)

4.1.3 Quantitative versus qualitative and mixed methods

According to Hussey and Hussey (1997), the process of research can be categorized as quantitative or qualitative. Creswell (2009) claimed that, there are three types of research design: namely, qualitative, quantitative and mixed methods.

Qualitative is defined as *" a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures. Data analysis inductively builds from particular to general themes"* (Creswell, 2009).

Quantitative is defined as*:" a means for testing objective theories by examining the relationship among variables, which can be measured on instruments, so that numbered data can be analyzed using statistical procedure"*(Creswell, 2009).

Mixed methods is defined as *" an approach to inquiry that combines or associates both qualitative and quantitative forms. It involves philosophical assumptions, the use of qualitative and quantitative approaches and the mixing of both approaches in a study"* (Creswell, 2009).

It is argued that a study tends to be more qualitative than quantitative, or vice versa .Mixed methods research sits in the middle of this range because it combines both qualitative and quantitative approaches. Frequently, qualitative and quantitative research are distinct, either by using words (qualitative) rather than numbers (quantitative), or using closed-ended question (quantitative hypotheses) rather than open-ended question (qualitative interview questions) (Creswell, 2009).

The following table(4.3), demonstrates the key differences between qualitative and quantitative research:

Quantitative Research	Qualitative Research
Used to determine causal relations among phenomena	Used to conceptualize and explore new phenomena
Hypotheses formulated prior to data collection	Hypotheses emerge in the process of data collection
Large statistically determined sample of subjects to be studied	Small number of sample in-depth studies

Table 4.3: Quantitative vs. qualitative research, adopted from Morse and Mitcham (2002)

4.1.4 Cross- sectional versus longitudinal

Blumberg et al. (2008) argued that research design can be classified based on the time dimensions of cross-sectional studies and longitudinal studies. Collis and Hussey (2009) described the cross-sectional studies as getting research data in different situations but over the same time. They are conducted when there are time restrictions or limited resources, and the data is collected at one time, while longitudinal studies study variables or groups of subjects over a long period of time. Thus, it is carried out over an extended period of time (Blumberg et al., 2008).

In conclusion, discussing the different types of research can help the researcher to understand his/her research, as well as the best approach to adopt to perform it (Hussey and Hussey, 1997; Collis and Hussey, 2009).

4.2 Research Approach within Technology Adoption

Choosing the right method is a critical issue while conducting a research study. Technology adoption is a research topic under the information system discipline where many studies have been made to review and classify research approaches (Choudrie and Dwivedi,2005).

According to Galliers (1987), two research approaches in the field of information system are common: positivist and interpretive. These two approaches include experiments, surveys, case studies, simulation, reviews and action research. In addition, Mingers (2001, 2003) reviewed published papers in information system and adoption between 1993-1998, in which findings revealed that the dominant approaches were surveys, interviews, experiments, and case studies.

Furthermore, Choudrie and Dwivedi,(2005) conducted a study to examine and review 633 articles contained in information system journals. Results demonstrated that two main methods were used to investigate the technology adoption survey and case study; the dominant approach was survey with 74 %, while 26% used case studies. They claimed that two levels were usually examined in the technology adoption research: organizational level and user level. A survey approach was preferred in research linked to customers or individuals, whereas a case study was a favoured in studies associated with organizations.

It has been argued that developed countries usually design and produce the technology that will be surrounded by their social and cultural values (Straub et al., 2001; Aldraehim et al., 2013).Moreover, in the information and communication technology field, culture has become an important factor (Hofstede, 1991). Many researchers have claimed that, culture is a barrier in the usage of electronic services. According to Chen et al. (2007), there are many differences in electronic services used between developed and developing countries due to dissimilar technological and social conditions, these differences are presented in Table (4.4).

	Developed countries	**Developing countries**
History and culture	Government and economy developed early, immediately after independence. Economy growing at a constant rate, productivity increasing, high standard of living. Relatively long history of democracy and more transparent government policy and rule.	Government usually not specifically defined; economy not increasing in productivity. Economy not growing or increasing productivity; low standard of living. Relatively short history of democracy and less transparent government policy and rule.
Technical staff	Has a current staff, needs to increase technical abilities and hire younger professionals. Has outsourcing abilities and financial resources to outsource; current staff would be able to define requirements for development.	Does not have a staff, or has very limited in house staff. Does not have local outsourcing abilities and rarely has the financial ability to outsource; current staff may be unable to define specific requirements.
Infrastructure	Good current infrastructure. High internet access for employees and citizens.	Bad current infrastructure. Low internet access for employees and citizens.
Citizens	High internet access and computer literacy; still has digital divide and privacy issues. Relatively more experienced in democratic system and more actively participation in governmental policy-making process.	Low internet access and citizens are reluctant to trust online services; few citizens know how to operate computers. Relatively less experienced in democratic system and less active participation in governmental policy-making process.
Government officers	Decent computer literacy and dedication of resources; many do not place e-government at a high priority.	Low computer literacy and dedication of resources; many do not place e-government at a high priority due to lack of knowledge on the issue.

Table 4.4: Differences between developed and developing countries. Source: Chen et al, 2007.

4.3 Research Approaches Applied in this Study

According to Hussey and Hussey (1997), two terms are important for conducting research, and these should be distinct. On one hand, *methodology* refers to *"the overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data"*. On the other hand, *methods* refer to*" actions and techniques used to get and analyze data"* (Saunders et al., 2009). This includes questionnaires, observations and interviews, as well as both quantitative and qualitative analyses techniques. Collis and Hussey (2009) stated that researchers are interested in collecting data about the phenomena they are studying, which can be either quantitative (in numerical form) or qualitative (in non-numerical form, such as text or images).

According to Webber (2004), the choice of research methods is affected by factors such as researcher training, pressures from advisors and colleagues, and preferences for gaining certain kinds of approaches during the research. Hall and Howard (2008) stated that researchers need to be motivated to recognize the different types of paradigm, and to be careful when selecting the methods that give the maximum opportunity in the study design.

Based on previous argument and the enormous amount of research literature on technology acceptance, which was presented in Chapter Two, this research has a main theoretical drive which is positivist in nature. The major force of the current research is to test hypotheses related to the proposed model, as well as a number of hypothesized relationships that were previously established in the technology acceptance literature (e.g. Venkatesh et al., 2003; Lewis et al., 2003; Venkatesh and Bala, 2008). Bryman and Bell (2007) described the quantitative research strategy as a deductive approach that usually employs scientific measures and statistical analysis to demonstrate the association between the factors in the phenomena of studies, whilst using previous literature to formulate this research and propose a clear relationship between constructs are requirements to discover the relevant data with

the help of statistical tests which cannot be achieved by adopting qualitative methods (Collis and Hussey, 2003). Thus, the theoretical purpose of the current research is quantitative deductive in nature.

It has been argued that the selection of a suitable strategy or method is a concern to any researcher, as there are a variety of research approaches and methodologies developed and implemented in the field of information technology and social science, such as laboratory experimental research, field experiments research, survey methods and case studies (Creswell, 2003; Chen and Irschheim, 2004).

Newsted et al. (1998), stated that in information technology research, survey is among the most popular methods to be used. Moreover, Choudrie and Dwivedi (2005) concluded that two methods are used for examining technology adoption topics: survey and case study. They added that the survey approach was preferred in researches linked to customers or individuals, whereas a case study was favoured in studies associated with organizations. Zikmund(2003) claimed that survey research is a suitable method in past technology adoption and acceptance literature, since it presents an efficient, low-cost, fast and correct means of assessing information about a target population. Therefore, the researcher decided to opt for a survey as the most appropriate method for this study.

4.3.1 The choice and the size of the sample

According to Gill and Johnson (2002), engaging all members of the population in a survey is not practical. Therefore, it is essential to choose a suitable population for the survey. Hussey and Hussey (1997) described a population as *"any precisely defined set of people or collection of items which is under consideration"*. Whereas, a sample is *"a subset of a population"*.

Saunders et al. (2009) suggested that there are two types of sampling technique: probability and non-probability. Blumberg et al. (2008) suggested that non-probability sampling is favoured where cost and time are important issues.
In this research, the population chosen consisted of Saudi's that have travelled by airplanes, and have also used either online or mobile services, or both. Thus, the precise size of this population is not known and cannot be measured. Al-Jabri and Sohail (2012) stated that in Saudi Arabia it is difficult to get probabilistic samples. In addition, Blumberg et al. (2008) claimed that, in terms of difficulties faced when identifying the targeted respondents because they are not registered as a population, it is useful to adopt snowball sampling. This is defined by Saunders et al (2009) as *"the researcher identifies a small number of subjects who in turn identify others in the population; and is commonly used when it is difficult to identify members of the desired population"*.

Therefore, two types of non-probability sampling were used in this research: convenience and snowball. According to Saunders et al. (2009), convenience sampling is selected on the basis that the respondents are conveniently available, i.e. available and close to hand.

To determine the appropriate sample size, Hinkin (1995) suggested that sample size should have an item to response ratio which ranges from a minimum of 1:4 to a maximum of 1:10 for every set of scales appropriate for factor analysis. Additionally, recent research has found that a sample size of 150 is sufficient for exploratory factor analysis, whereas a sample size of 200 is acceptable for confirmatory factor analysis. In this study, 31 items were measured. For this reason, the ideal sample size suitable for factor analysis would range between 124 and 310 respondents .

4.4 Timeline for Data Collection

The data was gathered using a self-administrated questionnaire, which is one of a number of methods used for collecting data, such as face to face interview, telephone interview, self-administrated survey, post questionnaire, and electronic survey (Zikmund, 2003; Sekaran, 2000).

E-mail invitations were used as they are less costly, less time consuming, and more convenient for the respondent to think about and answer the questions (Zikmund, 2003). These emails were sent to a sample of industrial contacts in both public and private sectors in Saudi Arabia between July and September 2012, and the voluntary participants were asked to complete the web-based questionnaire. The email invitations explained the purpose of the survey and invited the recipient to participate in the research. The respondent would access the questionnaire, using survey link hosted on the survey monkey server (www.surveymonkey.com). The survey took approximately ten minutes to complete and the data were collected when respondents clicked the submit button.

4.5 Ethical Consideration

Ethical issues are a concern during many stages of conducting research. These include getting access to firms or individuals, collecting, analyzing, and reporting the data (Bryman and Bell, 2007; Saunders et al., 2009). Therefore, the ethical issues have been discussed and checked with the supervisor. Furthermore, to meet these concerns, the web-based survey (Appendix B,C) contained an email invitation (Appendix A) explaining the purpose of the study, and the researcher's contacts details in case the respondents had any concern. Additionally, the researcher emphasized in the email invitation that taking part in this study was strictly voluntary and the participants were free to discard it any time. Respondents were reassured that all responses would be treated confidentially and anonymously with no personal information published.

4.6 Translation

In this study, the questionnaire was designed in the English language in UK by adapting and adopting questions from the well-established literature on technology acceptance models. Next, the questionnaire was examined and checked by the supervisor as a native English speaker to make sure all the questions were easy, clear, and understandable. However, the sample population is in Saudi Arabia and they are mostly Arabic language speakers. Therefore, the questionnaire was translated into Arabic by three PhD students from Brunel Business School. Additionally, back translation from Arabic to English was conducted and any differences were resolved. Furthermore, the two versions of the Arabic and English questionnaire were reviewed by another three PhD students to confirm the accuracy of the language. Finally, the questionnaires were distributed and piloted to a sample of Saudi and international students in UK.

4.7 Questionnaire Design

The design of the questionnaire as an information gathering tool contained five pages and a covering email invitation (see Appendices A, B, and C), which indicated the purpose of the study and contact details for the researcher. The questionnaire is divided into three sections: the first section is about the demographics characteristics including gender, age, nationality, and previous related internet experience. The second part is related to the proposed model constructs, i.e. perceived ease of use, perceived usefulness, social influence, compatibility, mobility, use situation, personal innovativeness, and perceived risk. The final section is about general travel characteristics.

According to Sekaran (2000), a Likert scale is a widespread method for getting information from respondents in a survey, and it was generally used with either five or seven points in the published literature relevant to the current study. This survey used 1 to 7 Likert scales to study the respondents behaviour in relation to these factors, where 1 indicates "strongly disagree " and 7 indicates "strongly agree ".

4.8 Pilot Study

This research aims to test and to validate the proposed model, presented in figure (4.1), and the related hypotheses by developing a questionnaire. Saunders et al (2009) stated that prior to using the questionnaire to collect data it should be pilot tested. The purpose of the pilot test is to refine the questionnaire so that respondents will have no problems answering the questions and there will be no problems in recording the data.

This questionnaire was piloted to a convenient sample of postgraduate students, who were Saudis studying at Brunel University and Surrey University in different schools and departments and international students. The rationale behind choosing the pilot study sample of Saudis who are studying in the UK, is to save time and money instead of travelling to Saudi Arabia during the term time, also, including international students would enrich the study in term of checking the general understanding of the subject, and to have a back up data for analysis in case the researcher failed to get a sufficient data from Saudi Arabia during the main field study. Furthermore, this pilot study is part of the questionnaire design process to check the conceptual model reliability.

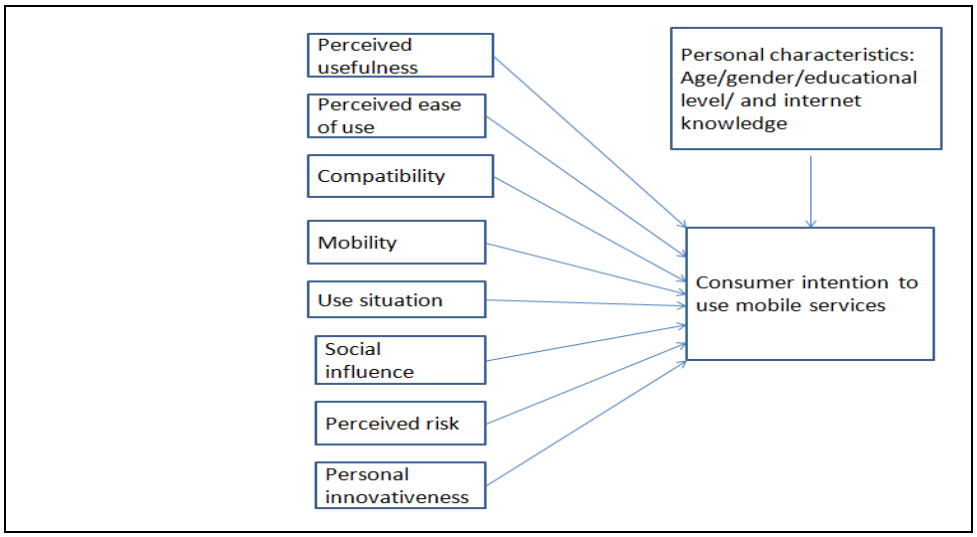


Figure 4.1: The primarily conceptual model

4.8.1 Sample profile

The sample for the pilot study contains 87 respondents in UK, as indicated in Table (4.5). This demonstrates that 65.5% are men and 34.5% are women. 77% of respondents are in the age group 21-30 years, 14.9% are in the age group 31-40 years, 4.6% for the age group 41-50 years, 2.3% for age group 20 years or under, and 1.1% for aged 61 years or more. In terms of the computer knowledge, 35.6% and 34.5% of respondents show good and very good computer knowledge, respectively, and 26.4% have moderate knowledge.

For respondents' internet knowledge, the results demonstrated that 25.3%, 35.6%, and 36.8 of respondents have moderate, good, and very good internet knowledge, respectively. The vast majority of respondents (98.9%) have used the internet for more than two years, and more than 50.6% of those who access the internet use it for more than four hours a day, while 37.9% use it between three and four hours daily.

Characteristics	Frequency	%
Gender:		
Male	57	65.5
Female	30	34.5
Age group:		
20 or under	2	2.3
21-30	67	77
31-40	13	14.9
41-50	4	6
61+	1	1.1
Computer knowledge:		
Very poor	1	1.1
Poor	2	2.3
Moderate	23	26.4
Good	31	35.6
Very good	30	34.5
Internet knowledge		
Very poor	2	2.3
Poor	-	-
Moderate	22	25.3
Good	31	35.6
Very good	32	36.8
Internet usage per years		
Don't use	1	1.1
>2 years	86	98.9
Internet usage per hours per day		
Don't use	1	1.1
1-2 hours	9	10.3
3-4 hours	33	37.9
>4 hours	44	50.6

Table 4.5: Sample profile for the pilot study

From the sample profile, Table (4.6) sheds light on the travel attitudes for the pilot sample. Firstly, 65.1% of respondents' travel purpose is for vacation, and 30.2% is for study. Secondly, 52.9% of respondents travel between one and two times a year, with 32.2% of them travelling three to five times a year, and 13.8% travelling more than five times. Finally, the majority of the respondents (69%) use both domestic and international flights for travel.

Characteristics	Frequency	%
Travel purpose:		
Vacation	56	65.1
Business	4	4.7
Study	26	30.2
Medical	-	-
Travel frequency:		
Nil	1	1.1
1-2	46	52.9
3-5	28	32.2
>5	12	13.8
Travel distance:		
Domestic	2	2.3
International	25	28.7
Both	60	69

Table 4.6: Travel attitude for the pilot study

The researchers observe the current mobile usage in Table (4.7), where the most frequently used services via mobile phones are checking mails (76.5%), web browsing (62.8%), and location-based services (52.9%). Least used services are buying airline tickets (54.1%), and banking services (41.9%).

Current mobile usage	Frequency	%
Banking:		
Rarely	36	41.9
Occasionally	30	34.9
Mostly	20	23.3
Buying airline ticket:		
Rarely	46	54.1
Occasionally	27	31.8
Mostly	12	14.1
Browsing :		
Rarely	6	7.0
Occasionally	26	30.2
Mostly	54	62.8
Checking mails:		
Rarely	2	2.4
Occasionally	18	21.2
Mostly	65	76.5
Location based services:		
Rarely	7	8.2
Occasionally	33	38.8
Mostly	45	52.9

Table 4.7: Current mobile usage for the pilot study

4.8.2 Reliability test

According to Lee and Hooley (2005), coefficient alpha is used to measure the internal consistency of a scale. In the case of estimating the reliability of a multi-item scale, coefficient alpha can be used by providing an indication of a scale's internal consistency. Also, coefficient alpha has been the measure, within marketing and many other fields, for assessing the reliability when developing a multi-item scale.

SPSS (v.18.0) is used to analyze the data to obtain descriptive statistics, and scale reliability analyses. The Cronbach's alpha coefficients in this study range from 0.749 to 0.884, which goes beyond the suggested value of 0.70 (Pallant, 2007). These alpha coefficients are 0.749, 0.806, 0.827, 0.849, 0.874 and 0.884 for mobility, perceived ease of use, perceived risk, perceived usefulness, social influence, and compatibility respectively, as shown in Table (4.8). However, use situation (0.541) was eliminated from the main field survey as the score is below the cut-off point.

Personal innovativeness had a Cronbach's alpha score of 0.494, but the researcher decide to keep it in the main field study. The reason for this decision is that four statements that describe the behaviours in the context of IT were created, as follows: "If I heard about a new information technology, I would look for ways to experiment with it."; "Among my peers, I am usually the first to try out new information technologies."; "I look to experiment with new information technologies."; "In general, I am hesitant to try out new information technologies".

From the previous statements it is noticed that, one of the statements was worded negatively, " I am hesitant". However, The first three statements are having a positive wording behaviour toward personal innovativeness. Thus, during the data analysis this item scale will be reversed as follow: (1=7) and (7=1), (2=6) and (6=2), (3=5) and (5=3), (4=4) and the new score of personal innovativeness will be displayed in Chapter Five.

Construct	Cronbach's alpha
Ease of use	0.806
Usefulness	0.849
Social influence	0.874
Compatibility	0.884
Mobility	0.749
Use situation	0.541
Personal innovativeness	0.494
Perceived risk	0.827

Table 4.8: Measurement scales reliability for the pilot study

4.9 Research Design

According to Hussey and Hussey (1997), the success of research depends upon the selection of the right research process/steps within research design.

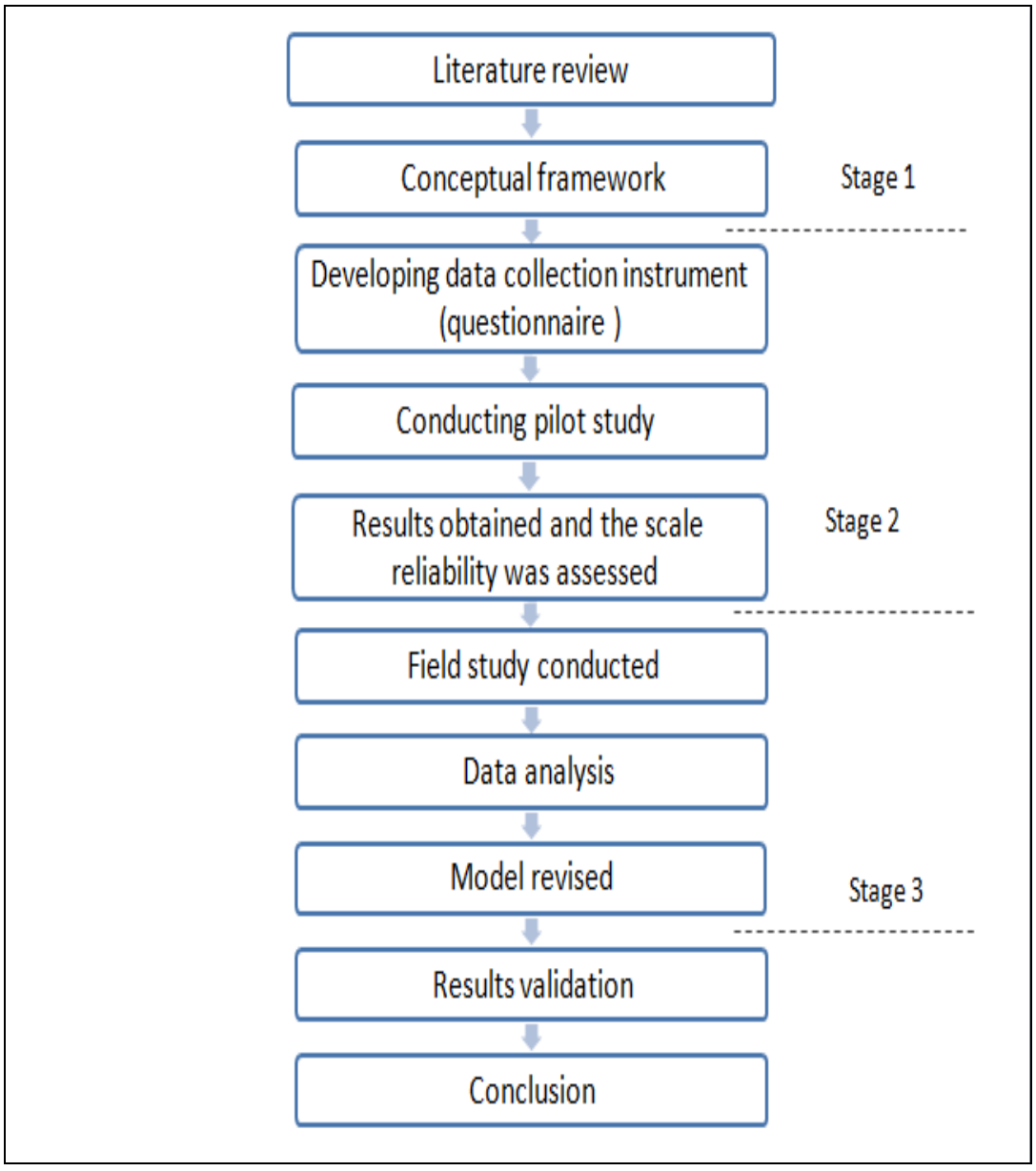


Figure 4.2: Study research design

Figure (4.2) illustrates the steps of the research design, as follows. Firstly, an extensive literature review was conducted in the area of mobile banking, mobile commerce, and technology acceptance theories. Secondly, the proposed framework was formulated by extracting the most cited factors from the well-established technology acceptance theories, such as TAM, TPB, TRA, and DOI, and the framework was presented at the 1st International Colloquium on Global Design and Marketing at Lincoln University to get a feedback from knowledgeable academics who are actively researching in the area of technology acceptance and adoption models. Thirdly, questionnaire was developed by extracting the questions from previous literature in the field of m-commerce and m-banking, and then these questions were adjusted to match the mobile service context. After the questionnaire was developed, it was refined by the supervisor and three PhD students. Fourthly, the pilot study was conducted in UK to a convenient sample of postgraduate Saudi and international students who were studying at Brunel University and Surrey University in different schools and departments. Next, the results were processed by using the SPSS, and the scale reliability was assessed. These results were published in The International Journal of Management and Marketing Academy as "Consumer acceptance of mobile commerce in the airline sector: factors influencing consumer behaviour" (Algethmi and De Coster, 2012). After that, the field study was conducted in Saudi Arabia by administrating a web-based questionnaire, which was sent during July-September 2012. Then, the data was analyzed using SPSS and the model revised based on the regression analysis and factor analysis. These results were presented at the Academy of Marketing conference 2013 at the University of South Wales to obtain further feedback from the academics in the field. These results will be described and presented in details in Chapter Six.

4.10 Supplementary Qualitative Interviews

In order to reinforce this research, face-to-face interviews were carried out to complement the survey approach. Also, the interview questions were used to cover the factors in the proposed model and to find any different relationships. Three participants from different departments in an airline company in Saudi Arabia were able to take part in the interviews during December 2013. Furthermore, a covering letter was provided for all the participants which clarified the purpose of the research, guaranteed the privacy of their information and obtained their permission to conduct the interview (see Appendix C and D). The analysis of the interviews data will be discussed in Chapter Six.

4.11 Chapter Conclusion

In this chapter, the focus was on classifying the different research paradigms and methods, such as positivist and interpretivest, and qualitative, and quantitative. These methods are corner stone in helping the researcher to identify the appropriate methods to apply in his/her research in terms of study design, sample choice and size, questionnaire design, and the related analysis required.

The next chapter will focus on the survey outcomes, including the sample profile, the travel characteristics for the respondents, and the effects of age, gender, educational levels, and internet knowledge on both the factors of the model and on behavioural intention.

Chapter Five: Survey Outcomes

5.1 Introduction

The purpose of this research is to propose and test a model to clarify the constructs that cause customers to adopt mobile services in Saudi Arabia, with particular reference to the airline sector. As Wei et al. (2009) claimed, there is a general lack of empirical research into mobile commerce acceptance and adoption by customers.

A cross-sectional survey was conducted in Saudi Arabia by developing a questionnaire. This questionnaire, as an information-gathering tool, is divided into three sections. The first section was the profile of the respondents, including such detail as gender, age, educational level, and nationality. The second section was concerned with the main core of this research, which is testing the model factors of consumer intention to use mobile services in Saudi Arabia, using the 7-point Likert scale ranging from 1 ('strongly disagree') to 7 ('strongly agree') for every item .The last section looked at general travel characteristics, such as the preferred channel for completing travel process, travel purpose and travel frequency per year, alongside general internet knowledge and usage. Thirty one statements were used to measure if the customers in Saudi Arabia are willing and intending to use their mobile phones during travel or not.

The data for this research was obtained through the use of an e-mail survey using industrial contacts in both the public and private sectors in Saudi Arabia. Email invitations were distributed and the volunteer participants were asked to complete the web-based questionnaire, which was set during the period July to September 2012. The sample of e-mail addresses was selected using (snowball/convenient) sampling. The e-mail invitations, which were sent to these addresses, explained the purpose of the survey and invited the recipients to participate in the research. The respondent would then complete the questionnaire, accessing it via a survey link hosted on the survey monkey server. The survey took approximately ten minutes to complete and the data were collected when the respondents clicked the submit button.

5.2 Sample Profile

Table (5.1) shows that from the sample size which consists of 307 respondents in Saudi Arabia, 87.3% (268) of the respondents are men and 12.7% (39) are women. Most of respondents (135 or 44%) are aged between 30 and 39; 91 (29.6%) are between 40 and 49 years; 36 (11.7%) are in age range 21 to 29 years, and 11% and 3.3% are for age group 50 to 59, and 60 plus, respectively. The majority (44.6%) of respondents are hold a Bachelor degree; 36.8% have a Master's degree; 10.1% have a PhD or higher education, and 4.6% and 3.9% are Diploma holders and high school or below, respectively. The vast majority (256) of respondents are Saudi, while 51 are non-Saudi but working in Saudi Arabia.

Characteristics	**Frequency**	**%**
Gender:		
Male	268	87.3
Female	39	12.7
Age group:		
21-29	36	11.7
30-39	135	44.0
40-49	91	29.6
50-59	35	11.4
60+	10	3.3
Educational level:		
High school or below	12	3.9
Diploma	14	4.6
Bachelor	137	44.6
Master degree	113	36.8
PhD or higher	31	10.1
Nationality:		
Saudi	256	83.4
Non-Saudi	51	16.6
N=307	307	100%

Table 5.1: Sample profile for the main field research

Moreover, most of the respondents (206) have very good internet knowledge and 85 are good, also 36.8% of respondents access the internet for more than four hours per day; 32.2% use the it for between 3 and 4 hours per day, and 30.9% use the internet 1 to 2 hours a day. This is shown in Table (5.2).

Characteristics	**Frequency**	**%**
Internet knowledge:		
Moderate	16	5.2
Good	85	27.7
Very good	206	67.1
Internet usage per hours per day:		
1-2 hours	95	30.9
3-4 hours	99	32.2
>4 hours	113	36.8
N =307	307	100%

Table 5.2: General computer knowledge and internet usage.

Furthermore, the greater part of the respondents currently have iPhone (68.1%); Samsung (25.7%), Blackberry (18.2%) and Nokia (17.3%) in that order, as described in Figure (5.1). In this case, the researcher found that the percentage is over 100%, due to the fact that consumers in Saudi Arabia often have more than one mobile, according to the communications and information technology commission report in Saudi Arabia, where they found that total mobile subscriptions reached around 53 million at the end of 2012. Because the majority own iPhone and Samsung mobiles, respondents have said *"airline companies should provide an application suitable for ios and android systems"*, whilst others said "*airline companies should have their own mobile application similar to what banks are implementing rather than browsing ".*

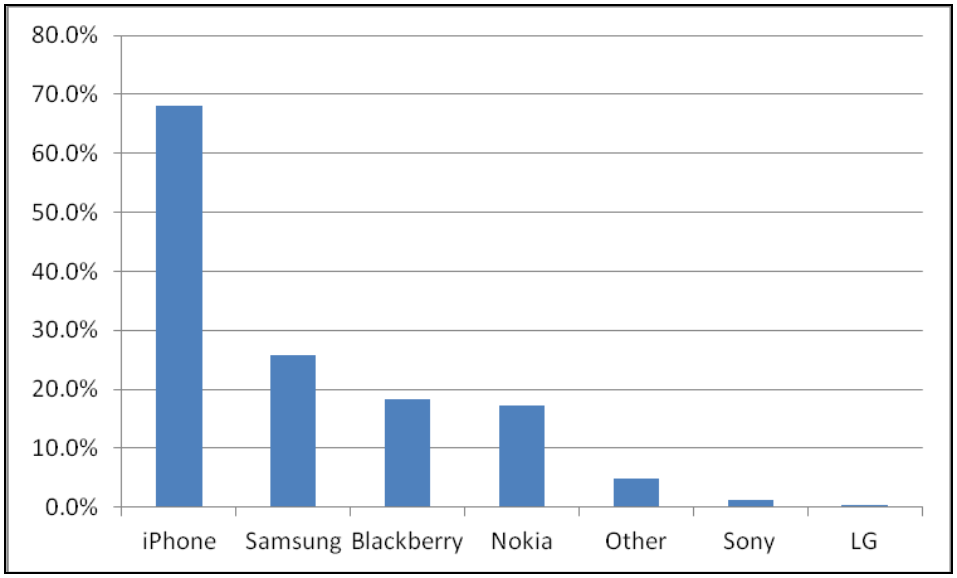
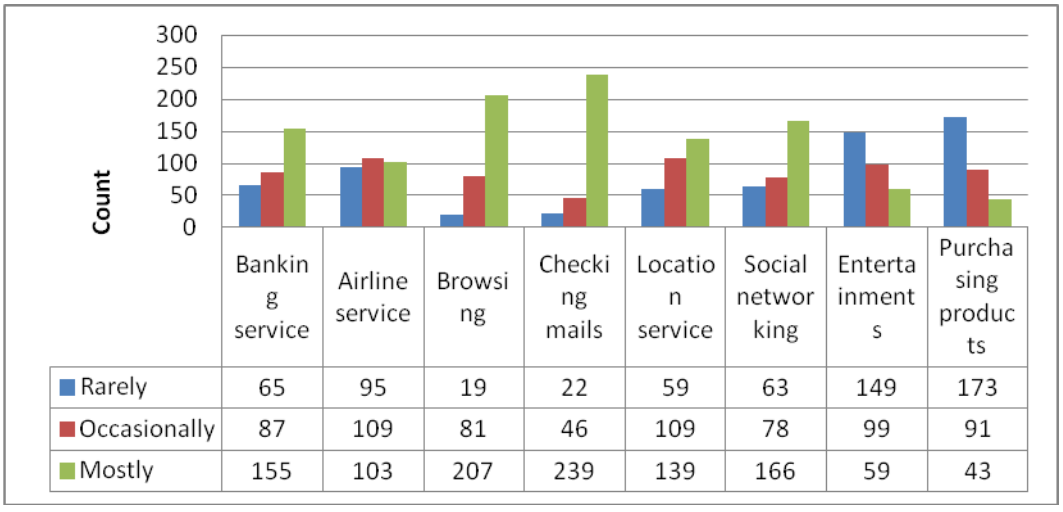


Figure 5.1: Current mobile phone ownership.

Figure (5.2) demonstrates the current mobile usage for the respondents. The most frequently used services by respondents through their mobile devices is checking e-mail (239), for browsing the internet (207), for social networking (166), and for banking services (155). At the other extreme, the least used services used by respondents on their mobile devices are purchasing products (173) and using the mobile for entertainment purpose (149). 109 of the respondents use their mobile devices occasionally for airline services and the same number occasionally use their mobile devices for location-based services.



	Banking service	Airline service	Browsing	Checking mails	Location service	Social networking	Entertainments	Purchasing products
Rarely	65	95	19	22	59	63	149	173
Occasionally	87	109	81	46	109	78	99	91
Mostly	155	103	207	239	139	166	59	43

Figure 5.2: Current mobile usage

5.3 Travel Characteristics

In this section the researcher will try to answer the research question about the travel characteristics in Saudi Arabia. A descriptive analysis by SPSS will be conducting extensively by segmented these characteristics by travel purpose, travel distance, travel frequency, and the preferred channel to complete the travel process. Also, another segmentation will be done based on age, gender, education level, and internet knowledge.

5.3.1 Travel purpose

Figure (5.3) describes the general travel behaviour for the sample, where the vast majority (88.3%) of respondents travel for leisure and 67.1% for business purposes; 25.4% travel to study, and a minority of 7.5% travel for medical purposes. Here, the percentage is over 100% as the respondents were able to choose more than one purpose for traveling.

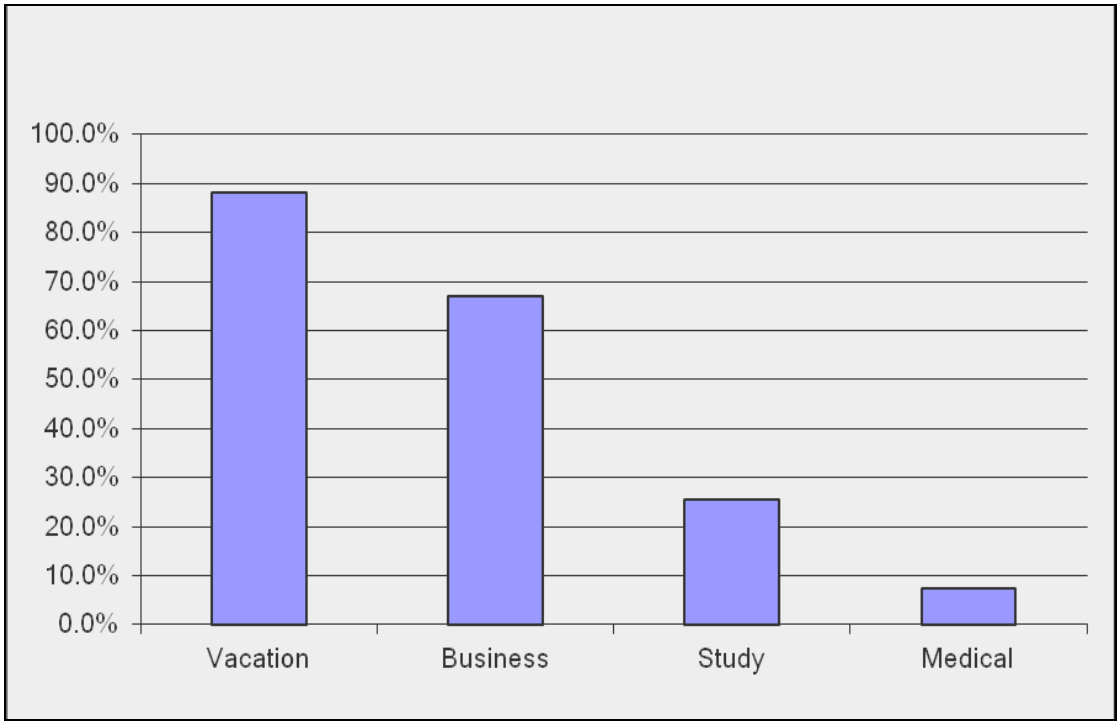
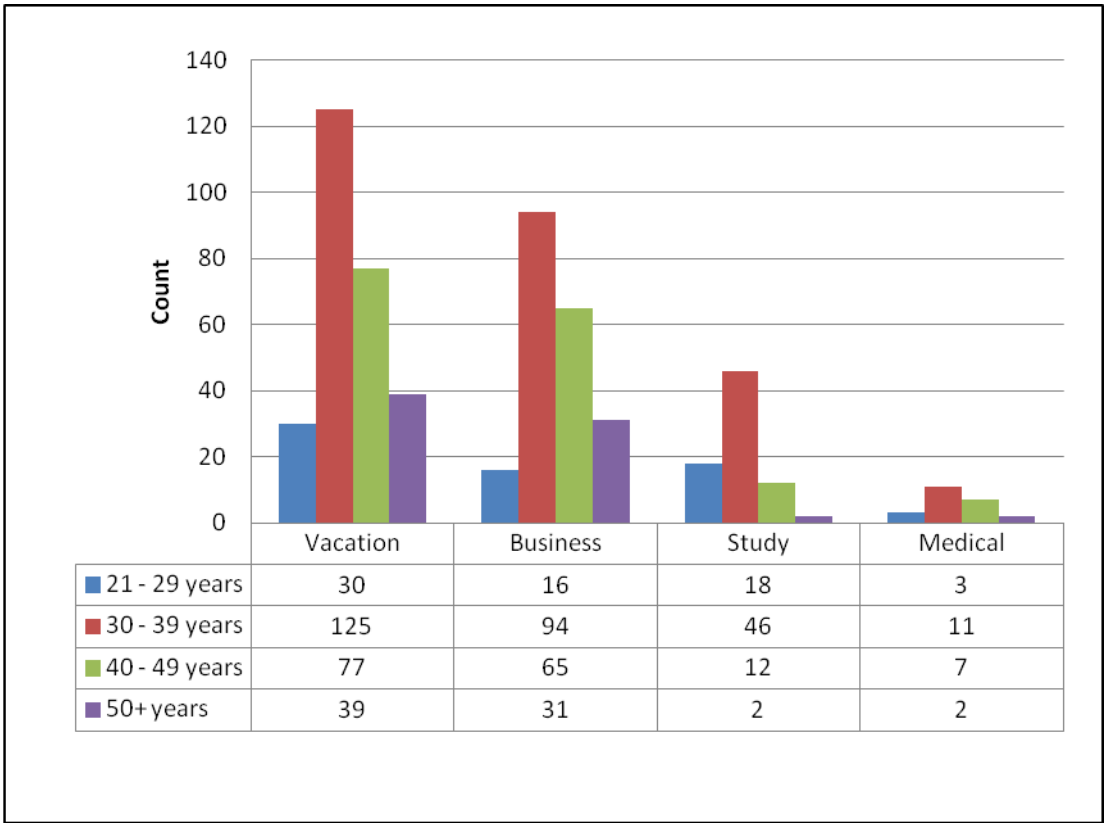


Figure 5.3: Travel purpose.

5.3.1.1 Travel purpose based on age groups

Looking to figure (5.4), it is possible to see that vacation is the main travel reason for all age groups, especially for age groups 30-39 years (125) and 40-49 years (77). Travelling for business purposes comes next, where the highest two groups are 30-39 year olds (94) and 40-49 year olds (65). Travelling for study and for medical issues are less important for respondents.



	Vacation	Business	Study	Medical
21 - 29 years	30	16	18	3
30 - 39 years	125	94	46	11
40 - 49 years	77	65	12	7
50+ years	39	31	2	2

Figure 5.4: Travel purpose based on age groups

5.3.1.2 Travel purpose based on gender

Figure (5.5) demonstrates that both females (32) and males (239) travel mostly for vacation which is the majority of the respondents , with (16) and (190), respectively, for business in the second place after travelling for vacation.

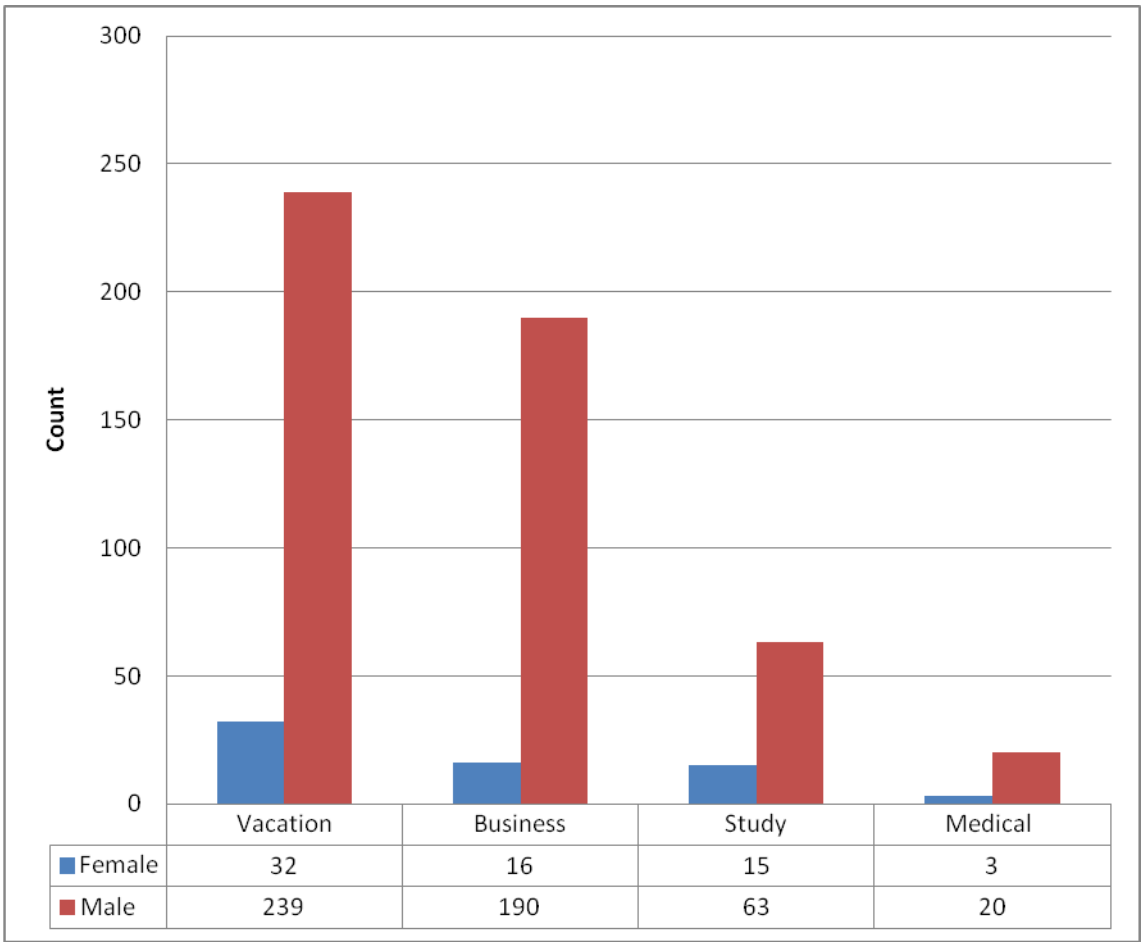
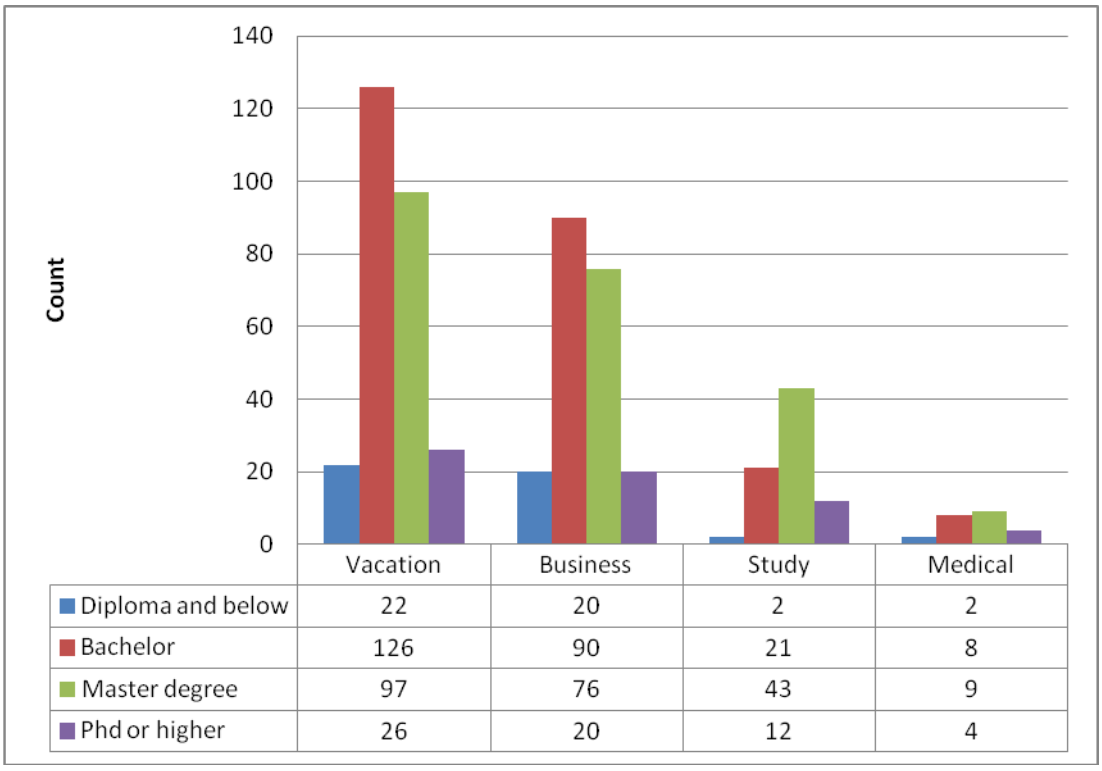


Figure 5.5: Travel purpose based on gender

5.3.1.3 Travel purpose based on educational level

Figure (5.6) illustrates that again the main two purposes for travelling among different educational levels are for vacation and for business. Among these educational levels, Bachelor and Master degree holders are the highest in travelling for vacation, with 126 and 97, respectively. Also, they are the highest for travelling for business (90 and 76, respectively).

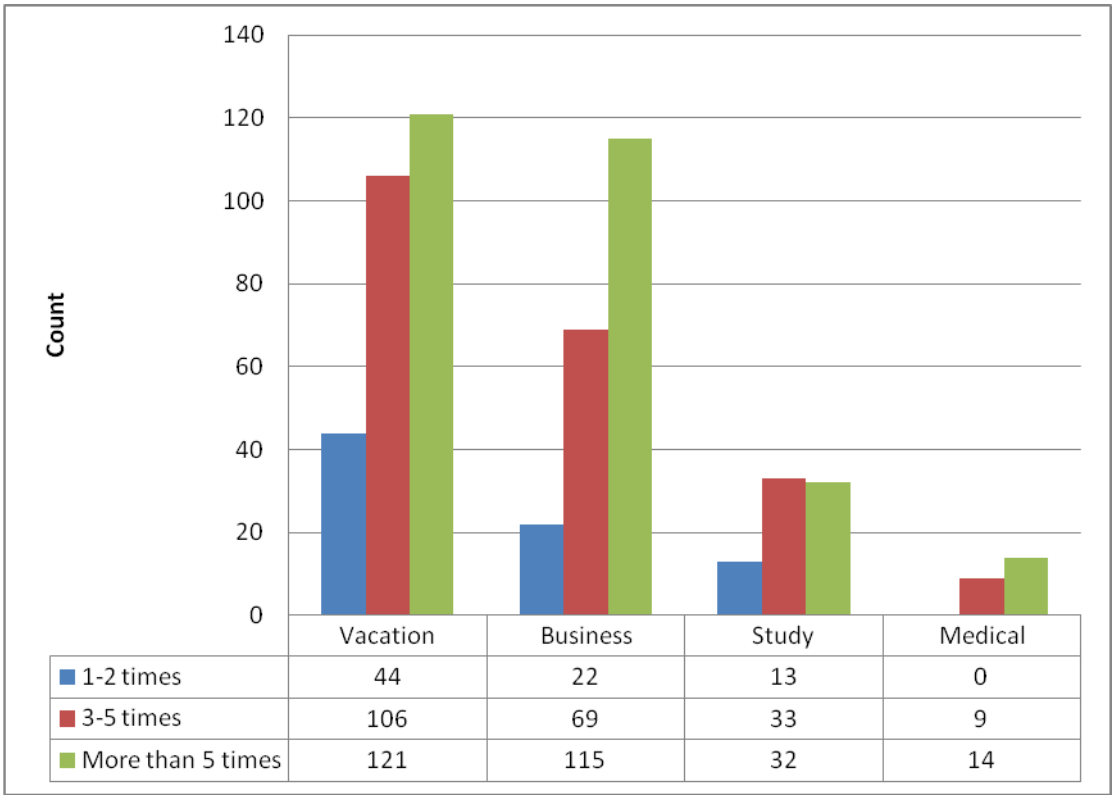


	Vacation	Business	Study	Medical
Diploma and below	22	20	2	2
Bachelor	126	90	21	8
Master degree	97	76	43	9
Phd or higher	26	20	12	4

Figure 5.6: Travel purpose based on educational level

5.3.1.4 Travel purpose based on travel frequency

Figure (5.7) highlights that respondents with different travel frequencies travelling for vacation are: 1-2 times with, 44, 3-5 times with 106, and more than 5 with 121. Travelling for business purpose is coming in the second place: 1-2 times with, 22, 3-5 times with 69, and more than 5 with 115.

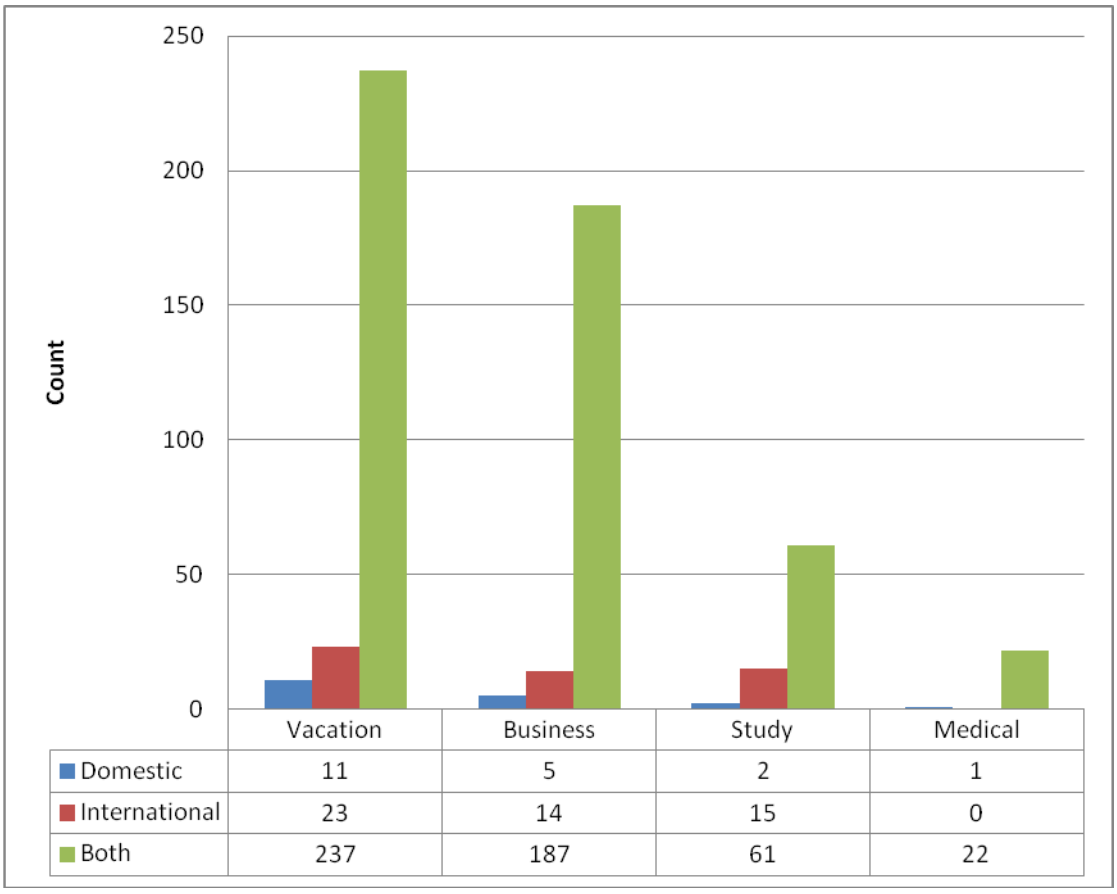


	Vacation	Business	Study	Medical
1-2 times	44	22	13	0
3-5 times	106	69	33	9
More than 5 times	121	115	32	14

Figure 5.7: Travel purpose based on travel frequency

5.3.1.5 Travel purpose based on travel distance

Figure (5.8) illustrates that respondents who travel both internationally and domestically which is the majority of respondents are mainly travel for vacation purpose (237) and also for business purpose (187). This suggests that airline companies in Saudi Arabia should pay more attention for leisure travellers as well as the business travellers in both sector domestic and international.



	Vacation	Business	Study	Medical
Domestic	11	5	2	1
International	23	14	15	0
Both	237	187	61	22

Figure 5.8: Travel purpose based on travel distance

5.3.2 Travel frequency

Figure (5.9) shows that 140 respondents travel more than 5 times a year, 115 travel between 3 and 5 times a year, and 52 travel 1 to 2 times per year. The mobile services which are provided by the airline companies in Saudi Arabia should be of a good level, as the respondents claimed "*an airline company should activate all services through the mobile, such as booking, flight status, boarding passes, and seat selection ".*

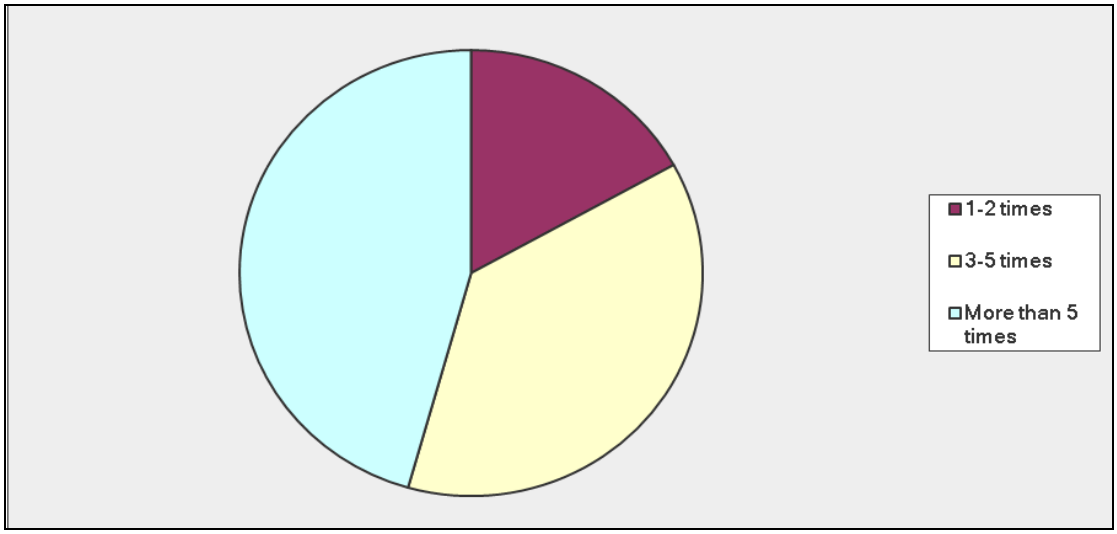


Figure 5.9: Travel frequency per year.

5.3.2.1 Travel frequency based on gender

Figure (5.10) illustrates that, male are more frequent travelers during the year than female in all the three frequency categories. Also, female are traveling 3-5 times a year are higher than the other two categories of 1-2 times and more than 5 times a year.

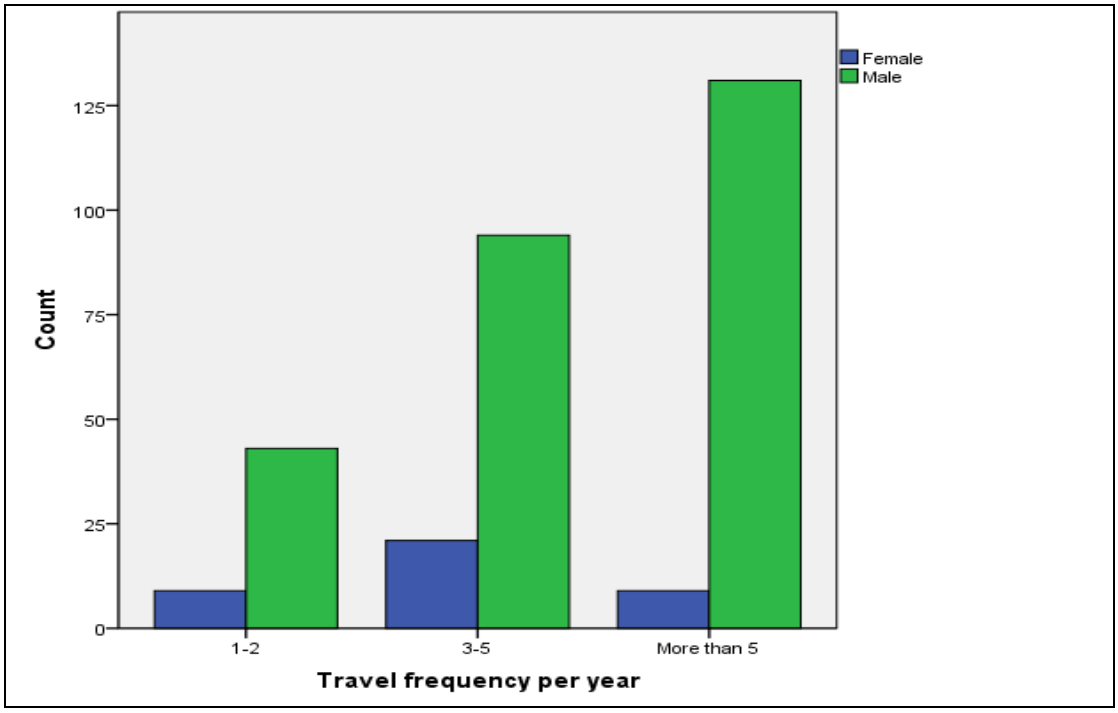


Figure 5.10: Travel frequency based on gender

5.3.2.2 Travel frequency based on age groups

Figure (5.11) demonstrates that, within the three travel frequency categories the age group 30-39 years is the highest followed by the age group 40-49 years. However, the age group 60 years and over is the least travel frequency.

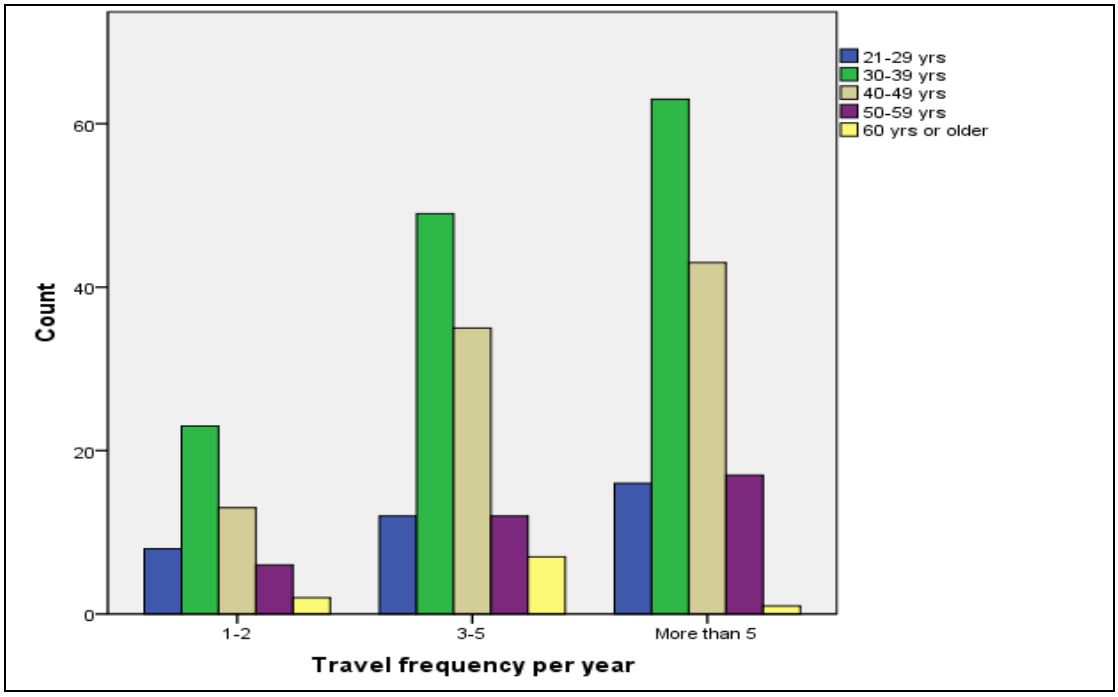


Figure 5.11: Travel frequency based on age group

5.3.2.3 Travel frequency based on educational levels

Figure (5.12) shows that, the bachelors and the master degree holders are the higher group within the three frequency categories. Also, they are traveling more than 5 times a year. However , the PhD degree holders are traveling mostly 3-5 times a year.

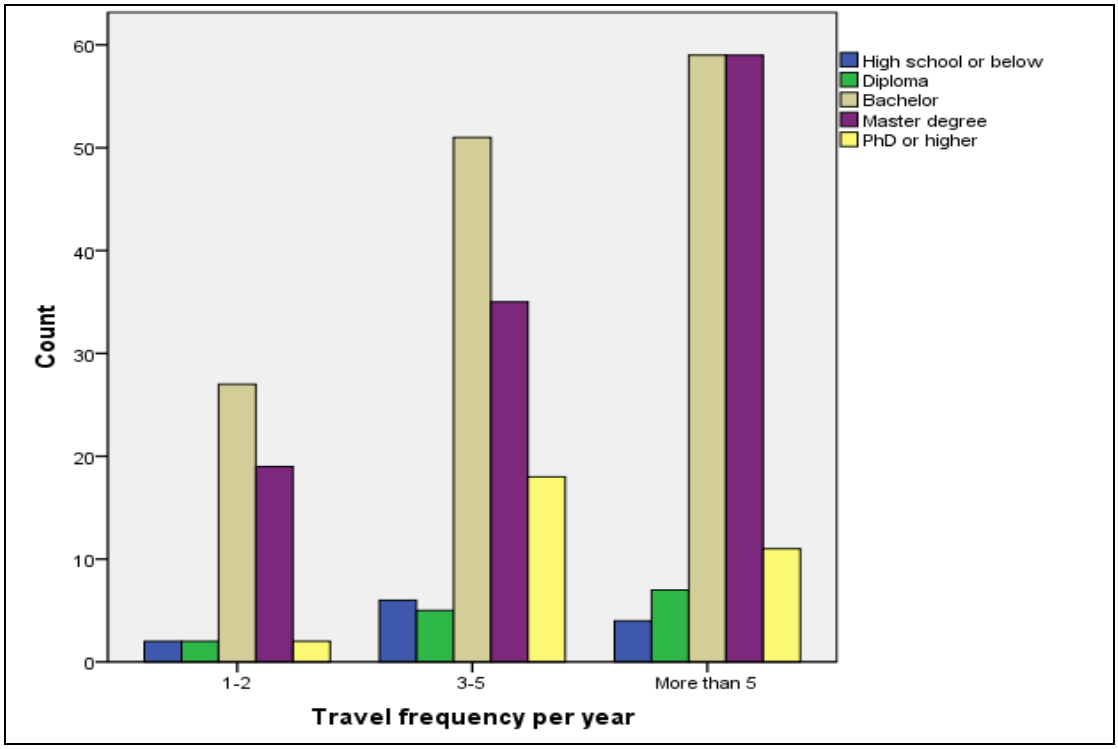


Figure 5.12: travel frequency based on educational levels

5.3.2.4 Travel frequency based on internet knowledge

Figure (5.13) demonstrates that, most of respondents with a very good internet knowledge are traveling more than 5 times a year followed by peoples with a good internet knowledge. However, respondents with a moderate internet knowledge are minority within all the three internet knowledge categories.

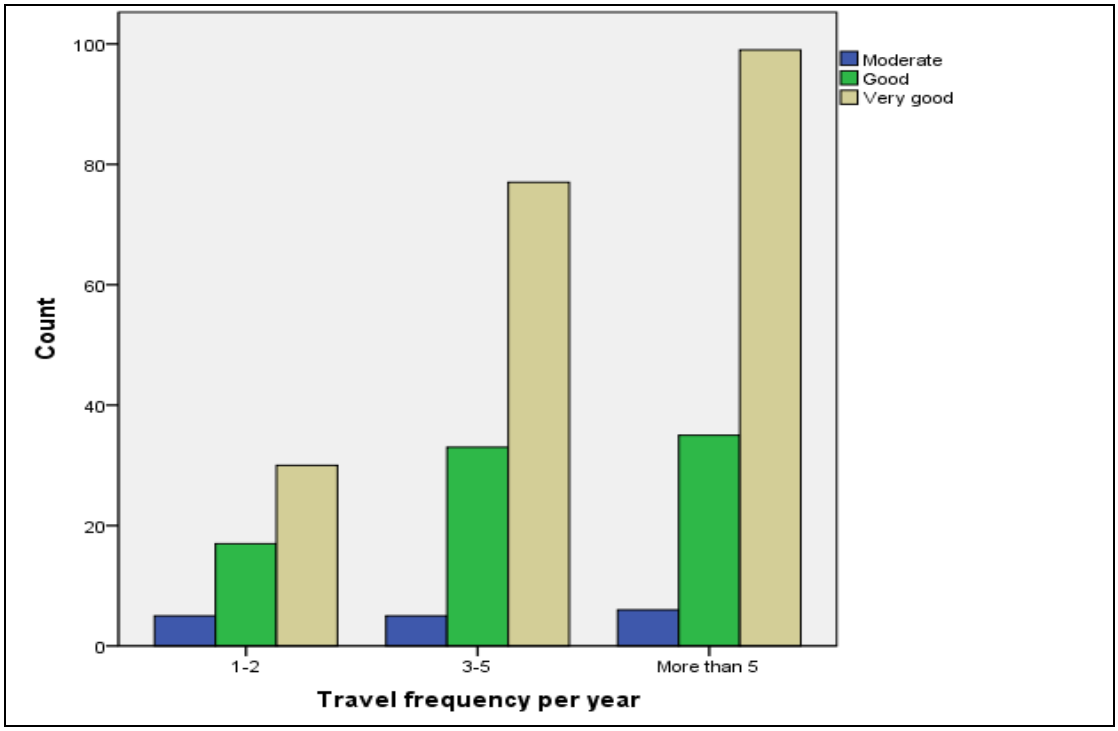


Figure 5.13: Travel frequency based on internet knowledge

5.3.3 Travel distance

The survey showed that the majority of respondents (85%) travel both domestically and internationally, as demonstrated in Figure (5.14), and this might give the impression that they may have used or experienced mobile services of other airlines during their trips . In addition, some respondents have recommended making " *the mobile services available for both domestic and international flight through all Saudi airports"*, and others have suggested a need to "*provide wireless internet service throughout airport terminals"*

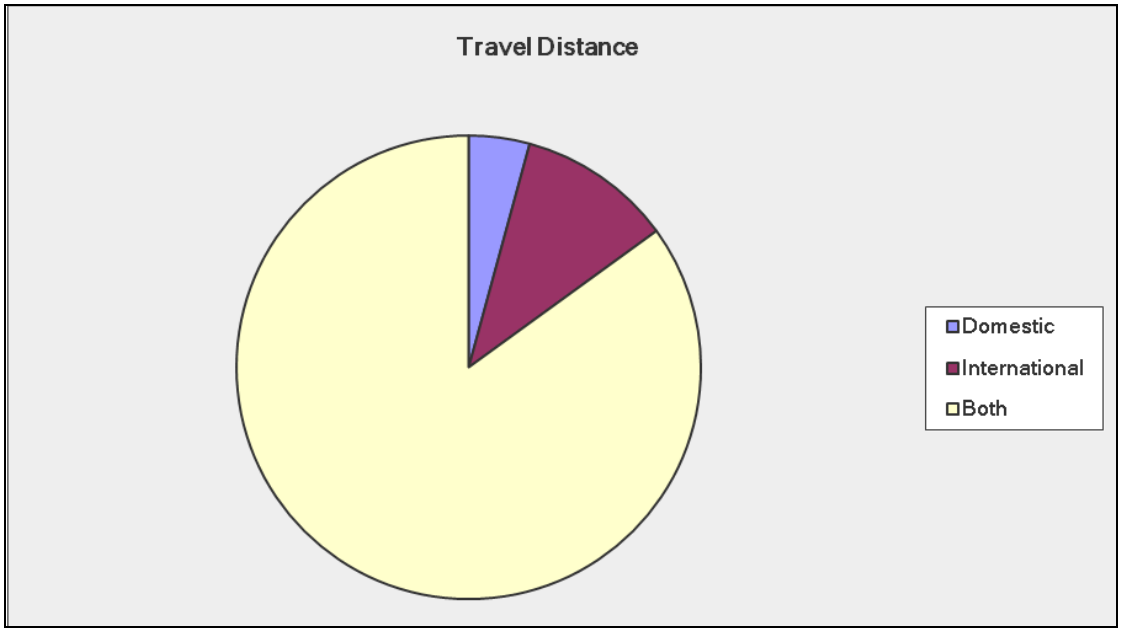


Figure 5.14: Travel distance.

5.3.4 The preferred channel for customers to complete their travel

As demonstrated in figure (5.15), the vast majority of respondents (83.1%) preferred to use the airline website channel to complete their travel process , 29% use self-services machines , 20.8% use travel agents, and 12.7% use the airline call centre. The least preferred channel for respondents to complete their travel process is the airline ticket office, with 9.4% of the respondents. Here, once again, the percentage is over 100% as the respondents were able to choose more than one channel that had been used whilst carrying out their travel process. It was noted that the vast majority of repondents use the airline website, with some respondents said "*the mobile services sould be available without technical problems" , and* others reporting that *"the airline companies in Saudi Arabia should update their systems regularly to be at the same level as their competitiors ".*

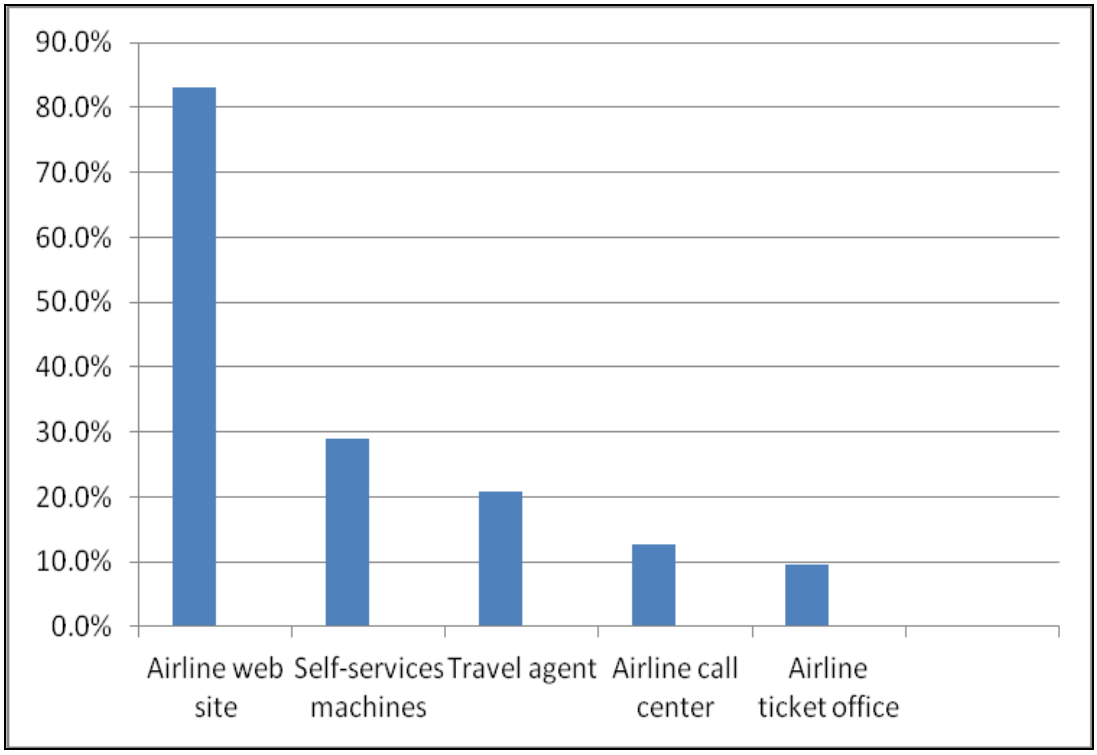
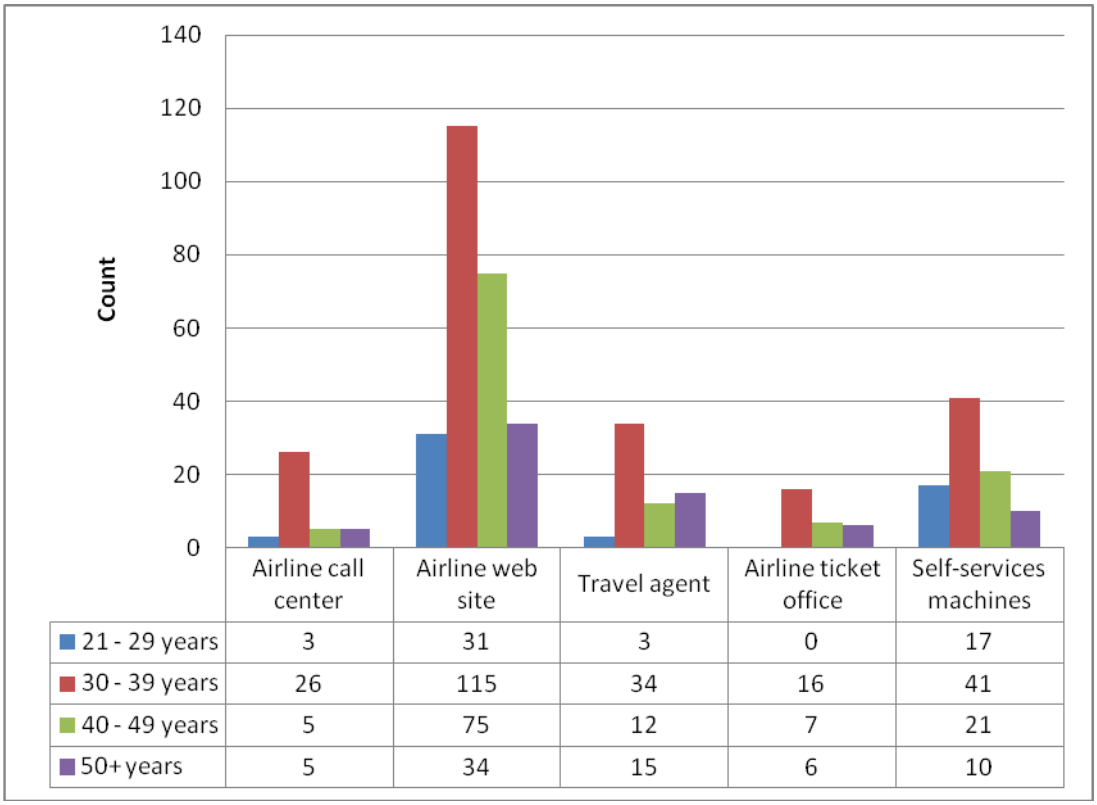


Figure 5.15: Preferred channel for completing travel process.

5.3.4.1 The preferred channel to complete travel process based on age group

The different age groups in this research (21-29, 30-39, 40-49, and 50+) behave differently in terms of choice of the preferred channel while completing their travel process. Figure (5.16) shows that the age group 30-39 years is the largest group for using the airline website to conduct their travel process with 115 respondents, followed by 40-49 years with 75 respondents, 50+ years with 34 respondents, and 21-29 years with 31 respondents. Moreover, the age group 30-39 years seems to be the highest in using all the preferred channels among the other age groups, but the least preferred channel is the airline ticket office.



	Airline call center	Airline web site	Travel agent	Airline ticket office	Self-services machines
21 - 29 years	3	31	3	0	17
30 - 39 years	26	115	34	16	41
40 - 49 years	5	75	12	7	21
50+ years	5	34	15	6	10

Figure 5.16: The preferred channel to complete travel process based on age group

5.3.4.2 The preferred channel to complete travel process based on gender

Figure (5.17) highlights that both men and women respondents use airline websites during their travel process more than the other channels, with 224 and 31, respectively, followed by self- service machines and travel agents . Whilst the least preferred channel for both is the airline ticket office with 26 for men and 3 for women. This shows the respondents tends towards more electronic and self-services channels for conducting the travel in Saudi Arabia.

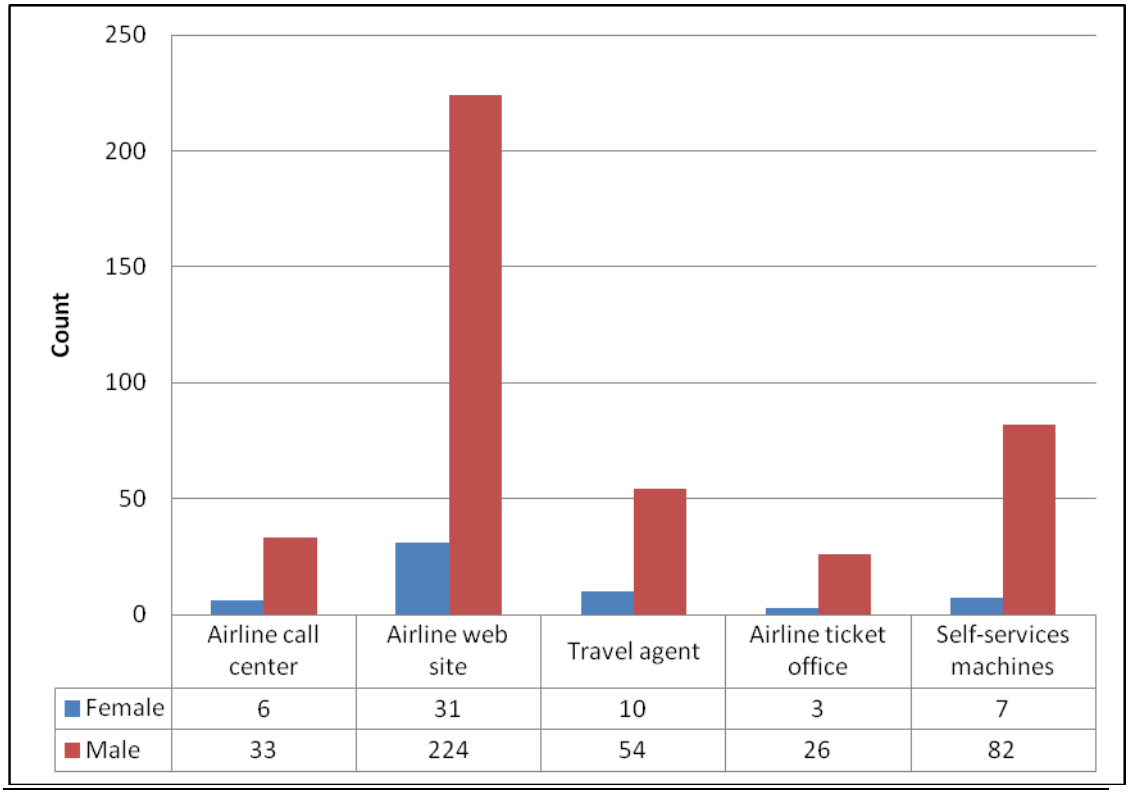
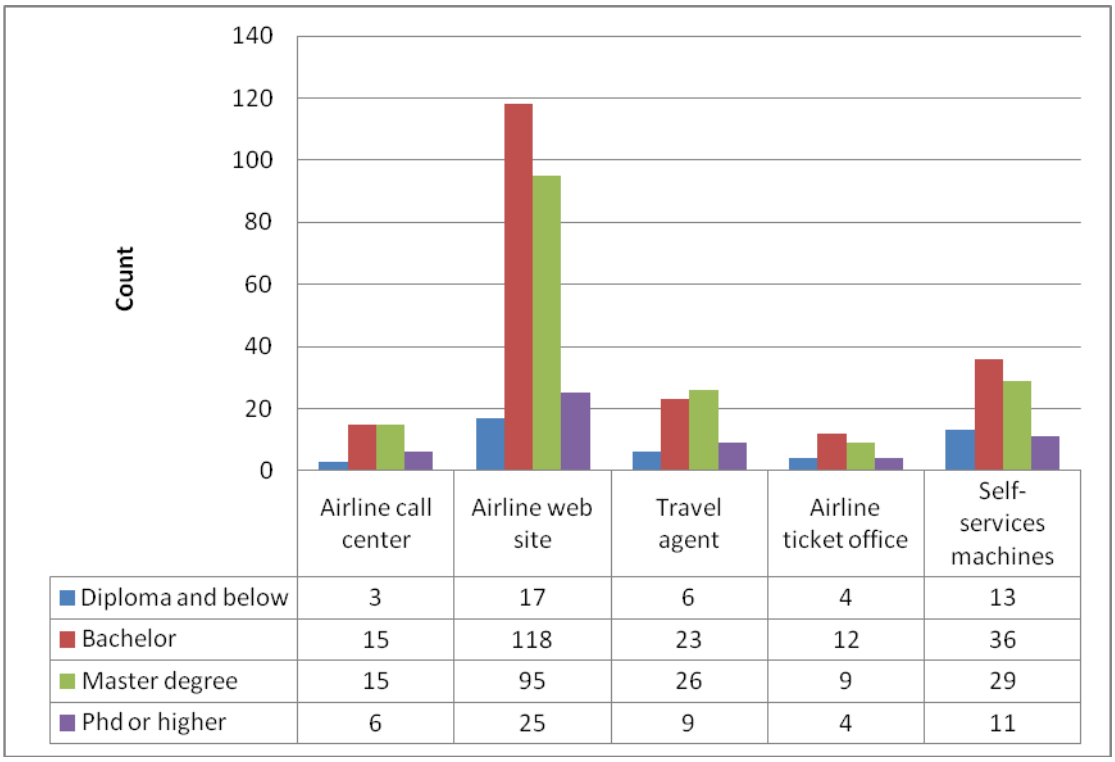


Figure 5.17: The preferred channel to complete travel process based on gender

5.3.4.3 The preferred channel to complete travel process based on educational level

Figure (5.18) illustrates that of those whom using the airline website to complete their travel process, the majority are bachelor degree holders (118 respondents) and master degree (95 respondents) in that order. However, the least preferred channel for them is the airline ticket office as a bachelor degree holders (12 respondents) and as master degree holders (9 respondents).



	Airline call center	Airline web site	Travel agent	Airline ticket office	Self-services machines
Diploma and below	3	17	6	4	13
Bachelor	15	118	23	12	36
Master degree	15	95	26	9	29
Phd or higher	6	25	9	4	11

Figure 5.18: The preferred channel to complete travel process based on educational level.

5.3.4.4 The preferred channel to complete travel process based on internet knowledge

Figure (5.19) shows that respondents with very good internet knowledge prefer to use airline website (179) respondents and self-services machines (67) respectively, to conduct their travel process. The respondents with moderate and good internet knowledge also prefer an airline website (76) as a first choice, however, the second choice will be travel agent (27) followed by self-service machines (22). In general, the airline ticket office is the least preferred channel for both groups.

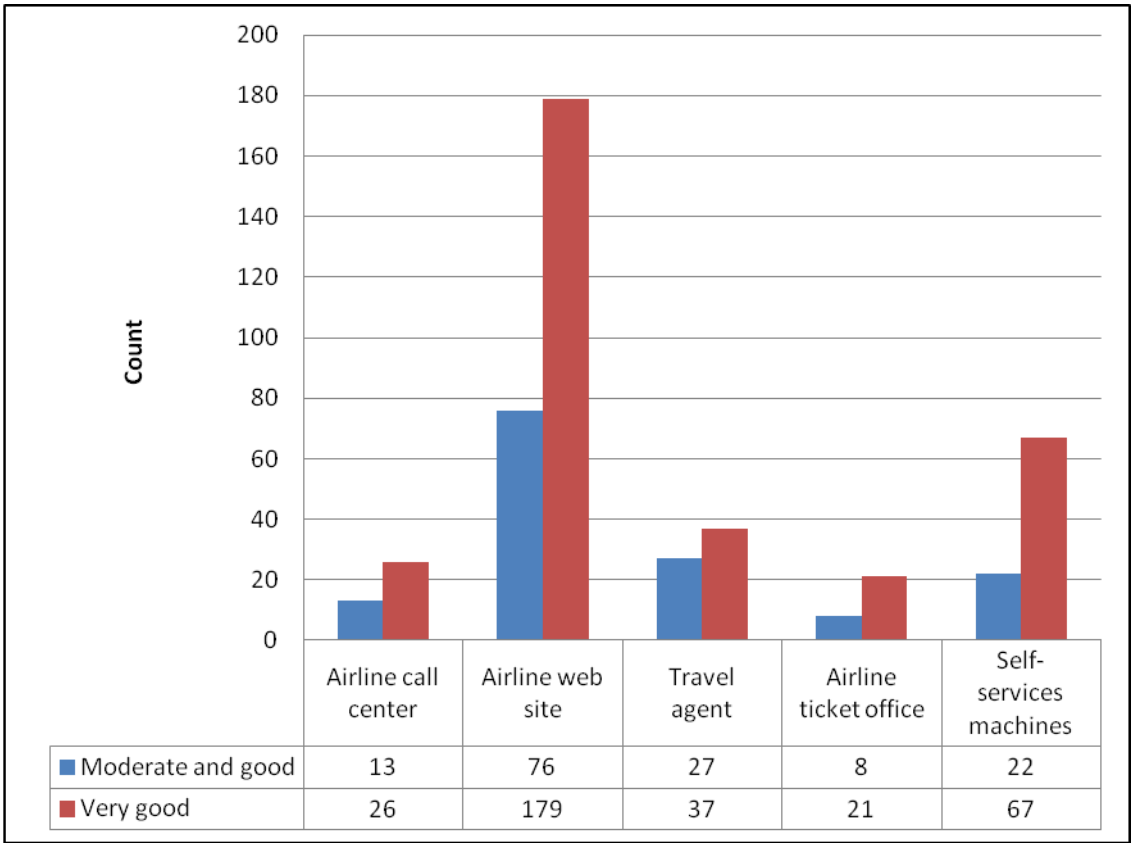


Figure5.19: The preferred channel to complete travel process based on internet knowledge

5.3.4.5 The preferred channel to complete travel process based on travel frequency

Figure (5.20) shows that an airline website is the preferred channel for the traveller who travels 1-2 times a year (38 respondents), 3-5 times a year (91), or more than 5 times a year (126), followed by self-service machines, whilst an airline ticket office is the least preferred channel for travellers who travel 1-2 times (9), 3-5 times (6), or more than 5 times (14).

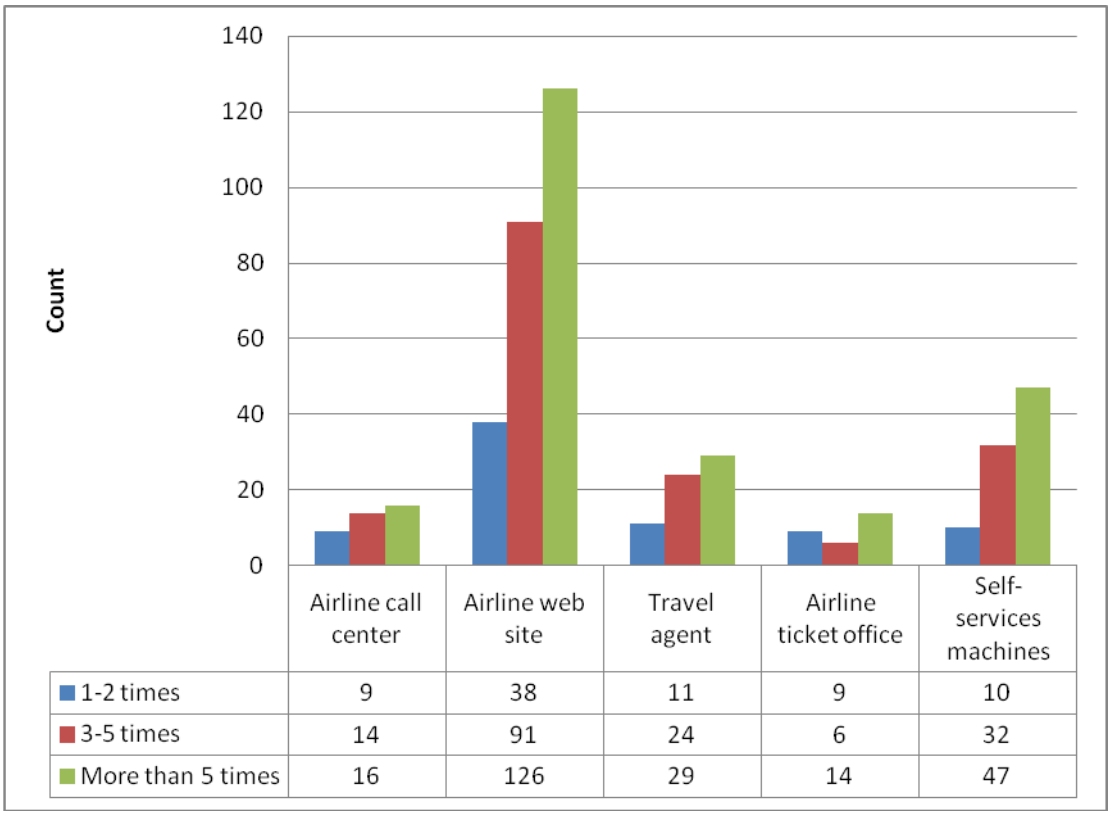


Figure 5.20: The preferred channel to complete travel process based on travel frequency

5.3.4.6 The preferred channel to complete travel process based on travel distance

Figure (5.21) demonstrates that respondents who travel both domestically and internationally prefer an airline website (220 respondents) and self-service machines to conduct their travel as their preferred channel, whilst the least preferred channel is an airline ticket office.

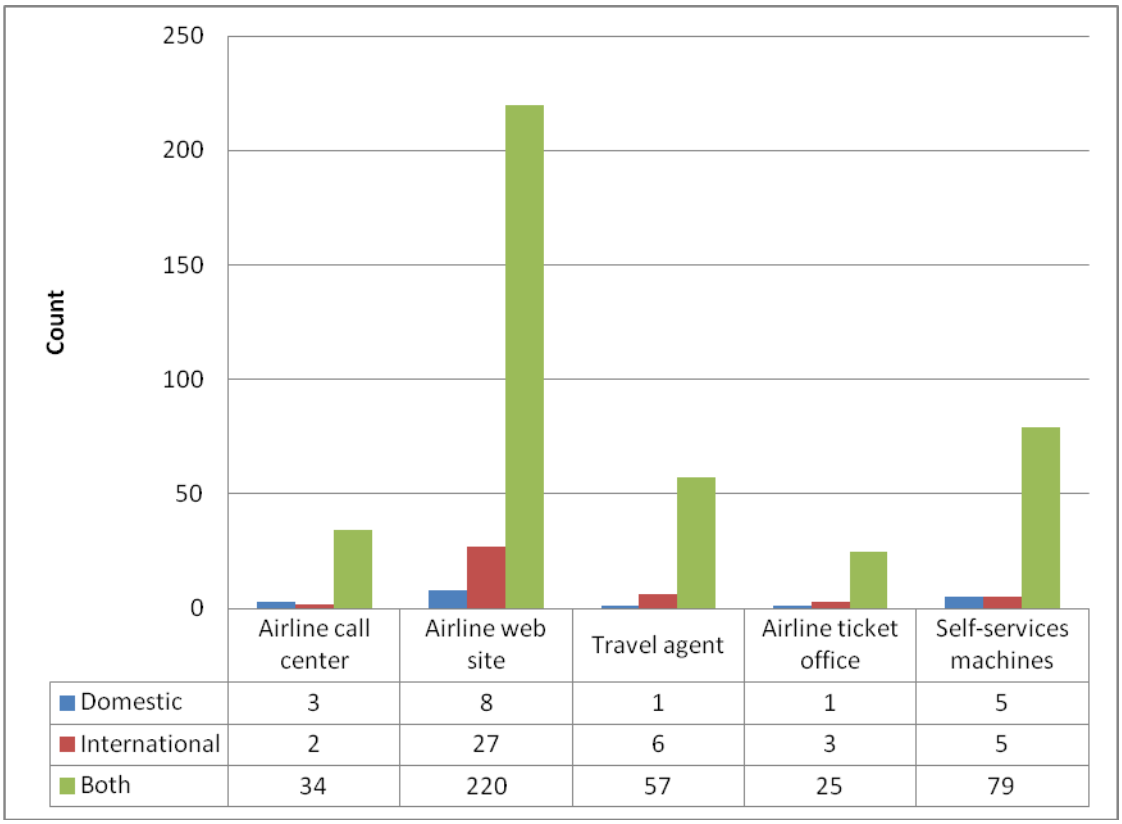


Figure 5.21: The preferred channel to complete travel process based on travel distance

5.3.4.7 The preferred channel to complete travel process based on travel purpose

Figure (5.22) shows that airline websites and self-service machines are the most preferred channel across the range of travel purposes. However, an airline ticket office is the least preferred channel among the different travel purposes. Furthermore, travelling for vacation is the highest reason for travelling amongst the different preferred channel followed by travelling for business.

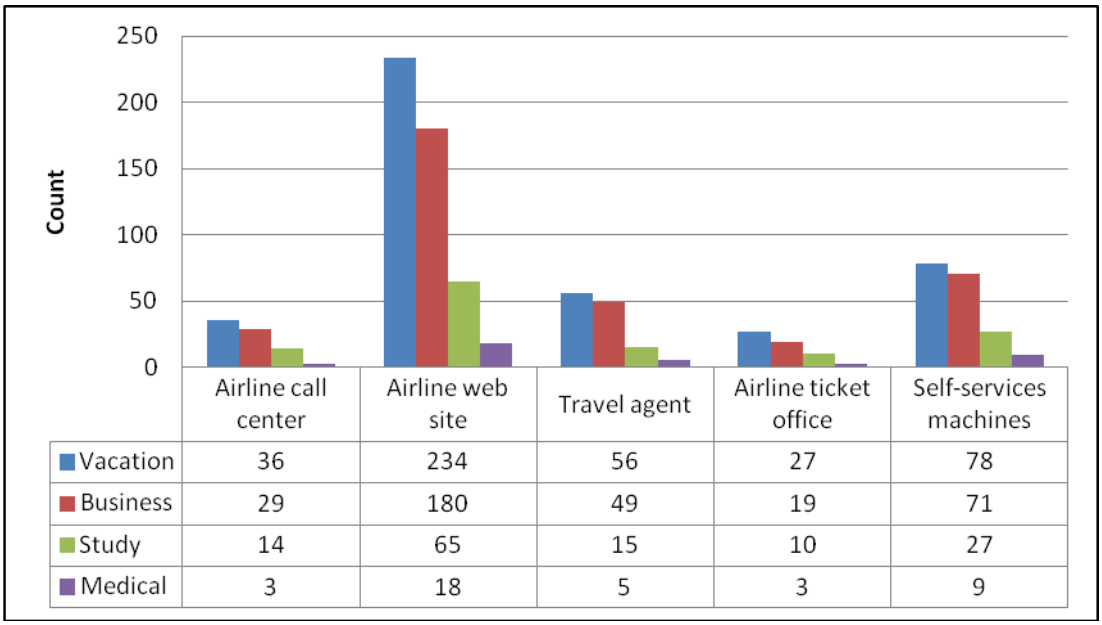


Figure 5.22: The preferred channel to complete travel process based on travel purpose

5.3.5 Customer satisfaction level

Figure (5.23) shows that customers in Saudi Arabia are not satisfied with the mobile services provided by airline companies, with an average rating of 3.23.As some respondents stated that "*airline companies in Saudi Arabia should conduct an educational campaign about the service through advertisements in all the media* " .

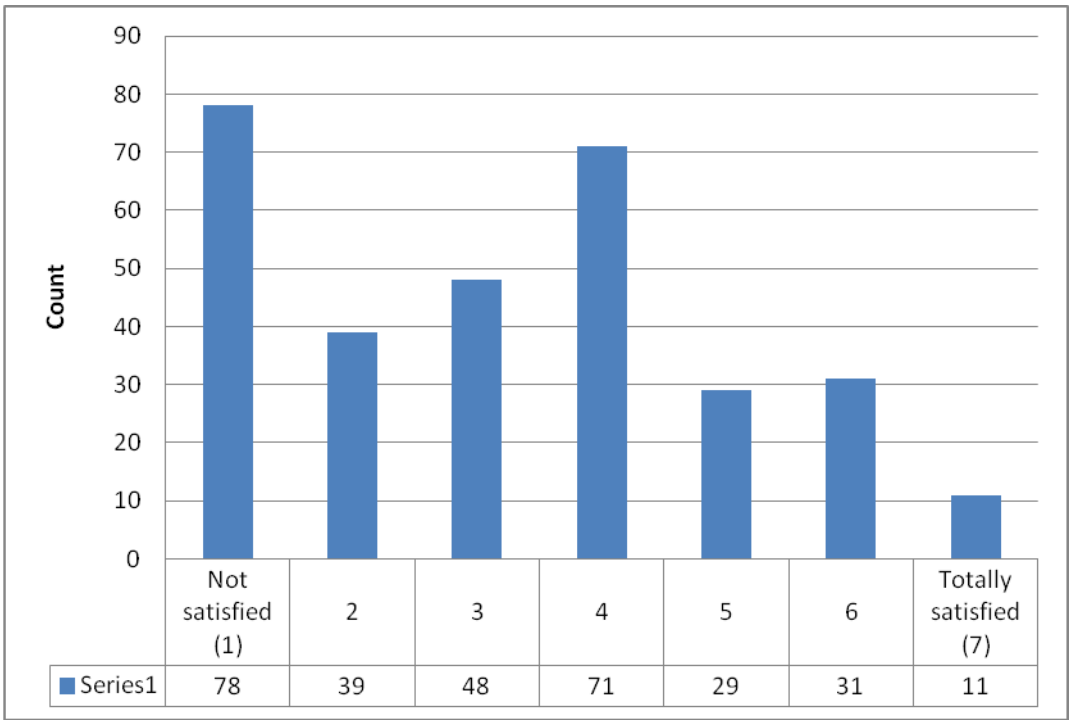
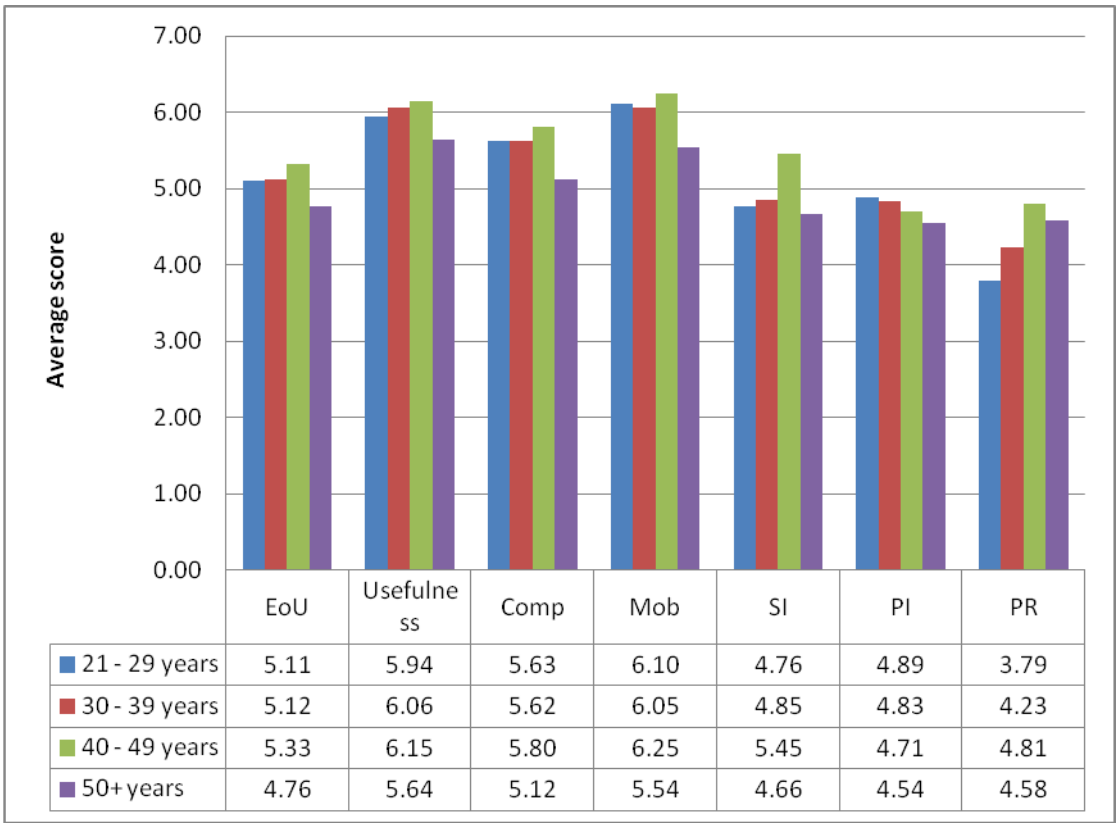


Figure 5.23: Customer satisfaction with mobile services provided by airline companies in Saudi Arabia

5.3.6 Model factors differences

5.3.6.1 Based on age group

As demonstrated in Figure (5.24), the age group 40-49 years seems to have the highest average score in mobility followed by usefulness, compatibility, social influence, ease of use, and perceived risk. However, the age group 21-29 years has personal innovativeness as the highest average score. In general, it looks as if all the age groups score highly in mobility, usefulness, and compatibility which indicates that the benefit attributes of mobile services play a vital role in consumers intention to adopt such technology.

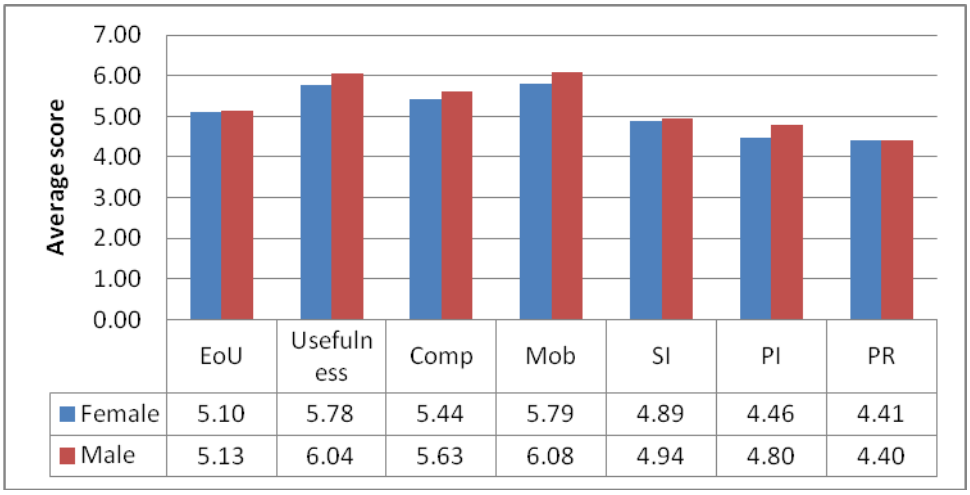


	EoU	Usefulness	Comp	Mob	SI	PI	PR
21 - 29 years	5.11	5.94	5.63	6.10	4.76	4.89	3.79
30 - 39 years	5.12	6.06	5.62	6.05	4.85	4.83	4.23
40 - 49 years	5.33	6.15	5.80	6.25	5.45	4.71	4.81
50+ years	4.76	5.64	5.12	5.54	4.66	4.54	4.58

Figure 5.24: Model factors differences based on age group

5.3.6.2 Based on gender

Figure (5.25) demonstrates that males have higher average scores in all the model factors, with the exception of perceived risk, where females score slightly higher than males.

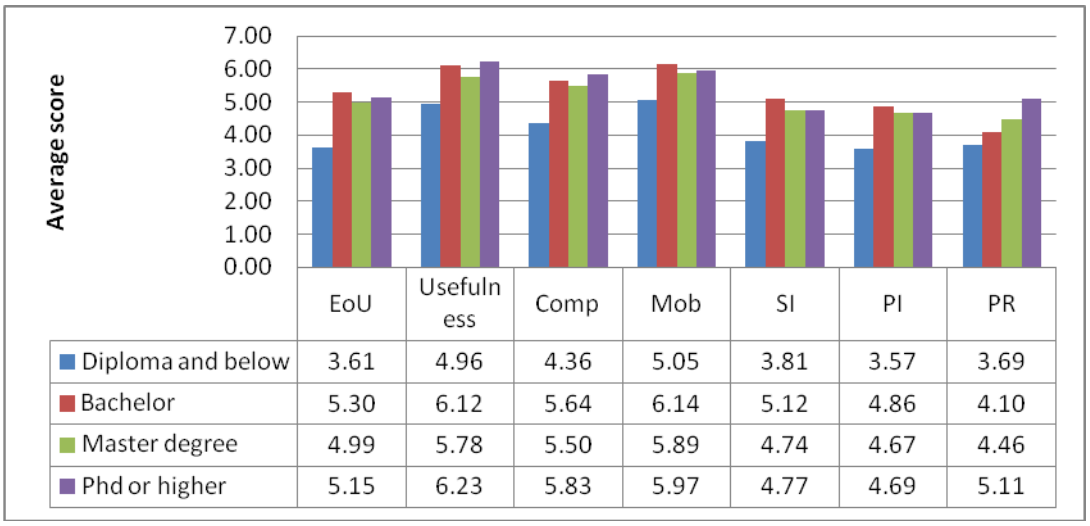


	EoU	Usefulness	Comp	Mob	SI	PI	PR
Female	5.10	5.78	5.44	5.79	4.89	4.46	4.41
Male	5.13	6.04	5.63	6.08	4.94	4.80	4.40

Figure 5.25: Model factors differences based on gender

5.3.6.3 Based on educational levels

As shown in Figure (5.26), once again mobility followed by usefulness, and compatibility have the highest average scores amongst the different educational levels. However, respondents holding a diploma and below record the lowest average scores in all factors, whilst PhD and master degree holders perceive risk higher than bachelor degree and diploma or below holders. This may be the result of those with higher educational levels having greater awareness of fraud and other risks than those with lower educational levels.

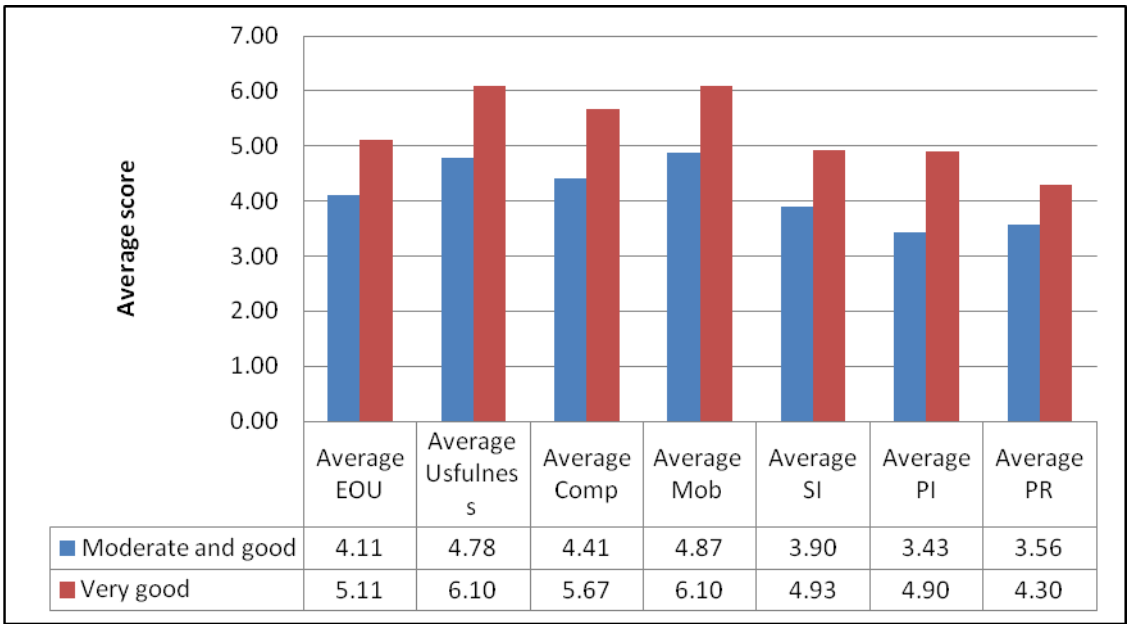


	EoU	Usefulness	Comp	Mob	SI	PI	PR
Diploma and below	3.61	4.96	4.36	5.05	3.81	3.57	3.69
Bachelor	5.30	6.12	5.64	6.14	5.12	4.86	4.10
Master degree	4.99	5.78	5.50	5.89	4.74	4.67	4.46
Phd or higher	5.15	6.23	5.83	5.97	4.77	4.69	5.11

Figure 5.26: Model factors differences based on educational levels

5.3.6.4 Based on internet knowledge

As illustrated in Figure (5.27), respondents with very good internet knowledge consider usefulness (6.10) followed by mobility (6.10), and compatibility (5.67) as the most important factor. However, the corresponding scores for mobility, usefulness and ease of use among those with only moderate or good knowledge are 4.87, 4.78 and 4.41, respectively.



	Average EOU	Average Usfulness	Average Comp	Average Mob	Average SI	Average PI	Average PR
Moderate and good	4.11	4.78	4.41	4.87	3.90	3.43	3.56
Very good	5.11	6.10	5.67	6.10	4.93	4.90	4.30

Figure 5.27: Model factors differences based on internet knowledge

5.3.7 Behavioural intention differences

5.3.7.1 Based on age

Figure (5.28) demonstrates that the respondents in the age group 40-49 years are more readily intend to adopt mobile services, with an average score of (5.95), followed by the age group 21-29 years (5.61) and the age group 30-39 years (5.58). However, the age group 50 + years are the least likely group to have intention to adopt mobile services during their travel process.

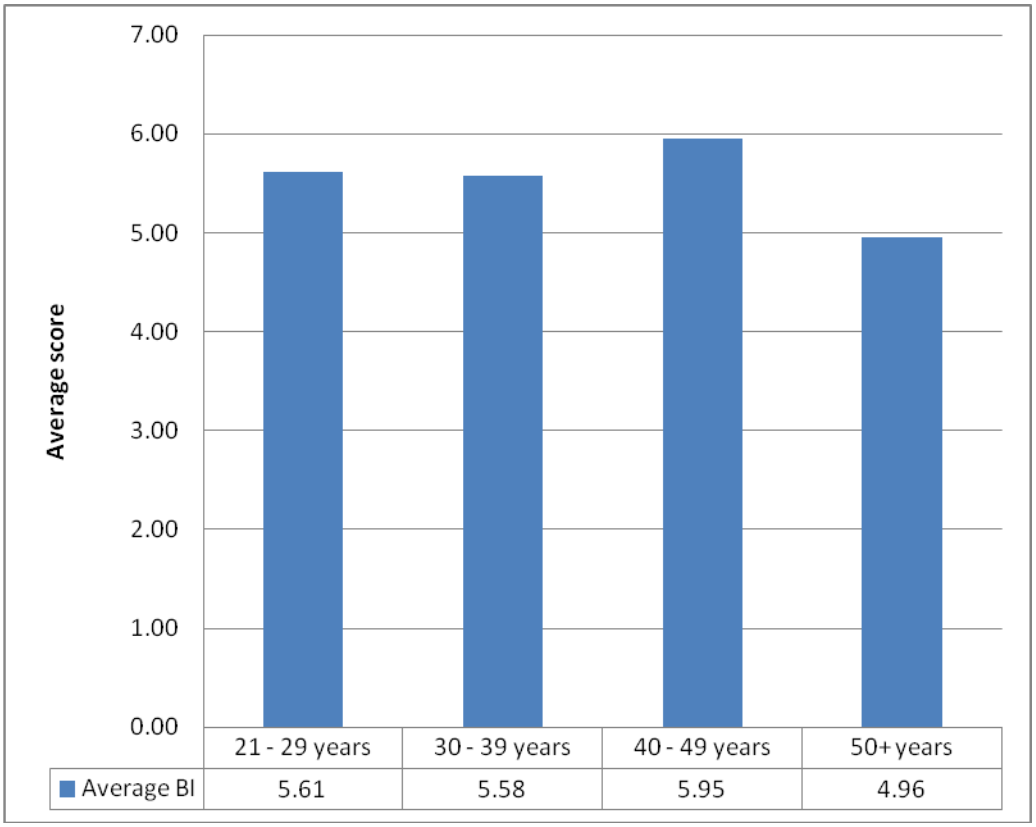


Figure 5.28: Behavioural intention differences based on age groups

5.3.7.2 Based on gender

Figure (5.29) shows average score for behavioural intention to use mobile service in Saudi Arabia for females and males: both have an average score above 5 out of 7. However, males have greater intention to adopt such service, with an average score of 5.68, compared with 5.08 for females.

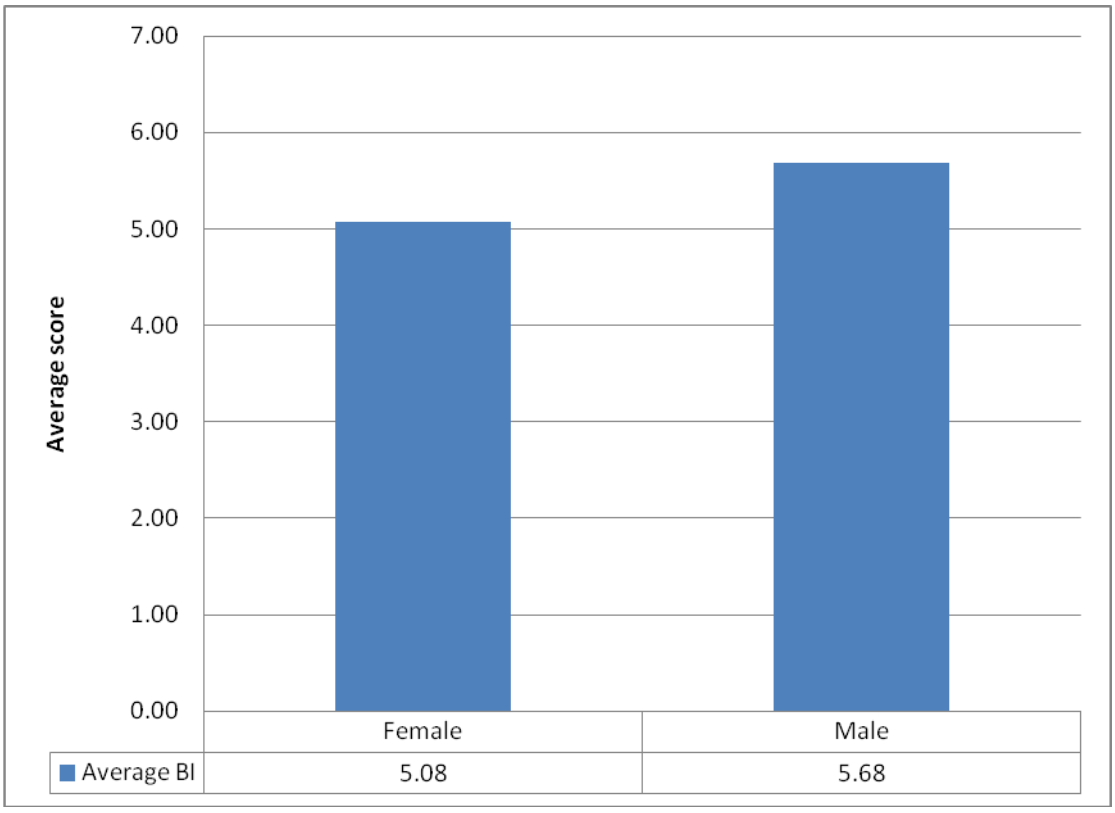


Figure 5.29: Behavioural intention differences based on gender

5.3.7.3 Based on educational level

Figure (5.30) illustrates that bachelor degree holders have the highest average behavioural intention to adopt mobile services (5.74), followed by those with a PhD or higher degree (5.48), and those respondents holding master degree (5.41). Respondents holding diploma and below exhibit less intention to adopt this service.

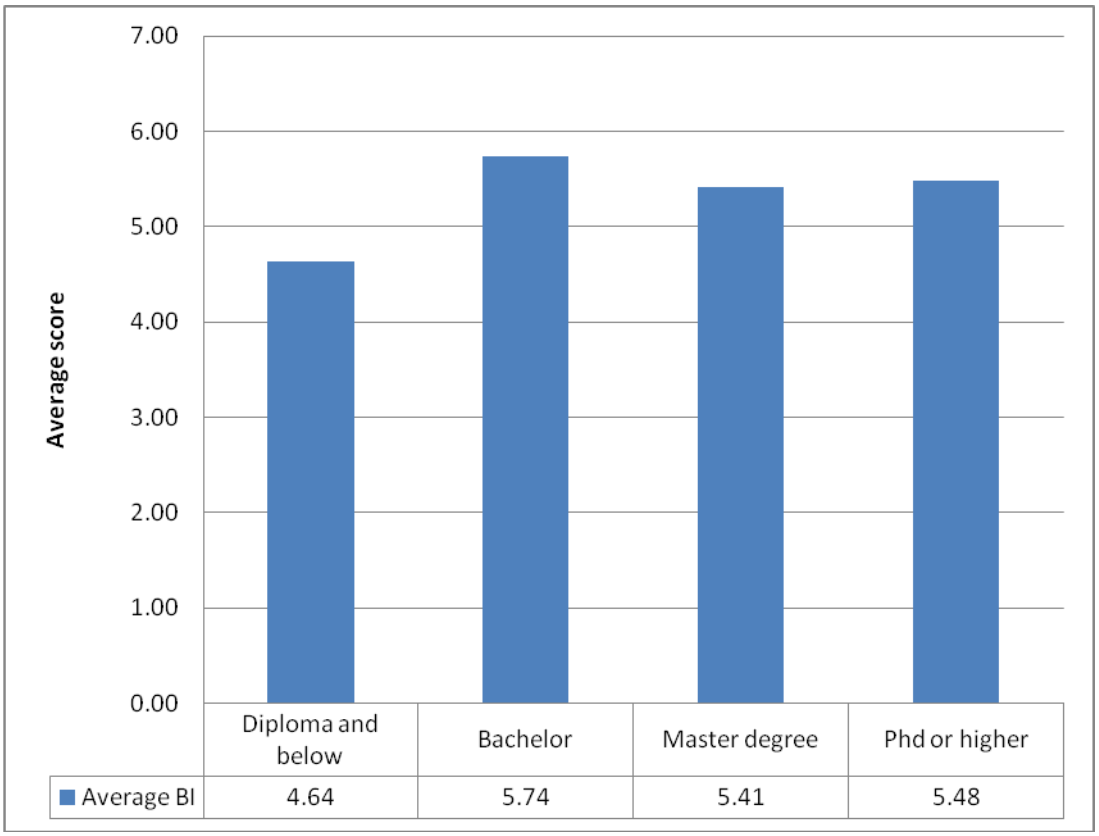


Figure 5.30: Behavioural intention differences based on educational levels

5.3.7.4 Based on internet knowledge

Figure (5.31) shows that respondents with very good internet knowledge have more intention to adopt mobile service, with an average score of 5.73. However, respondents with moderate and good internet knowledge have less intention to adopt this service.

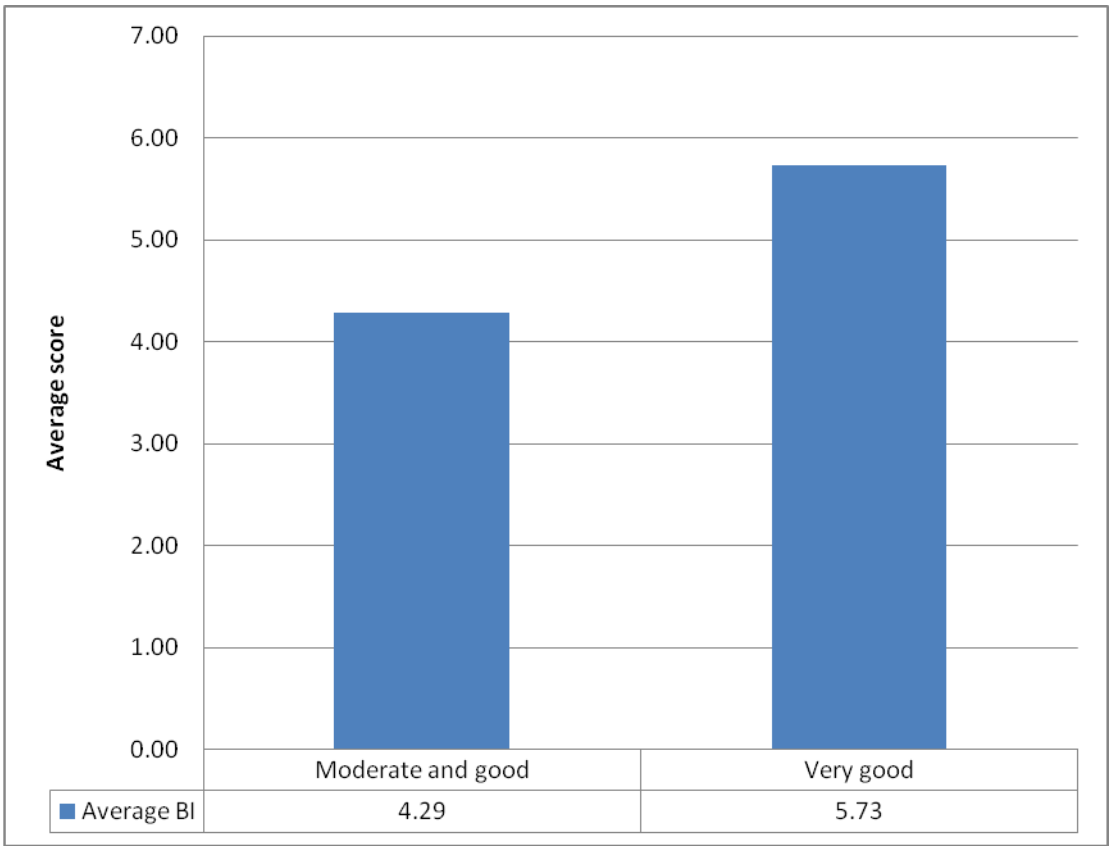


Figure 5.31: Behavioural intention differences based on internet knowledge

5.4 Effect of Demographics, Internet Knowledge and Travel Characteristics on Behavioural Intention (BI) in Saudi Arabia

The secondary aim of this research is to discover the difference observed between respondents towards mobile services acceptance in Saudi Arabia on the basis of their demographic characteristics, i.e. age, gender, educational level, and internet knowledge.

Based on the analysis requirements, to check these effects on the behavioural intention, Foster (2001) stated that t-test and one way ANOVA test are suitable data analysis methods for such analysis. These tests are required to spot if there are any differences among the demographics, internet knowledge, and travel characteristics on the customers' behavioural intention(BI) to use mobile services provided by airlines in Saudi Arabia .

5.4.1 T-test

Researchers are sometimes interested in looking at differences between groups of people rather than looking at relationships between variables (Field, 2009). An independent sample t-test can be used to compare the mean score for two different groups of participants (Pallant, 2010).

5.4.1.1 Gender effect

An independent samples t-test is used to compare the behavioural intention to use mobile services for males and females. Column 7 in Table (5.3) it reveals that there is a significant difference as $p<0.05$, to know this significant in favour of whom the mean in column 3 shows that the significance is for males (M=5.68, SD=1.59) while, female (M=5.08, SD=1.88; t(305)=-2.149, P=.032).

Gender	N	MEAN	SD	T	DF	SIG
Female	39	5.08	1.88	-2.149	305	.032
Male	268	5.68	1.59			

Table 5.3: T-test for gender effect on the behavioural intention (BI)

5.4.1.2 Nationality effect

An independent samples t-test is used to compare the behavioural intention to use mobile services for Saudi and non-Saudi respondents. Column 7 in Table (5.4) shows that the nationality effect is not significant, as $p>0.05$ for Saudi ($M=5.64$, $SD=1.62$) and non-Saudi ($M=5.43$, $SD=1.76$; $t(305)=.830$, $P=.407$).

Nationality	N	MEAN	SD	T	DF	SIG
Saudi	256	5.64	1.62	.830	305	.407
Non-Saudi	51	5.43	1.76			

Table 5.4: T-test for nationality effect on the behavioural intention (BI)

5.4.2 One-way ANOVA test

Previously, it was mentioned that the t-test is used to compare the scores of two different groups. However, the one-way ANOVA test is used if one variable has a number of diverse levels that correspond differently to the groups or conditions (Pallant, 2010).

5.4.2.1 Age groups effect

A one-way between-groups analysis of variance is conducted to explore the differences in behavioural intention to use mobile services' scores for the different age groups: i.e. 21-29 years; 30-39 years; 40-49 years; 50-59 years; and 60 years or older. Table (5.5) column 4 demonstrates that there is a statistically significant difference, as $p<0.05$, in behavioural intention scores for the five age groups: $F(4,302)=2.84$, $P=.025$

Behavioural intention	**df**	**F**	**Sig**
Between groups	4	2.84	.025
Within groups	302		
Total	306		

Table 5.5 : One- way Anova test for the effect of age group on the behavioural intention (BI)

A Tukey Post-hoc comparisons test was performed in order to determine the differences in favour of any age groups, by looking to significance. Column 4 shows that a significant difference, where $p<0.05$, was only found between age group 40-49 years ($M=5.95$, $SD=1.10$) and 50-59 years ($M=4.95$, $SD=1.95$). It should be noted that or age group 60+ it may not be significant as the sample of respondents was small (only 10), as shown in Table (5.6).

(I) Which category below includes your age?	(J) Which category below includes your age?	Mean Difference (I-J)	Sig.
21-29 yrs M=5.61 SD=1.81	30-39 yrs	.03481	1.000
	40-49 yrs	-.34274	.821
	50-59 yrs	.66254	.424
	60 yrs or older	.61111	.830
30-39 yrs M=5.58 SD=1.76	21-29 yrs	-.03481	1.000
	40-49 yrs	-.37755	.427
	50-59 yrs	.62772	.250
	60 yrs or older	.57630	.815
40-49 yrs M=5.95 SD=1.10	21-29 yrs	.34274	.821
	30-39 yrs	.37755	.427
	50-59 yrs	1.00527	.017
	60 yrs or older	.95385	.397
50-59 yrs M=4.95 SD=1.95	21-29 yrs	-.66254	.424
	30-39 yrs	-.62772	.250
	40-49 yrs	-1.00527	.017
	60 yrs or older	-.05143	1.000
60 yrs or older M=5.00 SD=1.78	21-29 yrs	-.61111	.830
	30-39 yrs	-.57630	.815
	40-49 yrs	-.95385	.397
	50-59 yrs	.05143	1.000

Table 5.6: Tukey post-hock comparison test for age group

5.4.2.2 Educational levels effect

A one-way between-groups analysis of variance was conducted to explore the differences in behavioural intention to use mobile services' scores for the different educational levels: high school or below; diploma; bachelor; master degree; and PhD or higher. Table (5.7) column 4 shows that the educational level is not significant as $p>0.05$ in behavioural intention scores for the five education groups : $F(4,302)=.822$, $P=.512$.

Behavioural intention	**df**	**F**	**Sig**
Between groups	4	.822	.512
Within groups	302		
Total	306		

Table 5.7: One-way Anova test for the effect of educational level on the behavioural intention (BI)

5.4.2.3 Internet knowledge effect

A one-way between-groups analysis of variance is conducted to explore the differences in behavioural intention to use mobile services' scores for different internet knowledge categories: moderate, good and very good. Results from Table (5.8) column 4 shows that there is a statistically significant difference, as $p<0.05$, in behavioural intention scores for the three internet knowledge categories: $F(2,304)=3.98$, $P=.020$.

Behavioural intention	df	F	Sig
Between groups	2	3.98	.020
Within groups	304		
Total	306		

Table 5.8: One-way Anova test for the effect of internet knowledge on behavioural intention (BI)

A Tukey post-hoc comparisons test was performed in order to determine the differences in favour of any groups. Column 4 in Table (5.9) reveals that a significant difference was only found between the categories internet knowledge moderate (M=4.59, SD=1.87) and internet knowledge very good (M=5.73, SD=1.64).

(I) How would you describe your internet knowledge?	(J) How would you describe your internet knowledge?	Mean Difference (I-J)	Sig.
Moderate M=4.59 SD=1.87	Good	-.89485	.110
	Very good	-1.14260	.020
Good M=5.48 SD=1.55	Moderate	.89485	.110
	Very good	-.24774	.465
Very Good M=5.73 SD=1.64	Moderate	1.14260	.020
	Good	.24774	.465

Table 5.9: Tukey post-hock comparison test for internet knowledge

5.4.2.4 Travel distance effect

A one-way between-groups analysis of variance was conducted to explore the differences in behavioural intention to use mobile services' scores for the different travel distance categories: international, domestic, and both. According to Table(5.10) column 4, there is a statistically significant difference, as $p<0.05$, in behavioural intention scores for the three travel distances: $F(2,304)=5.33$, $P=.005$.

Behavioural intention	**df**	**F**	**Sig**
Between groups	2	5.33	.005
Within groups	304		
Total	306		

Table 5.10: One-way Anova test for the effect of travel distance on behavioural intention (BI)

A Tukey post-hoc comparisons test was performed in order to determine the differences in favour of any groups. Column 4 in Table (5.11) shows a significant difference was only found between travel distance international (M=4.88, SD=1.82) and travel distance both (M=5.73, SD=1.57).

(I) Travel Distance	**(J) Travel Distance**	**Mean Difference (I-J)**	**Sig.**
Domestic M=4.89 SD=2.08	International Both	.01352 -.83643	1.000 .166
International M=4.88 SD=1.82	Domestic Both	-.01352 -.84995	1.000 .013
Both M=5.73 SD=1.57	Domestic International	.83643 .84995	.166 .013

Table 5.11: Tukey post-hock comparison test for travel distance

5.4.2.5 Travel frequencies effect

A one-way between-groups analysis of variance was conducted to explore the differences in behavioural intention to use mobile services' scores for the different travel frequencies per year: 1-2 times, 3-5 times, and more than 5 times. There is a statistically significant difference as p<.05, as shown in column 4 of Table (5.12) in behavioural intention scores for the travel frequencies: F(2,304)=7.96, P=.000 .

Behavioural intention	df	F	Sig
Between groups	2	7.96	.000
Within groups	304		
Total	306		

Table 5.12: One-way Anova test for the effect of travel frequency on behavioural intention (BI)

A Tukey post-hoc comparisons test was performed in order to determine the differences in favour of any group. Significant difference was only found at p<0.05, as column 4 of Table (5.13) shows, between travel frequencies 1-2 times (M=4.93, SD=1.71) and travel frequencies more than 5 times (M=5.94, SD=1.53).

(I) Travel frequency per year	(J) Travel frequency per year	Mean Difference (I-J)	Sig.
1-2 M=4.93 SD=1.71	3-5 More than 5	-.55234 -1.00967	.101 .000
3-5 M=5.49 SD=1.65	1-2 More than 5	.55234 -.45733	.101 .063
More than 5 M=5.94 SD=1.53	1-2 3-5	1.00967 .45733	.000 .063

Table 5.13: Tukey post-hock comparison test for travel frequency

After conducting the t-test and the one-way ANOVA test, the researcher concludes in Table (5.14) that there is statistically significant differences in terms of (gender, age, internet knowledge, travel distance, and travel frequencies on behavioural intention). However, there is no statistically significant difference in terms of nationality and educational levels on behavioural intention.

Characteristic	**Is there a difference?**	**Sig**	**Difference for**
Gender	Yes	.032	Males
Nationality	No	.407	-
Age groups	Yes	.025	40-49 and 50-59
Educational levels	No	.512	-
Internet knowledge	Yes	.020	Moderate and very good
Travel distance	Yes	.005	International and both
Travel frequencies	Yes	.000	1-2 times and >5 times

Table 5.14: T-test and one-way ANOVA significance differences summary.

5.5 Chapter Conclusion

This chapter investigated the respondents' profile in terms of their gender, age educational level, and nationality. Further, their travel characteristics: travel frequencies, travel distance, travel purpose, and the preferred channel for completing their travel process were examined using a descriptive SPSS analysis with cross tabulation for more insightful of travellers characteristics in Saudi Arabia. Furthermore, the effects of age, gender, educational level, and internet knowledge on behavioural intention to use mobile services in Saudi Arabia have been tested by t-test and one-way Anova test to discover the differences between respondents towards mobile services acceptance. Also, the model factor differences were tested, based on age groups, gender, and educational levels.

The next chapter will focus on the model testing and the different hypothesis relationships within the model.

Chapter Six: Model Testing

6.1 Introduction

The previous chapter presented, firstly, a rigorous analysis of the main field result, and ,secondly, discovered the differences between respondents towards mobile services acceptance in Saudi Arabia, on the basis of their demographic characteristics.

In this chapter, the aims are to discuss the possible justifications for the significance and insignificance of the relationships in the proposed model. Additionally, the focus will be on analyzing the outcomes to find the different hypothesis relationships in the proposed model. To achieve these targets, major data analysis techniques were conducted on this research by using the Statistical Package for Social Sciences (SPSS.18). A range of tests were conducted, including reliability test, correlation test, factor analysis test, and multiple regression test .

6.2 Data Screening

Marketing research and social science studies are mainly based on survey questionnaires (Sekaran, 2000). Also, in cases where the survey is administrated by the researcher, it is uncommon to obtain complete data (Zikumnd, 2003). According to Tabachnick and Fidell (2007), in the survey research the missing data problems occur when the respondents cannot answer one or more questions in the questionnaire, thus causing potential problems in the statistical analysis process. In this study, the researcher discarded any questionnaire which was not completed by the respondents and there is no missing data found.

6.3 Test of Normality

Normality is defined by the assumption that the shape of the data distribution is a symmetrical and bell-shaped curve (Hair et al., 2010; Pallant, 2010). Assessing the severity of non-normality is based on two perspectives: the shape of offending distribution; and the sample size (Hair et al., 2010, p.71).

The shape of the distribution can be assessed by kurtosis and skewness (Hair et al., 2010, p.71). According to Pallant (2010, p.57), skewness is an indication of the symmetry of the distribution , whereas, Kurtosis refers to the peakedness or flatness of the distribution compared to the normal distribution (Hair et al., 2010, p.71) normal distribution which occurs when the value of skewness and kurtosis is zero, which is rare in social science (Pallant, 2010).

Furthermore, (Tabachnick and Fidell, 2007,p.80) stated that, with reasonably large samples, skewness will not make a substantive difference in the analysis, but kurtosis can result in an underestimate of the variance. However, this risk is reduced with a large sample size of over 200. Moreover, Hair et al. (2010) argued that the severity of normality is also based on the sample size, which reduces the negative effects of non-normality. For sample sizes 200 or more, the non normality effect may be negligible. Furthermore, Tabachnick and Fidell (2007,p.74) confirmed that with large sample sizes the significance of the level of skewness is not as important as its actual size, and the impact of departure from zero kurtosis also diminishes. For instance, underestimation of variance associated with positive kurtosis disappears with samples of 100 and above; and with negative kurtosis, underestimation of variance disappears with samples of 200 or more. In this research , the practical sample size is 307, as illustrated in Table (6.1). Therefore, the researcher may be less concerned about non-normal variables (Hair et al., 2010, p.72).

Factors	N	Mean	Std. Deviation	Skewness	Kurtosis
Ease of Use (EoU)	307	5.1295	1.80157	-.802	-.442
Social Influence (SI)	307	4.9349	1.66551	-.442	-.679
Perceived Risk (PR)	307	4.4007	1.79581	-.196	-1.031
Personal Innovativeness (PI)	307	5.4039	1.28295	-.803	.084
Usefulness, Comp, Mob	307	5.9625	1.26927	-1.779	3.290
Behavioural Intention (BI)	307	5.6020	1.64293	-1.203	.512

Table 6.1: Shape of data distribution, based on Skewness and Kurtosis values

6.4 Testing for Multicollinearity

Multicollinerity has been defined by Pallant (2010,pp.151) as " *the relationship among the independent variables"*. In order to check the multicollinerity between the predictor variables, the correlation matrix should be inspected, and both Tolerance and Variance inflation factor (VIF) should be applied. Pallant (2010,pp.158) defines Tolerance as *"how much of the variability of the specified independent is not explained by the other independent variables in the model"*, and Variance inflation factor (VIF) as *" just the inverse of the Tolerance value"*.

In this research, the multicollinearity results revealed that the Tolerance results for EoU, Usefulness, Comp, Mob, SI, and PR are all bigger than 0.1,and their VIF values are less than 10, as shown in Table (6.2) below. Thus, no multicollinearity problem has occurred (Pallant, 2010).

Model factors	Tolerance	VIF
EoU	.595	1.681
Usefulness, Mob, Comp	.441	2.268
SI	.742	1.348
PI	.794	1.260
PR	.973	1.028

Table 6.2 :Multicollinearity test

6.5 Test of Reliability

According to Pallant (2010), reliability refers to the degree to which the items of the scale are correlated, measuring the same constructs. Cronbach's alpha is considered as the most commonly used, easy to calculate, and most well-known among academic research for testing data reliability (Tabachnick and Fidell, 2007). The questionnaire was tested using Cronbach's alpha measurements. The Cronbach's alpha coefficients are shown in Table (6.3), ranging from 0.840 to 0.963, which goes beyond the suggested value of 0.70 (Pallant, 2010).

Construct name	Cronbach's alpha
Behavioural intention (BI)	0.963
Social influence (SI)	0.954
Ease of use (EoU)	0.945
Compatibility (COMP)	0.918
Usefulness (USE)	0.917
Mobility (MOB)	0.903
Perceived risk (PR)	0.840
Personal innovativeness (PI)	0.769

Table 6.3: Reliability analysis

6.6 Results from Correlation Analysis

A compute variable was used based on the average score of a number of items for the constructs in the framework, as each construct was measured by several items in the questionnaire, which will be used in further analysis (such as regression and correlation) (Wang and Benbasat, 2007; Wei et al., 2009). Pearson r correlation was run to determine the relationship between independent constructs (EoU, SI, Usefulness, Mob, Com, PI, PR) and the dependent construct (BI), as described in Table (6.4). Cohen (1988, pp.79-81) suggests that the correlation coefficient value (r) with a range from 0.10 to 0.29 is considered weak; from 0.30 to 0.49 is considered medium; and from 0.50 to 1.0 is considered strong. Results show that there was a strong, positive correlation and statistical significance between EoU ($r = .512$, $n=307$, $p < 0.01$), Usefulness, Mob, Comp ($r = .726$, $n=307$, $p < 0.01$), SI ($r = .509$, $n=307$, $p < 0.01$), PI ($r=.556$, $n=307$, $p< 0.01$) and behavioural intention to use mobile services. However, perceived risk ($r = .112$,$n=307$, $p < 0.05$) was negatively correlated to behavioural intention to use mobile services.

Correlations

N(307)		EoU	SI	PR	PI	USEFULNESS.MOB.COMP	BI
EoU	Pearson Correlation	1	.342	-.111	.240	.633	.512
	Sig. (2-tailed)		.000	.051	.000	.000	.000
SI	Pearson Correlation	.342	1	-.019	.239	.505	.509
	Sig. (2-tailed)	.000		.741	.000	.000	.000
PR	Pearson Correlation	-.111	-.019	1	-.129	-.120	-.112
	Sig. (2-tailed)	.051	.741		.023	.035	.049
PI	Pearson Correlation	.240	.239	-.129	1	.443	.556
	Sig. (2-tailed)	.000	.000	.023		.000	.000
USEFULNESS.MOB.COMP	Pearson Correlation	.633	.505	-.120	.443	1	.726
	Sig. (2-tailed)	.000	.000	.035	.000		.000
BI	Pearson Correlation	.512	.509	-.112	.556	.726	1
	Sig. (2-tailed)	.000	.000	.049	.000	.000	

Table 6.4: Correlation matrix

6.7 Results from Factor Analysis

Pallant (2010) defined factor analysis as a *"data reduction technique. It takes a large set of variables and looks for a way the data may be reduced or summarized, using a smaller set of factors or components"*. Thus, factor analysis is conducted to examine the data and give information to the researcher about the number of possible factors in the model (Hair et al., 2010). Furthermore, principal components analysis helps to recognize and reduce the large set of variables into a smaller number of components (Hair et al., 2010; Tabachnick and Fidell, 2007). Thus in this research, factor analysis with principal components, and extraction with varimax rotation is run on 31 items to examine the construct validity and the measurement items used.

In order to get suitable factor analysis results, it is recommended to use the Kaiser-Meyer-Olkin (KMO) test as a measure of sampling adequacy and Bartlett's test of sphericity (Norusis, 1992). A value of KMO greater than 0.6 suggests that the relationship between items is statistically significant and is suitable for factor analysis to present a reasonable set of factors (Tabachnick and Fidell, 2007).

The significance of Bartlett's test of sphericity lies in the fact that if the correlation among the measurement items is higher than 0.3, they will be suitable for factor analysis (Hair et al., 2006). In this research, as presented in Table (6.5), the Kaiser-Meyer-Olkin (KMO) value of 0.925 and the significance of Bartlett's statistic Chi-Square = 9132.834 ($p < 0.001$) confirm the suitability of factor analysis for the data set.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	9132.834
	df	435
	Sig.	.000

Table 6.5: Initial assumption of factor analysis

Table (6.6) shows the total variance explained by each element. The number of factors that contributed Eigenvalue>1 were only significant and remain, while factors with Eigenvalue<1 were ignored (Hair et al., 2010; Tabachnick and Fidell, 2007). Table (5.6) exhibits all 30 components results, where six components have Eigenvalue>1, as stated in column 2. These six components gave a total variance of 77.6% in consumers' responses.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.445	44.815	44.815	13.445	44.815	44.815
2	2.566	8.553	53.368	2.566	8.553	53.368
3	2.413	8.043	61.411	2.413	8.043	61.411
4	2.121	7.071	68.482	2.121	7.071	68.482
5	1.603	5.342	73.824	1.603	5.342	73.824
6	1.127	3.758	77.582	1.127	3.758	77.582
7	.821	2.737	80.319			
8	.754	2.514	82.833			
9	.617	2.056	84.889			
10	.512	1.707	86.596			
11	.469	1.562	88.158			
12	.405	1.350	89.507			
13	.315	1.049	90.556			
14	.307	1.025	91.581			
15	.267	.889	92.469			
16	.257	.858	93.327			
17	.235	.785	94.112			
18	.212	.706	94.817			
19	.204	.681	95.498			
20	.182	.608	96.106			
21	.181	.604	96.710			
22	.162	.540	97.250			
23	.156	.518	97.769			
24	.148	.494	98.262			
25	.112	.375	98.637			
26	.105	.351	98.988			
27	.090	.301	99.289			
28	.082	.275	99.564			
29	.075	.248	99.812			
30	.056	.188	100.000			

Extraction method: Principal Component Analysis

Table 6.6: Eigenvalues and variance extracted by each component

Table (6.7) illustrates the rotated component matrix with six clustered factors: Factor 1 (Mob ,Usefulness, Comp), Factor 2 (EoU), Factor 3 (BI), Factor 4 (SI), Factor 5 (PI), and Factor 6 (PR). These factors range from 0.424 to 0.904, and fulfill the minimum factor loadings criteria (Hair et al., 2010; Pallant, 2010).

Rotated Component Matrix						
Factors	Component					
	1	2	3	4	5	6
Mobility3	.826					
Mobility2	.810					
Mobility4	.802					
Usefulness3	.752					
Mobility1	.738					
Usefulness1	.648	.424				
Usefulness4	.640					
Usefulness2	.582					
Compatibility3	.556					
Compatibility2	.543					
Ease of use4		.869				
Ease of use1		.867				
Ease of use3		.860				
Ease of use2		.815				
Behavioural Intention3			.805			
Behavioural Intention4			.797			
Behavioural Intention1			.766			
Behavioural Intention2			.765			
Behavioural Intention5			.710			
Social influence4				.904		
Social influence3				.895		
Social influence1				.883		
Social influence2				.859		
Personal					.798	
Personal					.791	
Personal					.770	
Personal					.559	
Perceived Risk2						.899
Perceived Risk3						.894
Perceived Risk1						.795
Extraction Method: Principal Component Analysis. a. Rotation converged in six iterations.						

Table 6.7: Rotated matrix (factor loading)

6.8 Model Testing Using Multiple Regression Analysis

Multiple regression analysis is applied to investigate the association between a single dependent variable and a number of independent variables (Hair et al., 2010; Pallant, 2010).

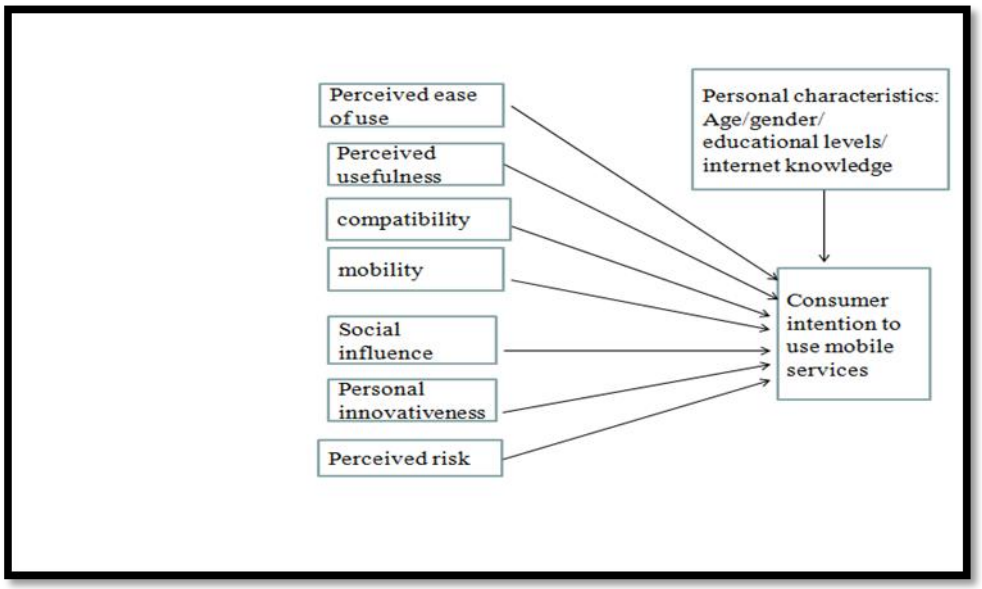


Figure 6.1: Proposed model

Additionally, multiple regression analysis was employed to test the hypotheses. Table (6.8) shows F=101.085, which assesses the overall significance of the model as $p<0.05$, as in column 6.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	517.669	5	103.534	101.085	.000
	Residual	308.290	301	1.024		
	Total	825.959	306			

Table 6.8: Overall model significance

The coefficient of determination, R square, shows how much of the variance in the dependent variable is explained by the model (Pallant, 2010). The R square result, in Table (6.9) column 3, indicates that the model explains 62.7 per cent of the variance in the behavioural intention towards mobile services in Saudi Arabia.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792	.627	.621	1.01204

Table 6.9: Model summary

The results in Table (6.10) column 4 show that Usefulness, Mob, Comp ($p < 0.05$), PI ($p<0.05$), EoU ($p < 0.05$) and SI ($p< 0.05$) all significantly affect the behavioural intention towards mobile services. Moreover, column 2 in Table (6.10) shows that the factors contributing most to consumer intention towards m-services are Usefulness, Mob, Comp (44%) and PI (29.3%), followed by SI (18.2%) and EoU (10%). However, PR was found not to be significantly linked to the behavioural intention to use mobile services in Saudi Arabia.

Model	Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	Beta			Lower Bound	Upper Bound
(Constant)		-3.152	.002	-1.862	-.431
EoU	.100	2.187	.030	.009	.173
USEFULNESS.MOB.COMP	.440	8.294	.000	.434	.704
SI	.182	4.463	.000	.101	.259
PI	.293	7.407	.000	.275	.474
PR	-.007	-.190	.849	-.070	.058

Table 6.10: Multiple regression analysis

6.9 Hypothesis Test Results

The multiple regression analysis was applied to test the different proposed hypotheses within the model: perceived ease of use, perceived usefulness, compatibility, mobility, social influence, personal innovativeness, perceived risk, and the behavioural intention to use mobile service. Results proposed that TAM is able to present sufficient detail for customer adoption of mobile commerce, as perceived usefulness is the highest contributed factor in the model (β=.440). Multiple regression results from Table (6.10) column 4 reveal the following:

According to the multiple regression analysis in Table (6.10) to test whether perceived ease of use has an effect on consumer intention to use mobile service, t=2.187, P<0.05. Thus, H1 (Perceived ease of use has a positive effect on consumer intention to use m-services in Saudi Arabia) is supported.

According to the multiple regression analysis in Table (6.10) used to examine if there is a positive relationship between usefulness, compatibility, and mobility on consumer intention to use mobile service, t=8.294, P<0.001. Thus, H2, H3 and H4 (Perceived usefulness, Compatibility, and Mobility each have a positive effect on consumer intention to use m-services in Saudi Arabia) are supported.

According to the multiple regression analysis in Table (6.10) used to look at the relationship between social influence and consumer intention, t=4.463 ,P<0.001. Thus, H5 (Social influence has a positive effect on consumer intention to use m-services in Saudi Arabia) is supported.

According to the multiple regression analysis in Table (6.10) used to verify the association between personal innovativeness to use mobile service and consumer intention, t=7.407 ,P<0.001 .Thus, H6 (Personal innovativeness has a positive effect on consumer intention to use m-services in Saudi Arabia) is supported.

According to the multiple regression analysis in Table (6.10) used to test the negative relationship between perceived risk and consumer intention to use mobile service, t= -0.190, P>0.05. Thus, H7 (Perceived risk has a negative effect on consumer intention to use m-services in Saudi Arabia) is not supported.

Hypothesis	t-value	P(sig)	Decision
H1 : EoU ⟶ BI	2.187	.030	Supported
H2,H3,H4 :Usefulness, Mobility, and Compatibility ⟶ BI	8.294	.000	Supported
H5 :SI ⟶ BI	4.463	.000	Supported
H6 :PI ⟶ BI	7.407	.000	Supported
H7 :PR⟶ BI	-.190	.849	Not supported

Table 6.11 : Hypothesis test summary

6.10 Revised Model

Based on the regression results, hypothesis test, and factor analysis (FA), the model was revised as customers nowadays may look at compatibility and mobility as elements of the usefulness attributes. The high correlation between compatibility and perceived usefulness (0.762) in this research supports the result of Al-Gahtani (2003) and Moore and Benbasat (1991), who found that relative advantage, which has the same meaning of perceived usefulness in TAM, and compatibility appear as a single construct. This may indicate that the respondents are looking to these factors as identical even though they are theoretically dissimilar, or there is an underlying association between the two factors. Thus, the observed affiliation between these three factors is an area to be investigated further.

Table (6.12) summarizes the key findings from the reliability test, and regression test.

Factor name	Cronbach's alpha(∂)	t-value	Sig (p)	Beta (β)	hypothesis
Perceived ease of use	.945	2.187	.030	.100	Supported
Perceived usefulness	.917	8.294	.000	.440	Supported
Social influence	.954	4.463	.000	.182	Supported
Personal innovativeness	.769	7.407	.000	.293	Supported
Perceived risk	.840	-0.190	.849	-.007	Not supported

Table 6.12: Key findings summary for the independent factors on the dependant factor behavioural intention

Finally, Figure (6.2) represents the revised model, which consists of four independents factors: perceived ease of use, perceived usefulness, social influence, and personal innovativeness. These four factors have an explanatory power of 62.7% in behavioural intention (BI) in Saudi Arabia. The variance in intention explained, R^2 in this study at 62.7%, is more able to explain and predict the behaviour intention for IS users compared with the previous literature which integrates TAM with other models, such as Wei et al. (2009) in their study about factors that drive Malaysian m-commerce adoption. An empirical analysis (R^2=54.1); Khalifa and Shen (2008) in their study about explaining the adoption of transactional B2C mobile commerce (R^2= 61.7); Lee and Jun (2005) in their study Contextual Perceived Usefulness: Toward an Understanding of Mobile Commerce Acceptance (R^2=53.7); Taylor and Todd (1995) in their study understanding information technology usage: a test of competing models , they have tested three models with different R^2 as follows: TAM 52%, TPB 57%, Decomposed TPB 60%.

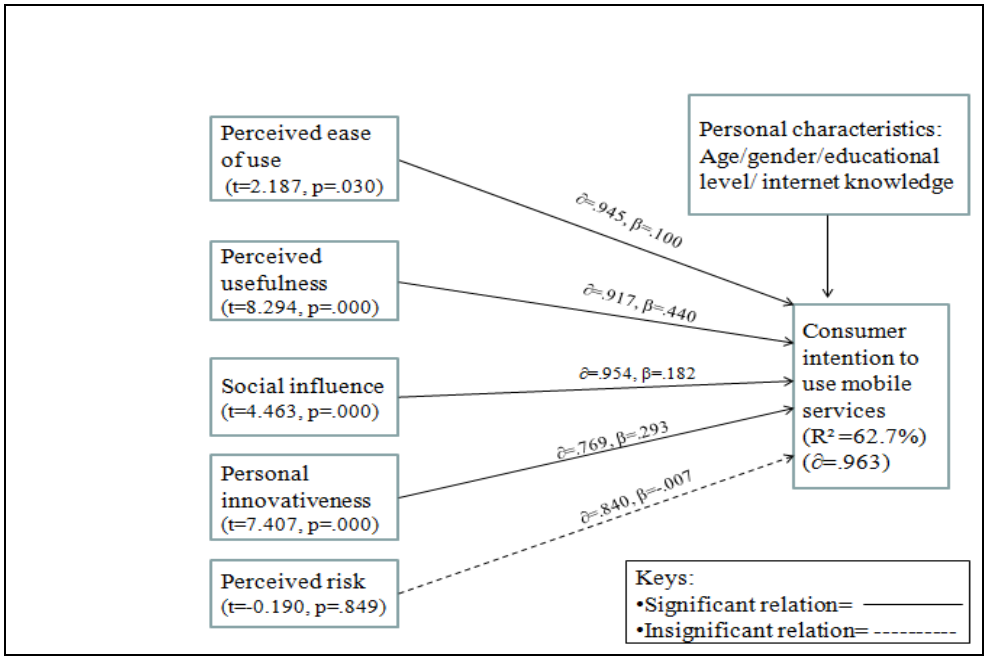


Figure 6.2: Revised model based on regression results and factor analysis (FA)

6.11 Discussion of the Findings

We recall that the purpose of this research was to endeavour to propose a model with different constructs to give details about consumer acceptance of mobile services in the airline sector in Saudi Arabia. By extracting associated factors from the well-known accepted models TAM, TRA, and IDT into the extended model and then applying them to a non-Western and non-North American background, the model explained 62.7 per cent of the variance in consumer acceptance of m-services in the airline sector in Saudi Arabia. This good explanatory power is higher than the TAM's persistence explanatory power (R square=35-40%).

The results confirm the hypotheses and support that the claim that perceived ease of use ($t=2.187$, $p<0.05$), perceived usefulness, compatibility, mobility ($t=8.294$, $p<0.001$), social influence ($t=4.463$, $p<0.001$), and personal innovativeness ($t=7.407$, $p<0.001$) are the main predictors of behavioural intentions for mobile services acceptance in the airline sector in Saudi Arabia, with an explanation of 62% of the variance in the behavioural intentions.

However, perceived risk ($t=-.190$, $p>0.05$), which Pavlou (2003) identified as the belief of individuals about the probability of suffering a failure in achieving a target, is found not be a significant determinant of the behavioural intention to use mobile services in Saudi Arabia. This result opposes prior studies in mobile banking (Luarn and Lin, 2005; Wu and Wang, 2005 ; Wessels and Drennan, 2010; Safeena et al.,2011). A number of potential reasons may exist regarding perceived risk. Firstly, the two largest age groups of the respondents are 30-39 years and 40-49 years, with a percentage of 44 % and 29 % respectively. Secondly, more than 44 % of the respondents hold a bachelor degree and above. Thirdly, the vast majority of the respondents (67%) have very good internet knowledge. Finally, around 37 % of them use the internet for more than 4 hours per day, indicating that they are more conscious of the existence of possible risks as they use mobile services.

Additionally, the new combined factor usefulness (which was defined by Davis (1989) as the extent to which an individual believes that using a specific system would improve his or her job performance), compatibility (which was defined by Rogers (1995) as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential adopters"), and mobility (which was defined by Mallat et al. (2006) as the capability of accessing services 'anytime, anywhere' via mobile phones or other devices and wireless networks) were found to be the most powerful predictors (β=.440).

This result is supported by previous studies, such as,Wei et al. (2009), which have practically examined the factors affecting consumer intention to use mobile commerce in Malaysia. The five factors examined in this study are perceived usefulness (PU), perceived ease of use (PEOU), social influence (SI), perceived cost and trust. Their results expose that PU, SI, perceived financial cost and trust are positively associated with consumer intention to use m-commerce in Malaysia. Whereas, PEOU and trust were found to have an insignificant effect on consumer intention to use m-commerce in Malaysia.

Jahangir and Begum (2008) have proposed a conceptual framework to investigate the effects of perceived usefulness, ease of use, and security and privacy on customer adoptation attitude towards e-banking. 227 customers from private commercial banks in Bangladesh were tested. The results of the research indicate that perceived usefulness and ease of use are positively and significantly linked to customer adoption. Khalifa and Shen (2008) looked at the factors that affect individual adoption of B2C transactional mobile commerce. An inclusive framework was developed by integrating constructs from well-established theories of technology adoption: i.e. the technology acceptance model (TAM) and the theory of planned behaviour (TPB). These factors are perceived ease of use, perceived usefulness, subjective norms, and self-efficacy. Mobile device users who had not adopted mobile commerce were empirically tested. The empirical outcome revealed a significant effect of the aforementioned constructs on the individual to adopt B2C transactional mobile commerce.

Davis (1989) has developed two specific variables in his research by involving a total of 152 users. These two variables are hypothesized to be the main determinants of user acceptance: perceived usefulness and perceived ease of use. Davis (1993) used TAM to identify why users accept or reject information technology, conducting a field study of 112 users. Results showed that perceived usefulness was 50% more influential than ease of use in determining usage and, overall, TAM is a supportive instrument in predicting and evaluating user acceptance of information technology. He further conducted research to predict peoples' intentions in terms of computer acceptance. The model included subjective norms, perceived usefulness, perceived ease of use, and related variables: in all 107 users were tested. The results showed that perceived usefulness strongly influenced peoples' intentions, but that perceived ease of use had a small significant effect on intentions.

According to these studies, perceived usefulness has played a very important role in influencing the behavioural intention of adopting new technology. That means the behavioural intention to use mobile services will increase when customers find it helpful and practical to get direct access to the required information and thus perform transactions, anytime and anywhere.

The high correlation between compatibility and perceived usefulness (0.762) supports the result of Al-Gahtani (2003), who studied how perceived attributes of computer technology influence its rate of adoption in the workplace in Saudi Arabia. Diffusion of innovation theory was used by applying Rogers' five attributes of innovation: relative advantage, compatibility, complexity, trialability, and observability. Approximately 1200 workers of different managerial levels in 56 public and private medium and large organizations across Saudi Arabia have participated in this study. The findings emphasized the purpose of these factors in term of computer technology implementation in developing countries. In addition, a study was conducted by Moore and Benbasat (1991) to develop an instrument designed to measure the various individual perceptions to adopt an information technology innovation.

These perceptions were based on the five characteristics of innovation by Rogers in the IDT literature. They found that relative advantage, which has the same meaning of perceived usefulness in TAM, and compatibility appear as a single construct, perhaps indicating that the respondents are looking to these factors in the same way, even though they are theoretically dissimilar, or that there is an underlying association between the two factors. Moreover, customers nowadays may look at compatibility and mobility as part of the usefulness attributes. Thus, the observed affiliation between these two factors is an area to be further investigated.

Personal innovativeness can be defined as the individual's willingness to attempt to adopt and use new technology and/or a new information system for achieving particular aims (Rao and Troshani, 2007; Bhatti, 2007). The result for personal innovativeness (β=.293) is in the same line with the previous literature. Agarwal and Prasad (1998) proposed personal innovativeness as a new construct in the context of the innovation represented by the World Wide Web information service on the internet. This factor further sheds light on the clear role of individual character in the technology adoption. Additionally, Kamarulzaman (2007) aimed to discover consumers' adoption of internet shopping in the context of UK travel services. Based on Davis' technology acceptance model (TAM), eight constructs (including personal innovativeness) were integrated and a model was proposed for the prediction of internet shopping adoption. The results yield evidence of the importance of personal innovativeness, illustrating that innovative people are likely to employ new technology more widely when compared to less or non-innovative people.

It is argued that social influence is a factor equivalent to subjective norm, and that it can be added to both the theory of planned behaviour and theory of reasoned action, with both theories speculating that social influence can be perceived as a significant determinant in usage and technology acceptance (Lu et al., 2003; Rao and Troshani, 2007).According to Ajzen (1991), subjective norm is defined as "the perceived social pressure to perform or not to perform the behaviour". The finding of social influence (β=.182) provides confirmation for the earlier researches (Venkatesh and Davis, 2000; Wei et al., 2009; Kurnia et al., 2006; Khalifa and Cheng, 2002),which indicated the significance of social pressure to adopt mobile services that comes from traditional ways, such as peers, mass media or the new revolution of twitter and facebook.

Davis (1989) defined perceived ease of use as the level to which a person thinks that using a particular system would be free of effort. The finding for perceived ease of use (β=.100) is in consistent with prior researches (Davis, 1989; Davis, 1993; Davis et al., 1989; Mallat et al., 2006; Luarn and Lin, 2005; Jahangir and Begum, 2008; Lin and Wang, 2005). This is not surprising, as perceived ease of use is a fundamental and crucial factor in TAM to predict user intention to use new technology.

6.12 Results Validation

In order to validate the results obtained quantitatively and to investigate beyond what the respondents answered in the survey questionnaires, the researcher decided to conduct face-to-face semi-structured interviews to support the quantitative data. These interviews covered the factors used in the survey questionnaire, including perceived ease of use, perceived usefulness, social influence, personal innovativeness, and perceived risk.

The interviews were conducted with three experts Saudi managers from different departments and different years of experience of an airline company in Saudi Arabia during December 2013 to help better understand the factors in this study. The interviews took between 20 and 30 minutes, and were held separately at the participants' personal offices , after guaranteeing the privacy of the information provided by them. Table (6.13) presents the profile of the interviewees.

Number	Gender	Age	Position	Years of experience
1	Male	40-49	Manager mobile sales	15-20 years
2	Male	50-59	Assist vice president sales strategies	>20 years
3	Male	30-39	Information system specialist	5-10 years

Table 6.13: Interviewee profile.

6.12.1 Perceived ease of use

The results obtained from the survey questionnaire showed that customers perceive ease of use as a factor which influences their intention to use mobile services during their travel . So, from the company perspective:
"yes, I agree, whenever we reduce the steps for conducting the selected services and make it easy the more the customers will use the services".

The second participant said :
"too much steps to choose the service will make the customers hesitant to complete it and will confuse him/her".

The third participant said:
"making the apps user-friendly will result in more usage".

6.12.2 Perceived usefulness

Perceived usefulness was found to be the most influential factor in the behavioural intention to use mobile services in Saudi Arabia. From the company point of view:
"I believe that adding features to the mobile application, such as sky sales, airport information upon arrival and other features, is among the main reason to download it".

The second participant said:
"I think our service is not complete yet, so for example you can't book and buy at the same time from the mobile channel, which means you book through your mobile and then buy the ticket from either ticket office, online, or self service kiosk. Also, all methods of payment should be activated, not only the credit card".

The third participant said:
"I emphasise that adding features, such as paying for excess baggage, to the apps will make the usage and adoption rate higher".

6.12.3 Social influence

The survey results showed that social influence had an effect on customers decision whether to adopt or not such service. From the company point of view:

"yes, there should be a marketing campaign to tell and educate people about the new service, by doing this we help and encourage customers to adopt and use these services".

Participant two said:

"yes, social influence is important. However, before I make a campaign I should improve my services and provide a full rather than partially range of services ".

While participant three said:

"I agree, and we should exploit the social media channels, such as: facebook ,twitter and,Google plus, to promote our services, also we should add a video manual about the application on these social channels".

6.12.4 Personal innovativeness

The results revealed the important role of personal innovativeness in the behavioural intention to adopt mobile service. From the company perspective:

"yes, because if the customer is less innovative, he/she will not use this service. He will prefer to use the traditional services".

The second participant said:

"that's why we should focus on the high innovative customers to promote the service through them".

The third participant said:

"yes, the people in Saudi Arabia are familiar with the mobile phone technologies and they are ready to cope with it".

6.12.5 Perceived risk

The survey results showed that perceived risk was not significant and did not influence the behavioural intention to use mobile service in Saudi Arabia. From the company point of view:

"I am not surprised, the reason may be because the age group of the respondents were high and they were aware of the mobile risks".

The second respondents said:

"perceived risk was not significant because there is no money transaction yet to be conducted; for instance, buying tickets is not available yet".

The third participant said:

"nowadays, many customers are well-educated and they may use similar services provided by other airlines, either regionally or internationally".

6.12.6 Interviews Summary

As mentioned earlier, the aim of these interviews was to investigate further what the respondents answered in the survey questionnaires and to support the quantitative data, based on several managers' perceptions in an airline company in Saudi Arabia. The finding from the interviews offered huge support for the proposed model, in terms of the direct effect of perceived ease of use, perceived usefulness, social influence, and personal innovativeness on the behavioural intention to use mobile service in Saudi Arabia.

6.13 Chapter Conclusion

This research aims to investigate the characteristics of Saudi Arabian consumers in terms of acceptance new technologies, specifically the mobile services, which are provided by the airline companies in Saudi Arabia, and to propose the predictors of the behavioural intention to use such technology by extending the TAM and DOI and integrating them with three factors: social influence, personal innovativeness, and perceived risk. Different tests were applied, including reliability test, correlation test, factor analysis test, and regression test, to examine the proposed model and the related hypotheses .

In addition, the model in this research was tested with a survey using a web-based mail questionnaire involving 307 respondents. The empirical findings indicate the important role of perceived usefulness (β=.440) in influencing consumers' intention to adopt mobile service. Both personal innovativeness (β=.293) and social influence (β=.182) are confirmed as significant additions to TAM. Moreover, perceived ease of use (β=.100) was found to be the least significant factor to influence consumers intention to use mobile service in Saudi Arabia. However, perceived risk was found insignificant to influence the consumers intention to use mobile service in Saudi Arabia.

Chapter Seven: Conclusion

7.1 Thesis Summary

The main aim of this research is to investigate customer acceptance of mobile services, such as boarding pass, seat selection, flight information, schedule information, and other related services, which are provided by airline companies in Saudi Arabia for the purpose of enhancing travellers' experience throughout their journey.

In order to achieve this aim, an extensive literature review has been conducted into four areas. Firstly, technology acceptance models, such as TAM, IDT, TRA, and other related theories. Secondly, mobile banking literature. Thirdly, mobile commerce literature. Finally, the airline industry and its development literature. Moreover, a self-administrated web-based questionnaire was designed to collect the data and this was distributed through email invitations to a group of industrial contacts, in both public and private sector in Saudi Arabia, during July to September 2012. The questionnaire asked about customer attitudes towards mobile services and travel characteristics, as well as general internet knowledge. From this, 307 responses were received and the data were analyzed (using SPSS 18) and, based on the regression analysis, the research model was revised.

The findings from the distributed questionnaires revealed that on one hand customers in Saudi Arabia are not satisfied with the mobile services which are provided by airline companies, with an average rating 3.23 out of 7 on a Likert scale. An explanation for this dissatisfaction may be because of several reasons. Firstly, the service had just been launched in July 2012 during the investigation time. Secondly, the service was started with some destinations, but not all destinations were included. Thirdly, it was available through mobile browsers not through a mobile application. Finally, not all the services had been activated at that time.

On the other hand, when customers were asked about their intention to use these services in the future if they have access, the average answer was in agreement, with an average rating 5.73 out of 7 on a Likert scale.

Furthermore, the results from regression analysis showed that perceived usefulness, personal innovativeness, social influence, and perceived ease of use significantly influence the behaviour intention to use mobile services in Saudi Arabia. Perceived usefulness was found the most influenced factor (with 44%), followed by personal innovativeness (29%), social influence comes next (with 18%), and the least influenced factor is perceived ease of use (with 10%). However, perceived risk was found not to significantly influence the behavioural intention to use mobile services in Saudi Arabia, as illustrated in Figure(7.1).

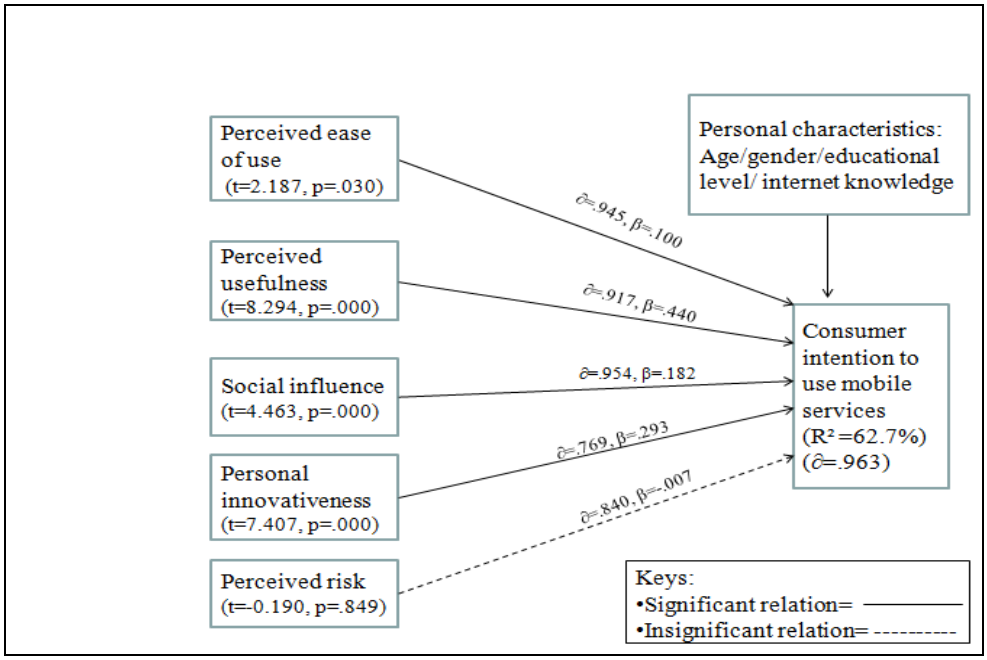


Figure 7.1: Final revised model based on the regression test.

The reason behind that may be explained as customer readiness due to the high penetration rate of mobile handsets in Saudi Arabia 181.6% with 53 million of subscribers (ICT Indicators in Saudi Arabia ,2012).Also, when the service launched in July 2012 not all functions were activated , one of these functions is ticket payment. Thus, customers did not perceive any risk in using their mobile to conduct other services, such as seat selection, boarding pass, and flight schedule.

In addition, the secondary aim of the research is to explore if there is any difference in term of gender, age, educational level, and user-related internet knowledge and the behavioural intention to use mobile service in Saudi Arabia. The results from t-test and one-way Anova test demonstrated that, in terms of gender, males have a greater intention to use mobile services than women. In term of age, the age groups 40-49 years and 50+ years are more in favour of using the service than younger groups. No significant differences were found between different educational levels. Finally, the customers with moderate and very good internet knowledge were more willing to use the mobile services than those with less internet knowledge, as demonstrated in Table (7.1).

Characteristic	**Is there a difference**	**Sig**	**Difference for**
Gender	Yes	.032	Males
Age groups	Yes	.025	40-49 and 50-59
Educational levels	No	.512	-
Internet knowledge	Yes	.020	Moderate and very good

Table 7.1: T-test and one-way ANOVA test significance differences summary.

7.2 Managerial Implications

This research indicated a number of findings with respect to the factors influencing the customers behavioral intention to adopt mobile service in Saudi Arabia during their travel process. These findings lead to a number of valuable practical implications . It provides a useful tool for managers to understand the drivers of acceptance in order to target users that may be less likely to adopt and use new technologies.

In addition, perceived usefulness is found to be the most important factor among all the independent variables, which implies that the individual's adoption decision is mainly determined by the functional values connected with m-commerce. As some respondents said, *"airline companies should provide an application at Apple and Android stores"*, others have claimed that *"the service should be compatible with the smart phone operation systems"*. Thus, the airline companies should develop accepted contents, programs, and applications which will be compatible with the life styles of users, and the customers should find these applications valuable and functional. Also, they should meet customers' needs by designing stable and solid systems, which will provide quality and useful information for them on an anytime-anywhere basis.

Beside the usefulness of mobile services, the results show the importance of personal innovativeness in adopting such technology. This is reflected in some respondents answers, such as *"we need more interaction"*, whilst others have said *"we need full service for reservation, payment, check in, and seat selection*", and some respondents have asked *" to avoid the need to visit the ticket office for any changes that happen on the reservation"*. As a result, the airline organizations should encourage the innovative people, such as online users, self services users, facebook, and twitter, by providing them with incentives to use their mobiles when conducting their travel: such incentives can add an extra 5% discount of the ticket price or an extra advantage for the loyal card holders.

Furthermore, to promote the adoption of mobile services in the airline sector social influence should be taken into account, as some respondents said *"airline companies should make a lot of advertisements and educational campaign about the service"*. For this reason, airline firms, and especially marketing managers, should consider the social issues in their marketing communication activities and campaigns to encourage the customers to use their mobiles while they conduct their travel process.

Finally , ease of use is found to be a sufficient factor to influence the customer intention to use mobile services when conducting their travel process in Saudi Arabia, as respondents stated that it was necessary to *"facilitate the service by making it easy to use, clear, and understandable"*. Thus, airline companies should keep in mind how easy or difficult their mobile applications or mobile browsing are to use while they are designing them; the easier and more flexible services and process are to use, the better the customers will perceive it and thus increase their intention to deploy it.

7.3 Academic Implications

The finding of this study provides several implications for academics who concerning about factors that affect the adoption of new technology in general and mobile commerce in particular.

Firstly, this study provides an empirical evidence for the existing body of literature concerning m-commerce to better understand the phenomena in developing countries as Wei et al (2009) stated that, most of the previous studies were conducted in developed countries, such as USA, Japan, and Korea. However, this is still in its early stage in developing countries and has a huge potential as a new inspiring technology.

Secondly, this research extends the traditional TAM and DOI model in the context of m-commerce by incorporating other factors, such as social influence and personal innovativeness, to predict consumer intention to adopt mobile services in Saudi Arabia particularly in the airline sector with an overall explanatory power (R^2=62.7).

Thirdly, in term of the existing literatures on mobile commerce and mobile banking, this research supported and complemented a number of their results especially the importance and significance of perceived usefulness in accepting and adopting new technologies.

Finally, results from Saudi Arabia can be applied to other gulf community countries (GCC), in particular Kuwait and Qatar due to the cultural and ethnic similarities, and to other Arabic countries.

7.4 Research Contribution to Knowledge

This study has contributed to the current available literature of technology acceptance model in general and mobile commerce in particular. The presented findings were examined empirically through a quantitative analysis followed by conducting qualitative interviews to reinforce these results. These contributions can be found in the following areas:

1. This study to the best of the researchers knowledge is the first study about the airline sector in the Saudi Arabian context. It contributes to the body of knowledge about mobile services acceptance and how customers are perceiving services such as boarding pass, flight information, flight schedule, and seat selection during the travel process.

2. This study has added valuable insights to the existing literature of the technology acceptance model (TAM) and innovation diffusion theory (IDT), in term of its empirical evidence which identifies a number of factors that influence the behaviour intention to adopt mobile services in the airline sector.

3. This study is one of only few studies that have targeted a sample of real travellers through industrial contacts in both public and private sectors. In developing countries , most of the previous research examined technology acceptance theories and researches were mainly based on a student sample (Taylor and Todd, 1995; Venkatesh and Davis, 1996).

4. To strengthen the results, this study has employed a triangulation mixed method by surveying customers in Saudi Arabia and then conducting some interviews with an airline company which is a different population. In order to identify whether or not airline companies are aware of the customer perspectives , also to enhance the customer overall travel experience.

5. This study developed an integrated model based on technology acceptance model (TAM) and innovation diffusion theory (IDT) which may be considered as a road map for airline companies to enable them to encourage their customers to adopt mobile services and keep them always engaged.

7.5 Achieving Objectives

The objectives in this study were achieved by using two different research approaches . First, an extensive literature review was conducted to understand the context of mobile commerce. Second, a quantitative methods were conducted extensively by using SPSS statistic programme such as: descriptive analysis, correlation test, regression test, and factor analysis test to determine the different relationships existed.

i. To investigate, and if possible to develop, a conceptual framework for mobile commerce adoption and the associated Saudi consumer characteristics in the airline sector.
ii. To investigate the differences of the demographics on behavioural intention to adopt mobile service technology.
iii. To empirically identify the factors affecting behavioural intention of customer acceptance of mobile services during their travel process.
iv. To attempt to validate the conceptual framework by conducting interviews.

First objective was achieved by conducting a comprehensive literature review in three areas: technology acceptance model, mobile commerce , and mobile banking in order to understand the phenomena. These three areas were addressed in Chapters 2 and 3.

Second objective was achieved by conducting the field research . These differences and characteristics were addressed thoroughly in Chapters 5.

Third objective was achieved by conducting the main field study and the related statistics tests such as : reliability, correlation , factor analysis, and regression test. These tests were addressed in details in Chapters 6.

Fourth objective was achieved by conducting an interviews with airline managers in Saudi Arabia. These interviews were discussed at the end of chapter 6.

7.6 Answering Research Questions

From the extensive literatures which have been conducted in three areas namely: technology acceptance model, mobile banking, and mobile commerce. The following research questions were addressed about customer characteristics in Saudi Arabia during their travel process and the factors influencing their behaviour intention to adopt mobile services. By identifying these factors, airline companies can enhance their services and encourage their customers to adopt them through their smart phones.

1. What are the characteristics of the Saudi consumers in term of the acceptance of new technologies , particularly in the airline sector ?

The descriptive analysis presents a number of Saudi consumer characteristics in general such as: age, gender, educational level, internet knowledge, and current mobile usage. Also, it presents the travel characteristics such as : travel distance, travel frequency, travel purpose, and the preferred channel for travelling. All these analysis were pointed out in chapter 5.

2. Are there any age, gender, educational level, and internet knowledge differences in terms of the behavioural intention to use mobile services of travellers in Saudi Arabia ?

To answer this question, T-test and One-way Anova tests were conducted to identify any age, gender, educational level, and internet knowledge differences. These tests were addressed deeply in chapter 5.

3. What are the predictors of the behavioural intention to use mobile services of airline travellers in Saudi Arabia ?

To identify the predictors of the behaviour intention, statistics quantitative analysis through SPSS were conducted such as: correlation, factor analysis, and regression test. These tests results are examined in chapter 6.

7.7 Limitations and Direction for Future Research

This study was conducted in Saudi Arabia to empirically identify the factors influencing the Saudi customers to adopt mobile service such as: booking, seat selection, schedule information, and boarding pass, while they are travelling.

Despite the promising empirical results of this study and the contributions which identified by this study. This study has experienced some limitations that need to be acknowledged , also provides several research opportunities for future studies.

First, this study is cross-sectional, which means the behavioural intention was measured and that data were collected at a single point of time. Cross-sectional studies are conducted when the time is restricted and the recourses are limited, as in this study (Blumberg et al., 2011; Collis and Hussey, 2009). Other studies may conduct a longitudinal strategy to measure the actual behaviour before and after using the mobile services for sustainable understanding of the acceptance attitudes.

Second, this study focused on identifying the factors influencing the customer behaviour intention to adopt mobile service in Saudi Arabia. However, it neglects identifying the reasons for the customers to adopt or not to adopt this services. Thus, future research should focus on the motivators and inhibitors from the customer perspective for the adoption or rejection decision.

Third, generalization is another limitation. The study was restricted to the Saudi Arabian context, which may improve generalization for Saudis' behavioural intention but may not be generalized to developed countries due to the society differences. This study may be deployed in other similar cultural of Arab countries with similar characteristics to Saudis in order to enhance the generalization.

Finally, Although the overall variance explained by the proposed framework (R square = 62.7%), future studies may use other theories, such as UTAUT,TPB and incorporate more factors, such as quality, security and trust from the mobile banking literature to investigate the risk perception during buying tickets and to improve the overall explained variance.

7.8 Chapter Conclusion

This chapter has reviewed the thesis and given a summary of this research study's findings. Furthermore, a number of practical and theoretical implications have been discussed in terms of the contribution to the field of technology acceptance models in general and mobile services acceptance in the airline sector in particular. Finally, some limitations and directions for future work were presented for a thorough investigation into this interesting topic .

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Appendices

Appendix A: Email Invitation

Consumer Acceptance of Mobile Services in the Airline Sector

هذا الإستبيان هو جزء من رسالة الدكتوراة في جامعة برونيل - لندن، تم تصميم هذا الإستبيان لمعرفة العوامل المؤثرة في العميل لقبول خدمات الجوال المقدمة. علماً بأن مشاركتك تطوعيه وسوف تساهم في نجاح هذه الدراسة وهي محل تقديري وشكري. سوف يستغرق تعبئة الإستبيانه حوالي 5-10 دقائق، المعلومات المقدمه سوف تعامل بسرية ولن تستخدم هذه إلا لغرض البحث العلمي.
إذا كان لديك أي أسئلة أو إستفسار، الرجاء عدم التردد في التواصل معي:

محمد القثمي
جامعة برونيل - لندن
mohammed.algethmi@brunel.ac.uk

This survey is part of my PhD Thesis at Brunel University-London , this questionnaire is designed to understand customer acceptance of mobile services in the airline sector in Saudi Arabia. Your participation is voluntary, If you do not wish to participate, simply discard the questionnaire .Your contribution will help in survey success and I appreciate it.This survey will take approximately 5 -10 minutes of your time and the provided information will be confidential and used for research purpose only.
If you have any concern , please do not hesitate to contact me:

Mohammed Algethmi
Brunel University-London
School of Engineering and Design
mohammed.algethmi@brunel.ac.uk

***1. Please choose your langauge**

- ◯ Arabic
- ◯ English

Appendix B: Survey Questionnaire In English

(1/4) Consumer Profile:

2. What is your gender?

- ◯ Female
- ◯ Male

3. Which category below includes your age?

- ◯ 20 or under
- ◯ 21-29
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 60 or older

4. What is the highest level of education you have completed?

- ◯ High school or below
- ◯ Diploma
- ◯ Bachelor
- ◯ Master degree
- ◯ PhD or higher

5. Are you:

- ◯ Saudi
- ◯ Non Saudi

(2/4) Mobile Acceptance Characteristics:

Using a scale from 1 to 7, please rate to what extent do you agree with the following statements (1: Strongly disagree; 7: Strongly agree)

6. Ease of Use:

	Strongly disagree						Strongly agree
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) is easy	◯	◯	◯	◯	◯	◯	◯
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) is convenient	◯	◯	◯	◯	◯	◯	◯
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) is clear and understandable	◯	◯	◯	◯	◯	◯	◯
Overall, I find mobile services easy to use	◯	◯	◯	◯	◯	◯	◯

7. Usefulness:

	Strongly disagree						Strongly agree
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) is faster than the traditional ways	◯	◯	◯	◯	◯	◯	◯
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) increase my productivity	◯	◯	◯	◯	◯	◯	◯
Using my mobile for airline travel(e.g: check-in, booking, buying tickets..) save me time	◯	◯	◯	◯	◯	◯	◯
Overall, I find mobile services useful in my daily life	◯	◯	◯	◯	◯	◯	◯

8. compatibility:

	Strongly disagree						Strongly agree
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) is compatible with my use of mobile phone	◯	◯	◯	◯	◯	◯	◯
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) is a suitable method for me	◯	◯	◯	◯	◯	◯	◯
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) is compatible with my style and habits	◯	◯	◯	◯	◯	◯	◯

9. Mobility:

	Strongly disagree						Strongly agree
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) reduce queuing time	◯	◯	◯	◯	◯	◯	◯
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) happen any time	◯	◯	◯	◯	◯	◯	◯
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) happen at any place	◯	◯	◯	◯	◯	◯	◯
Using mobile for airline travel(e.g: check-in, booking, buying tickets..) is convenient because the mobile handset is always with me	◯	◯	◯	◯	◯	◯	◯

(3/4) Mobile Acceptance Characteristics:

10. Social influence:

	Strongly disagree						Strongly agree
Most people who are important to me think I should use mobile services (e.g: check-in, booking, buying tickets...)	◯	◯	◯	◯	◯	◯	◯
Most people who are important to me think that it is a good idea for me to use mobile services (e.g: check-in, booking, buying tickets...)	◯	◯	◯	◯	◯	◯	◯
Most people who are important to me have encouraged me to use mobile services (e.g: check-in, booking, buying tickets...)	◯	◯	◯	◯	◯	◯	◯
People who influence my behavior think that I should use mobile services (e.g: check-in, booking, buying tickets...)	◯	◯	◯	◯	◯	◯	◯

11. Personal innovativeness:

	Strongly disagree						Strongly agree
If I heard about a new technology, I would look for ways to experiment with it	◯	◯	◯	◯	◯	◯	◯
Among my peers, I am usually the first to explore new technology	◯	◯	◯	◯	◯	◯	◯
I look to experiment with new information technologies	◯	◯	◯	◯	◯	◯	◯
In general, I am hesitant to try out new information technologies	◯	◯	◯	◯	◯	◯	◯

12. Perceived risk:

	Strongly disagree						Strongly agree
I worry about the connection quality on the mobile	◯	◯	◯	◯	◯	◯	◯
I worry about safe transaction on the mobile	◯	◯	◯	◯	◯	◯	◯
I worry about how my personal information might be used when I buy through mobile	◯	◯	◯	◯	◯	◯	◯

13. Behavioral intention to use mobile services in Saudi Arabia :

	Strongly disagree						Strongly agree
I intend to use mobile services for airline travel in the next six months	◯	◯	◯	◯	◯	◯	◯
I intend to use mobile services frequently for airline travel in the next six months	◯	◯	◯	◯	◯	◯	◯
I plan to use mobile services for airline travel in the next six months	◯	◯	◯	◯	◯	◯	◯
I predict I would use mobile services for airline travel in the next six months	◯	◯	◯	◯	◯	◯	◯
Assuming I have access to mobile services, I intend to adopt it	◯	◯	◯	◯	◯	◯	◯

(4/4) Travel and General Characteristics:

14. What is the preferred channel for completing your travel process? (check all applicable)

- ☐ Airline call center
- ☐ Airline ticket office
- ☐ Airline web site
- ☐ Self-services machines
- ☐ Travel agent

15. Travel Purpose (check all applicable)

- ☐ Vacation
- ☐ Study
- ☐ Business
- ☐ Medical

16. Travel frequency per year

- ◯ Nil
- ◯ 3-5
- ◯ 1-2
- ◯ More than 5

17. Travel Distance

- ◯ Domestic
- ◯ International
- ◯ Both

18. How would you describe your internet knowledge?

- ◯ Poor
- ◯ Good
- ◯ Moderate
- ◯ Very good

19. How often do you use the internet per day?

- ◯ Don't use
- ◯ 3-4 hrs
- ◯ 1-2 hrs
- ◯ More than 4 hrs

20. Current use of mobile:

	Rarely	Occasionally	Mostly
Banking services(e.g: balance inquiry, money transfer...)	◯	◯	◯
Airline services(e.g: check-in, booking, buying tickets..)	◯	◯	◯
Browsing	◯	◯	◯
Checking mails	◯	◯	◯
Location based services(e.g:directions, maps..)	◯	◯	◯
Social networking(e.g: Facebook, twitter..)	◯	◯	◯
Entertainment purpose (e.g: games, music..)	◯	◯	◯
Purchasing products (e.g: books, CD's..)	◯	◯	◯

21. The current holding mobile? (check all applicable)

- [ ] iPhone
- [ ] Sony
- [ ] Blackberry
- [ ] LG
- [ ] Nokia
- [ ] Samsung
- [ ] Other (please specify)

22. To what extent are you satisfied with the current mobile services provided by Saudia Airline?

Not satisfied ○ ○ ○ ○ ○ ○ ○ Totally satisfied

23. How can Saudia Airlines improve mobile services to match your needs/expectation?

24. What is your future expectation for mobile services provided by Saudia Airlines?

All questions have been answered, please press "Next" then "Done" to submit the survey.

Thank you for your time in completing this survey. شكرا على وقتك الثمين في ...

Appendix C: Survey Questionnaire In Arabic

المعلومات الأساسية (1/4):

25. الجنس؟

- ◯ أنثى
- ◯ ذكر

26. ماهي الفئة العمرية التي تضم عمرك ؟

- ◯ أو أقل20
- ◯ من 21 - 29
- ◯ من 30 - 39
- ◯ من 40 - 49
- ◯ من 50 - 59
- ◯ فأكثر 60

27. ماهو أعلى مستوى تعليمي تحصلت عليه ؟

- ◯ ثانوي أو أقل
- ◯ دبلوم
- ◯ بكالوريوس
- ◯ ماجيستير
- ◯ دكتوراه أو أعلى

28. هل أنت

- ◯ سعودي
- ◯ غير سعودي

خصائص قبول الجوال (2/4):

بإستخدام مقياس من 1-7 , الرجاء تقييم إلى أي مدى توافق مع الحالات التاليه حيث (1= لا أوافق بشدة , 7 = أوافق بشدة)

29. سهولة الإستخدام:

	لا أوافق بشدة						أوافق بشدة
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)هو سهل	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)هو مريح	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)هو واضح ومفهوم	◯	◯	◯	◯	◯	◯	◯
عام, أنا أجد خدمات الجوال للسفر بالطائرة هو سهل الإستخدام	◯	◯	◯	◯	◯	◯	◯

30. الفائدة:

	لا أوافق بشدة						أوافق بشدة
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)هو أسرع من الطرق التقليدية	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)يزيد من الإنتاجيه	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)يختصر من الوقت	◯	◯	◯	◯	◯	◯	◯
عام, أنا أجد خدمات الجوال للسفر بالطائرة مفيدة في حياتي اليومية	◯	◯	◯	◯	◯	◯	◯

31. التوافقية:

	لا أوافق بشدة						أوافق بشدة
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)متوافق مع إستخداماتي للجوال	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)هو طريقه مناسبة لي	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)متوافق مع عاداتي وطريقة حياتي	◯	◯	◯	◯	◯	◯	◯

32. قابلية التنقل والحركة:

	لا أوافق بشدة						أوافق بشدة
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)يقلل من وقت الإنتظار	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)يحدث في أي وقت	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر)يحدث في أي مكان	◯	◯	◯	◯	◯	◯	◯
إستخدام جوالي للسفر بالطائرة (لا: إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) مريح [illegible]	◯	◯	◯	◯	◯	◯	◯

خصائص قبول الجوال (3/4):

33. التأثير الإجتماعي:

	لا أوافق بشدة						أوافق بشدة
الأشخاص المهمين بالنسبة لي يعتقدون أنه ينبغي على إستخدام جوالي للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر).	○	○	○	○	○	○	○
الأشخاص المهمين بالنسبة لي يعتقدون أنها فكرة جيدة لي إستخدام جوالي للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر).	○	○	○	○	○	○	○
الأشخاص المهمين بالنسبة لي يشجعوني على إستخدام جوالي للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراءالتذاكر).	○	○	○	○	○	○	○
الأشخاص اللذين لهم تأثير على يعتقدون أنه ينبغي على إستخدام جوالي للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر).	○	○	○	○	○	○	○

34. الإبتكار الشخصي:

	لا أوافق بشدة						أوافق بشدة
إذا سمعت عن تقنية جديدة, سوف أجد طرق لتجربتها	○	○	○	○	○	○	○
من وسط زمائلي, انا عادة الأول في إستكشاف التقنية الجديدة	○	○	○	○	○	○	○
انا أحاول تجربة التقنية الحديثة	○	○	○	○	○	○	○
مإ, أنا متردد لمحاولة تجربة التقنية الحديثة	○	○	○	○	○	○	○

35. المخاطر المدركه:

	لا أوافق بشدة						أوافق بشدة
أنا قلق بخصوص جودة الإتصالات على الجوال	○	○	○	○	○	○	○
أنا قلق بخصوص أمان التحويل على الجوال	○	○	○	○	○	○	○
أنا قلق بخصوص كيفية إستخدام معلوماتي الشخصية عند شرائي عن طريق الجوال	○	○	○	○	○	○	○

36. التوجه السلوكي لإستخدام خدمات الجوال في المملكة العربية السعودية:

	لا أوافق بشدة						أوافق بشدة
أنا أنوي أن أستخدم خدمات الجوال للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) خلال الستة شهور القادمة	○	○	○	○	○	○	○
أنا أنوي أن أستخدم خدمات الجوال بصفة متكررة للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) خلال الستة شهور القادمة	○	○	○	○	○	○	○
أنا مخطط أن أستخدم خدمات الجوال للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) خلال الستة شهور القادمة	○	○	○	○	○	○	○
أنا أتوقع أن أستخدم خدمات الجوال للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) خلال الستة شهور القادمة	○	○	○	○	○	○	○
بإفتراض يوجد لدي توصيل لخدمات الجوال للسفر بالطائرة (مثلاً :إصدار بطاقة صعود الطائرة, الحجز , شراء التذاكر) أنا أنوي تطبيقها	○	○	○	○	○	○	○

معلومات السفر، معلومات عامة (4/4):

37. ماهي القناة المفضلة لديك لإكمال إجراءات سفرك ؟

- ☐ مكتب مبيعات شركة الطيران
- ☐ مركز الإتصال بشركة الطيران
- ☐ مكائن الخدمة الذاتية
- ☐ موقع الإنترنت لشركة الطيران
- ☐ وكيل السفر والسياحة

38. الغرض من السفر:

- ☐ دراسة
- ☐ سياحة
- ☐ علاج
- ☐ عمل

39. عدد مرات السفر في السنة:

- ◯ من 3 - 5
- ◯ ولا مرة
- ◯ أكثر من 5
- ◯ من 1 - 2

40. وجهة السفر:

- ◯ داخلي
- ◯ دولي
- ◯ كلاهما

41. كيف تصف معرفتك بالإنترنت؟

- ◯ جيده
- ◯ ضعيفه
- ◯ جيداً
- ◯ متوسطه

42. كم ساعة تقضيها على الإنترنت في اليوم؟

- ◯ من 3 - 4 ساعات
- ◯ لا أستخدمه
- ◯ أكثر من 4 ساعات
- ◯ من 1 - 2 ساعة

43. الإستخدام الحالي للجوال:

	دوماً	أحياناً	نادراً
الخدمات البنكيه (طلب كشف حساب, تحويل مالي)	◯	◯	◯
خدمات الطيران (بطاقة صعود الطائرة, الحجز , شراء التذاكر)	◯	◯	◯
التصفح	◯	◯	◯
قراءة البريد الإلكتروني	◯	◯	◯
خدمات تحديد المواقع (المواقع, الخرائط)	◯	◯	◯
التواصل الإجتماعي (فيسبوك, تويتر)	◯	◯	◯
لأغراض التسلية (الألعاب, تحميل النغمات)	◯	◯	◯
لشراء المنتجات (كتب, سي دي)	◯	◯	◯

44. الجوال الحالي الذي تملكه:

- [ ] آي فون
- [ ] سوني
- [ ] بلاك بيري
- [ ] إل جي
- [ ] نوكيا
- [ ] سامسونج
- [ ] أخرى (الرجاء التحديد)

45. إلى أي مدى أنت راضي عن خدمات الجوال المقدمة من الخطوط السعودية؟

غير راضي ○ ○ ○ ○ ○ ○ ○ وجيها

46. كيف تستطيع الخطوط السعودية تحسين خدمات الجوال لتلبي إحتياجاتك وتطلعاتك؟

47. ماهي تطلعاتك المستقبلية لخدمات الجوال المقدمة من الخطوط السعودية؟

تمت الإجابة على الأسئلة، الرجاء الضغط على "التالي" ثم "انهاء" لتسليم الإستبيان

Thank you for your time in completing this survey. شكرا على وقتك الثمين في ...

Appendix D: Interview Covering Letter In English

Dear Sir/

This interview is part of my PhD Thesis at Brunel University London . It is designed to understand customer acceptance of mobile services in the airline sector in Saudi Arabia.

Your participation is voluntary and will contribute in survey success and it is appreciated .
This interview will take approximately 20 to 30 minutes of your valuable time and the provided information will be confidential and used only for this research purpose.

If you have any concern , please do not hesitate to contact me:

Mohammed Algethmi
Brunel University, London
School of Engineering and Design
mohammed.algethmi@brunel.ac.uk

1. **Current position :**

   …….

2. **Do you think the relationships within the attached framework are reasonable?**

   ☐ Yes ☐ No

3. **Tell me your opinion in the next relation: there is a positive relationship between ease of use and customer behavioral intention to use mobile services?**

   …….

   …….

4. **Tell me your opinion in the next relation: there is a positive relationship between usefulness and customer behavioral intention to use mobile services?**

   …….

   …….

5. **Tell me your opinion in the next relation: there is a positive relationship between social influence and customer behavioral intention to use mobile services?**

   …….

   …….

6. **Tell me your opinion in the next relation: there is a positive relationship between personal innovativeness and customer behavioral intention to use mobile services?**

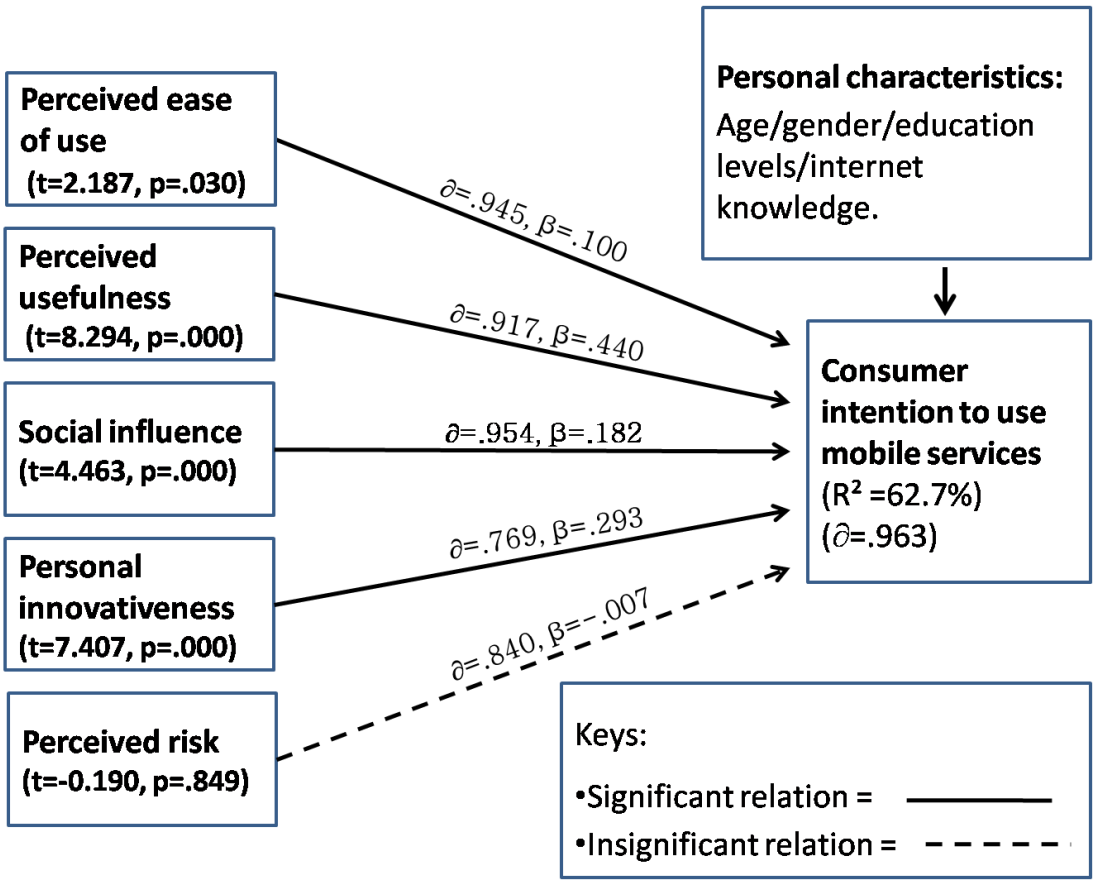
   …….

   …….

7. **Tell me your opinion in the next relation: there is a negative relationship between perceived risk and customer behavioral intention to use mobile services?**

   …….

   …….


Perceived ease of use (t=2.187, p=.030)
Perceived usefulness (t=8.294, p=.000)
Social influence (t=4.463, p=.000)
Personal innovativeness (t=7.407, p=.000)
Perceived risk (t=-0.190, p=.849)
∂=.945, β=.100
∂=.917, β=.440
∂=.954, β=.182
∂=.769, β=.293
∂=.840, β=-.007
Personal characteristics: Age/gender/education levels/internet knowledge.
Consumer intention to use mobile services (R² =62.7%) (∂=.963)
Keys:
•Significant relation =
•Insignificant relation =

Appendix E: Interview Covering Letter In Arabic

السيد الفاضل /

المقابلة الشخصية التالية هي جزء من رسالة الدكتوراه في جامعة برونيل – لندن ، وهي تهدف لفهم قبول العملاء للخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية في المملكة العربية السعودية.

مشاركتك في هذه المقابلة تطوعية وغير إلزامية ، علماً بأن رأيك سوف يساهم في تحقيق أهداف الدراسة .

في حال رغبتك المشاركة في هذه المقابلة ، الرجاء الإجابة على الأسئلة المرفقة والتي سوف تستغرق تقريباً 20 دقيقة ، علماً بأن الإجابات والمعلومات التي سوف تقدمها ستكون سرية ولن يسمح بالإطلاع عليها وستستخدم لأغراض البحث العلمي فقط .

نقدر لكم تعاونكم في إنجاح هذه الدراسة ، وفي حالة وجود أي استفسار الرجاء عدم التردد في الاتصال بي :

الباحث / محمد عبد الله القثمي

جامعة برونيل – بريطانيا

mohammed.algethmi@brunel.ac.uk

جوال / 0505608781

1- الوظيفة الحالية :

.....

2- بخصوص الشكل المرفق للدراسة هل تعتقد أن العلاقات معقولة :

☐ نعم ☐ لا

3- أخبرني رأيك في : " توجد علاقة طردية بين سهولة الاستخدام ونية العميل لاستخدام الخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية ".

.....

.....

4- أخبرني رأيك في : " توجد علاقة طردية بين الفائدة المدركة ونية العميل لاستخدام الخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية ".

.....

.....

5- أخبرني رأيك في : " توجد علاقة طردية بين التأثير الاجتماعي ونية العميل لاستخدام الخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية ".

.....

.....

6- أخبرني رأيك في : " توجد علاقة طردية بين الابتكار الشخصي ونية العميل لاستخدام الخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية ".

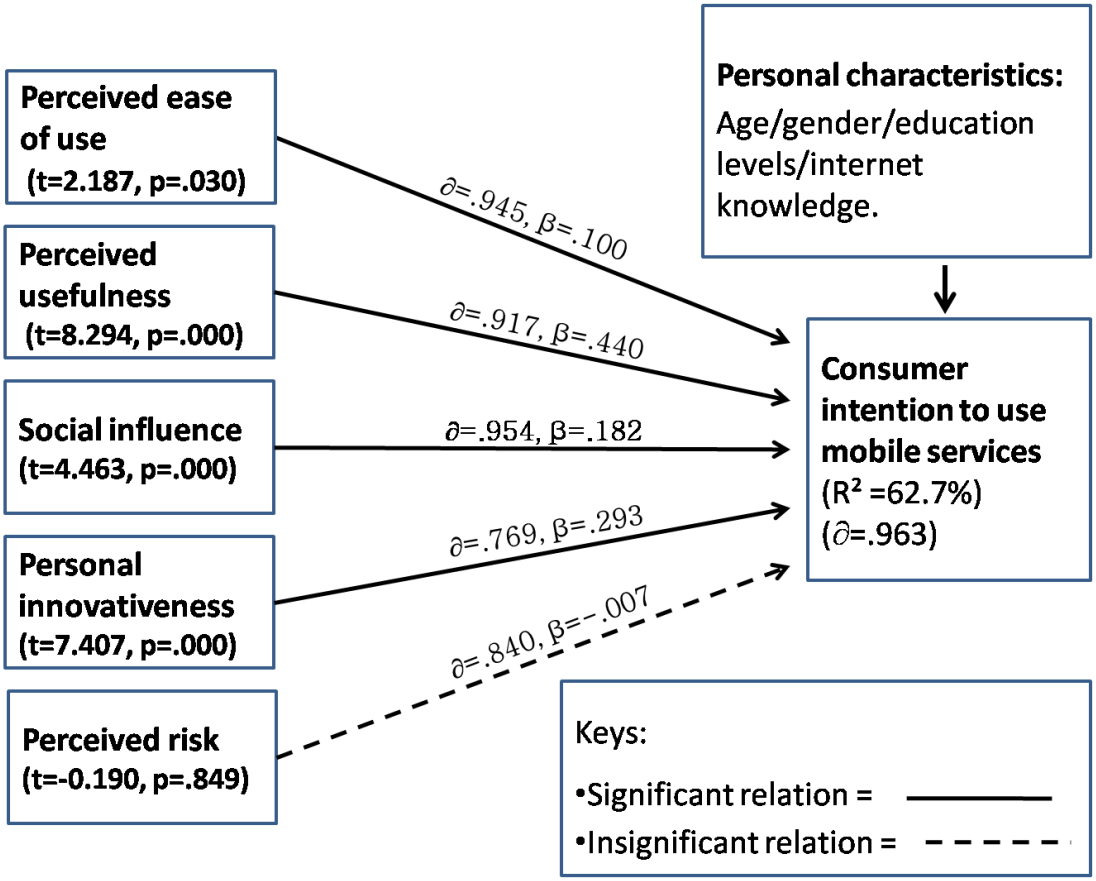
.....

.....

7- أخبرني رأيك في : " توجد علاقة عكسية بين المخاطر المدركة ونية العميل لاستخدام الخدمات المقدمة من شركات الطيران عبر أجهزة الجوال الذكية ".

.....

.....


Perceived ease of use (t=2.187, p=.030)
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Personal characteristics: Age/gender/education levels/internet knowledge.
Consumer intention to use mobile services (R² =62.7%) (∂=.963)
Keys:
•Significant relation =
•Insignificant relation =