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# An Integrated Model of the Influence of Personal Psychological Traits and Cognitive Beliefs on Customer Satisfaction and Continuance Intentions in Relation to Internet Banking Usage within the Saudi Arabian Context

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**Plymouth Universtiy**

**An Integrated Model of the Influence of Personal  
Psychological Traits and Cognitive Beliefs on  
Customer Satisfaction and Continuance Intentions in  
Relation to Internet Banking Usage within the Saudi  
Arabian Context**

**By**

**Ahmed Dirwish G Alghamdi**

**A thesis presented to meet the final requirements of the  
achievement of the degree of “Doctor of philosophy”**

**2014**

**Ahmed Dirwish G Alghamdi**

**An Integrated Model of the Influence of Personal Psychological Traits and Cognitive Beliefs on Customer Satisfaction and Continuance Intentions in Relation to Internet Banking Usage within the Saudi Arabian Context**

**Abstract**

This thesis examines the effects of Culture, the Unified Theory of Acceptance and Use of Technology (UTAUT), Expectation Confirmation Theory (ECT) and Technology Readiness (TR) on the satisfaction and usage continuance intention of Internet banking customers within the Saudi Arabian context. The aim is to develop and test a new framework for use in determining the factors that affect Internet banking customers' actual usage behaviours, with a special focus on the role of cognitive processes, and cultural and personal psychological traits.

This research uses cross-sectional survey questionnaire methods within a quantitative approach. 261 valid responses were received. Structural Equation Modelling (SEM) was used to test the hypothesised relationships within the research model in Analysis of Moment Structures (AMOS 20) software.

ECT is well established in conventional marketing literature and explains how cognitive beliefs and affects lead to customers' repurchasing behaviour. It was first adopted for the Information Systems (IS) context and then customised to explain IS continuance intention behaviour. However, previous ECT customisations in the IS context present a significant knowledge gap because technology-based services are sensitive to individuals' psychological traits, which ECT does not account for. This research integrates psychological traits and culture into the ECT framework to explain

customer satisfaction and continuance intentions in the context of Internet banking usage. It combines ECT with the UTAUT in order to expand ECT to include more cognitive beliefs. Then it integrates TR and Culture to account for psychological and sociological traits.

The results present a new contribution to the body of knowledge by validating a theoretically backed integration of the above models into one structural model. This model broadens the understanding of the factors that influence IS satisfaction and usage continuance intention. Compared to previous studies, the explanatory power of this model is a major improvement, with an  $R^2$  of (0.61) for usage continuance intention.

**Keywords:** information systems, expectation confirmation theory, culture, expectation confirmation model of information systems continuance, the unified theory of acceptance and use of technology, technology readiness, technology acceptance models, technology acceptance model, theory of planned behaviour, self-service technologies, business-to-customer Internet banking, the kingdom of Saudi Arabia.

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## List of Abbreviations

<b>AMOS</b>	Analysis of Moment Structures
<b>DTPB</b>	Decomposed Theory of Planned Behaviour
<b>DOI</b>	Diffusion of Innovation
<b>ECT</b>	Expectation Confirmation Theory
<b>KACST</b>	King Abdul Aziz City for Science and Technology
<b>IT</b>	Information Technology
<b>KSA</b>	The Kingdom of Saudi Arabia
<b>MF</b>	Masculinity and Femininity
<b>PDI</b>	Power Distance
<b>TRA</b>	Theory of Reasoned Action
<b>TPB</b>	Theory of Planned Behaviour
<b>UA</b>	Uncertainty Avoidance
<b>USA</b>	United States of America
<b>UK</b>	United Kingdom
<b>UTAUT</b>	Unified Theory of Acceptance and Use of Technology
<b>WWW</b>	World Wide Web
<b>TR</b>	Technology Readiness
<b>SEM</b>	Structural Equation Modelling
<b>TAM</b>	Technology Acceptance Model
<b>TAMs</b>	Technology Acceptance Models (TAM, TPB, TRA...)
<b>FATs</b>	Financial Analysis Tools
<b>ECM-IS</b>	Expectation Confirmation Model of IS Continuance

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## **Author Declaration**

The author hereby declares that at no time during the registration for the research degree has he been registered for any other university award. This work does not form part of any other degree.

The words count of the main body of the thesis: 72,348.00

# *Chapter One:* **Introduction and Overview**

## **1.0 Introduction**

This part of the research gives a general introduction and overview. It provides general background information on Internet technology and its application in the banking sector in the kingdom of Saudi Arabia. This chapter also states the research problem, and presents its questions and objectives. It specifies the scope of the study and highlights the methodology to be adopted. Limitations of the research are presented briefly as well.

## **1.1 Overview and Research Problem**

The influence of globalisation through the development of technology in general and the development of information communication technologies in particular has reshaped the banking industries in many countries. Innovation has facilitated the faster communication of information and decrease in transaction costs. The technology improvements have increased the volume of financial sector transactions globally. This has also transformed banking practices around the globe (Loonam & O'Loughlin, 2008; Milne, 2006; Southard & Siau, 2004). Saudi Arabia has responded actively to this growing trend since the mid 80s by introducing new products and services to the banking sector.

With these new waves of globalisation, the banking industry has become highly competitive and characterised by a large number of banks that offer similar products. One of the ways that banks become integrated into local and global markets is through the products and services they render and the way they provide these services. Thus, a bank's ability to innovate accounts for its success in the global market as well as its profitability in the domestic economy. It equally suggests how well a bank can attract new customers or retain old ones. The banks' use of the new innovative technologies in service delivery channels increases their

competitiveness in difficult environments. It also enhances the development of new products and ensures that the appropriate means of service delivery are made available (Loonam & O'Loughlin, 2008).

Many banks in the kingdom of Saudi Arabia see new technologies, including Internet banking, as a channel for improvements in service quality. Others see them as a rewarding growth strategy. Innovations in electronic-banking technologies have provided better means for conducting daily banking transactions and this has enhanced productivity in the sector. Internet banking services have quickly been adopted throughout the world. By the year 2000, the service had been introduced to Saudi Arabia (Albawaba, 2000) and since then little information has been available about its actual usage. It is essential therefore to investigate and identify the factors that determine users' perceptions of Internet banking within the kingdom. In particular, this study tries to investigate Internet banking customers' actual usage behaviours. In particular, there is a focus on the culture, post-adoption system perceptions and personal psychological traits of users. However, it is important first to know the history of the Internet in the kingdom. The next section contains a general overview of the Internet in Saudi Arabia.

## **1.2 The Internet in Saudi Arabia**

The advent of the World Wide Web in 1993 increased the pace of information technology. This technology facilitates large-scale use of the Internet by people with little or no technical skills. Approximately four years later, in 1997, the Internet was available in the kingdom of Saudi Arabia (Internet.Gov.Sa, 2013), but its use was restricted to government establishments. The government of the kingdom, aiming to control, monitor and facilitate the public use of the Internet, devoted a lot of time, attention and resources to building enabling infrastructures. The King Abdul Aziz City for Science and Technology (KACST) was given the responsibility of managing this centralised control system, and they made the Internet available to the public in February 1999. This centralised system blocks some websites that are considered unfavourable to the authorities or local culture. The system serves as a filtering unit, whose function includes checking the

appropriateness of sites in terms of their religious content, sexual activities and orientations, violence, drugs, political views and other issues against the moral code and religious beliefs of the country.

In an attempt to identify the level of control exercised by the KACST, the OpenNet Initiative conducted a study in 2004; their report suggests that out of 56,631 sites visited, 1,262 were found to be blocked by the KCST (The OpenNet Initiative, 2004). The Saudi Arabian government still maintains the same intensive Internet content filtering practices, especially for social, political and conflict contents (The OpenNet Initiative, 2009, 2013).

Despite the level of control and the late adoption of Internet technology, the spread of its use among Saudi citizens was rapid, such that it has become a household chore. It equally permeates all levels of society. The spread of this channel of communication includes social gatherings and networks, friends and neighbours, as well as educational and government establishments. Table 1.2 shows the growth of Internet use over the last decade in the country.

**Table 1.2 Growth of Internet Use in Saudi Arabia**

<b>Year</b>	<b>Population</b>	<b>Internet users</b>	<b>% of Internet Users</b>
2000	21,624,422	200,000	0.9%
2003	21,771,609	1,500,000	6.9%
2005	23,595,634	2,540,000	10.8%
2007	24,069,943	4,700,000	19.5%
2010	25,731,776	9,800,000	38.1%
2012	26,534,504	13,000,000	49.0%

**(Internet world stats, 2013)**

The Saudi Arabian government soon realised the value of the Internet for economic growth and development in the country. This makes government policy towards the Internet become gradually positive and increasingly permissive. The government also observes that Internet technology improves social development

among people, and provides an enabling environment for attracting foreign direct investment. Thus, a huge investment in Internet technology was made, with the expectation of a growth impact on the economy. A new committee was established to encourage both public and private organisations to utilise the Internet. The organisations in the two sectors were greatly encouraged to embrace the new technology (Al-Solbi & Al-Harbi, 2008). In addition, commercial organisations realised the prospects that this new technology offers to them in terms of wider patronage and product awareness. They therefore embraced this new technology, leading to the wider spread of Internet usage among Saudi Arabian businesses.

### **1.3 Internet Banking in Saudi Arabia**

One of the effects of the technological innovations in the financial sector is Internet banking, which has turned into an advantageous technology that most banks are embracing. It has spread widely in the sector and the number of customers using Internet banking services has increased considerably. Internet banking systems employ the new means offered by the World Wide Web to allow people to conduct their banking transactions online (Shih & Fang, 2004). The year 1995 witnessed one of the early cases that illustrate the increasing importance of the World Wide Web's applications in the banking sector. In that year, the Security First Network Bank in the USA launched a complete virtual banking system (Grandy, 1995). This development has attracted attention from policymakers and practitioners in financial institutions as well as information technology communities and the public sector.

In the case of Saudi Arabia, public and private banking industries recognised early the positive implications of Internet banking. Research has shown that in 2000, there were 11 banks with 1201 branches operating across the kingdom. Eight out of these 11 banks (representing 73%) established their presence on the web, but only two of them offered Internet banking services (Jasimuddin, 2006). However, a short time later, all banks in the kingdom offered Internet banking services for their customers.

Having said that, previous research showed Saudis to have relatively different behavioural patterns towards Internet banking.

**Table 1.3 UK and KSA Internet Penetration Data**

Country		Population	Internet penetration	Registered banks	IB users % from bank customers
UK	2004	60,093,000	63%	382	85%
Saudi	2006	25,213,000	18%	16	20%

**Adapted from (Al-Sajjan, 2008)**

Table 1.3 illustrates that the percentage of Saudi Arabian banking customers who embrace Internet banking in managing personal finances is comparatively low. Academic research is not able to explain the reasons behind such findings without implementing thorough investigations into the real factors that drive the use of technology within the Saudi Arabian context. Saudi Arabians have one of the lowest literacy rates worldwide and Internet banking services are already available and provided to them by almost all banks within the country. The existence of such differences in the adoption rates justifies the importance of this research, which is an attempt to examine the actual Internet banking users' behaviours within a developing country context.

Previous researches have investigated the Saudi customers' adoption and acceptance of Internet banking (e.g. Al-Sajjan, 2008; Al-Somali et al, 2009). However, this study aims to contribute to the knowledge by investigating the actual usage behaviours of Internet banking customers. This is done by examining post-adoption behaviours. The model developed for this research integrates acceptance models with one appropriate for the additional need of this research, which has a focus on post-adoption behaviours.

Internet banking, as a part of financial services, has been found to be extremely beneficial to customers. It saves cost and time, and enables a prompt response to complaints. It also enhances product delivery while easing banking transactions (Ok & Shon, 2006). Currently, after nearly a decade since the full establishment of Internet banking services by almost all Saudi Arabian banks, bankers still perceive it as a strategic choice to reduce costs, time and space. Therefore, it is imperative for them to consider the factors that may influence a customer's usage behaviour and attitudes toward this technology. Investigating the factors that determine Internet banking use and patronage may, therefore, improve the knowledge of the reasons why customers continue or discontinue to use Internet banking. There has been a shortage of research on Saudi Arabian customers' usage behaviours in relation to Internet banking. Saudi Arabia is culturally different from the countries where the Internet banking technologies originated, and from where most information system (IS) studies of self-service technologies (SSTs) behaviour have taken place. Studying customers' actual Internet banking behaviour within the Saudi Arabian context is a void this research aims to fill.

#### **1.4 Research Area**

The way businesses are conducted is adapting to the new technologies. One major issue in this is that the costs of installation and maintenance of information technology systems are reducing and this enhances innovation and changes the traditional ways in which business is conducted. Technology is now an integral part of a viable business environment, especially in the banking industry. From a business perspective, maintaining Internet banking usage is important to bankers because it serves as a replacement or a substitute for human skills in the delivery of services. This often leads to standardisation and continuity of quality in the delivery of services as well as a reduction in labour costs and man-hours. This leads to an expansion of the customer base to whom services can be delivered and transaction speeds are improved. However, it can also result in an unnecessary waste of resources, too mechanical and devoid of human interaction and consideration, and sometimes to an unnecessary burden on banks. Thus, it is

necessary to know what factors can lead to better consumer acceptance of Internet banking.

Saudi Arabian banking sectors, as part of an international financial system, have established new products and services to cope with growing local demand. Many banks in the kingdom of Saudi Arabia find Internet banking technology a viable channel for improved service delivery and quality improvement. However, bankers realise that maintaining the use of their Internet systems is as important as establishing them. Therefore, understanding the factors that form banking customer responses to Internet banking usage experience can help banks re-evaluate, improve and customise their services to fulfil customer needs in order to maintain their use.

This research uses the well-established literature of Technology Acceptance Models (TAMs) as the basis for its investigation. These models, however, are dynamic because they are concerned with a phenomenon that keeps developing and changing at a rapid rate. Scholars have borrowed from psychology to explain technology acceptance in terms of adoption and usage, while information systems concentrate on system characteristics and their role in technology acceptance. This research will include both perspectives.

Reviewing the literature, it is notable that Davis et al (1989) Technology Acceptance Model (TAM) has been the basis for a substantial amount of research in the IS domain (Yousafzai et al, 2007). TAM is an intention-oriented model. It was established to account for the general characteristics of information technology research. It has been widely accepted and confirmed as a reliable predictor of information technology users' perceptions, intentions and actual behaviour. However, the original TAM has been modified and researchers have kept adding new variables to it in order to strengthen its explanatory power. For example, TAM was integrated with the seven leading models of technology acceptance and the result was the introduction of Venkatesh et al (2003) UTAUT.

It has been a long time since the introduction of the UTAUT. In addition, most of the popular IT systems such as Internet shopping and Internet banking have been around for a while. This includes in Saudi Arabia and around the globe. TAMs,

including the UTAUT, were originally established and used to predict users' initial acceptance of an IS system.

Over time, IS researchers shifted their focus from studying IS users' initial acceptance to studying their post-adoption behaviour. This necessitated the development of more sophisticated models to explain IS behaviour in the new context. Traditional TAMs were theorised as being incapable of fully explaining IS post-adoption behaviour as they do for initial technology acceptance behaviour.

Internet banking in Saudi Arabia has been established for a relatively long time. This research aims to investigate its use by studying customers' continuance usage behaviour. The focus will be to investigate Internet banking as a post-adoption behaviour. This takes previous IS work on customers' acceptance of technology as "initial acceptance" one step forward by customising it for the IS post-adoption context.

In order to achieve the current research goals and build on previous theoretical bases, this study integrates culture, the UTAUT and Technology Readiness (TR) into Expectation-Confirmation Theory of IS continuance (ECM-IS). The built conceptual model should provide the best possible formula from IS theories. It should also have the highest possible predictive power to explain the phenomenon under study.

In the IS research, scholars have two fundamental views regarding post-adoption behaviour. One school of thought considers post-adoption behaviour to be a kind of "acceptance behaviour" and therefore it applies the traditional TAMs to study it – with no modifications to TAMs. On the other hand, the second school of thought theorises that post-adoption behaviour has unique characteristics and therefore TAMs are not fully capable of explaining it. The latter school of thought, however, argues that TAMs can be used with modification in post-adoption studies. Taking the above into consideration, this research follows the school of thought that considers post-adoption behaviour to be different from "acceptance" behaviour.

IS post-adoption is concerned with the decision to continue to use. Continuance comes after acceptance. Continuance is also a kind of "acceptance" behaviour of a

later stage. The TAMs were mostly originated to study the early phases of IT system adoption. However, they can still be used for later phases with modifications.

In this study, the UTAUT represents acceptance behaviour and ECM-IS represents post-adoption behaviour. In order to rectify any potential imbalance resulting from the integration of the UTAUT and ECM-IS into one structural model, this research proposes integrating Technology Readiness (TR) into the research model. The theoretical bases for the integral research model will be stated later in this research.

## **1.5 Internet Banking Studies within the Saudi Arabian Context**

As stated earlier, one of the main motives for conducting this study is a theoretical one. The focus here is to build upon previous studies and the way they approached Internet banking use. There are a small number of studies within the Saudi Arabian context that elucidate upon customer behaviours within Internet banking.

Al-Sajjan and Dennis (2010) used a modified TAM to study Internet banking acceptance by university students in both Saudi Arabia and the UK. Their study emphasised the role of attitudes in the acceptance process. The authors found that behavioural intention and attitude merged into a single factor, which they entitled “attitudinal intentions”. The results showed that trust and perceived usefulness were important as full mediators of the influence of subjective norms and perceived manageability on attitudinal intentions.

Al-Somali et al (2009) have used an extended TAM to investigate the factors driving Internet banking adoption among Saudi Arabian customers. They found that Internet connection quality, awareness about the service and its benefits, and security significantly influence perceptions of usefulness and ease of use. In addition, education and trust influence attitudes toward the acceptance of the services.

Almohaimmeed (2012) investigated dormant Internet banking users in Saudi Arabia using an extended TAM that included perceived risk, perceived trust and the task technology fit. The author found that service visibility and perceived usefulness function as direct influences on intention to use. On the other hand, the ease of use of

a construct's influence on behavioural intention was significant but indirect, because perceived usefulness mediates the association between the two. In addition, perceived ease of use was influenced by system accessibility and reliability as well as trust. The author emphasised that the construct "trust" used in his research related to perceived bank trustworthiness.

Sohail and Shaikh (2008) measure the service quality from Internet banking customers' point of view, aiming to provide banks with insights that might produce competitive advantages. The authors found that certain factors determine users' perceptions of the quality of Internet banking services. Specifically, fulfilment and responsiveness as well as efficiency and security were noted.

Al-Ashban and Burney (2001) assessed customer adoption of telephone banking technology in Saudi Arabia. They concluded that consumers increasingly extend their use of telephone banking over time. Customer experience is a key player in forming use intensity. In addition, consumers' income and education levels determine their attitudes and usage behaviours.

This research identified several gaps in the few studies that had considered the Saudi Arabian Internet banking business-to-customer context. These include limitations in considering post-adoption behaviour (e.g. no study is found to measure satisfaction and continuance intentions). In addition, cultural psychological tendencies were not considered.

This research supplements previous studies that were conducted within the Internet banking context of Saudi Arabia. It contributes theoretically to the general technology acceptance literature by building a new theoretical framework.

## **1.6 Research Problem**

Internet users in the Saudi Arabian context are comparatively slow in adopting technology. Information system studies have repeatedly indicated that acceptance

of technology differs in developing countries compared to the developed world. Al-Sajjan and Dennis (2010) compared Internet banking adoption behaviour between England and Saudi Arabia and indicated that differences in behaviour patterns do exist between the two countries. Therefore, they emphasised the potential role of culture in causing such variations.

Within the Saudi Arabian context, key studies are important in relation to Internet banking: (Almohaimmeed, 2012; Sohail & Shaikh, 2008; Al-Somali et al 2009; Al-Sajjan & Dennis, 2010).

However, these studies did not consider post-adoption behaviour. No study on Internet banking was conducted in Saudi Arabia that examined customer post-adoption behaviour and the drivers of usage in that stage (e.g. by measuring satisfaction and continuance intentions). In addition, no theories that provide a framework for studying post-adoption behaviours have been tested in Saudi Arabia (e.g. ECM-IS).

The literature shows a lack of comprehensive investigations incorporating the factors that are the focus of this research. These factors include cognitive perceptions, psychological tendencies and environmental factors that evidently influence behaviour, but that have not yet been examined together. This research attempts to prioritise and quantify the above-listed factors and show how they affect post-adoption behaviour. A theoretical framework is required. This demands examination of suitable theories that can be customised for this precise purpose. It also requires the application of an appropriate analysis, one that can provide insights into these interrelated factors.

Having said that, the problem this research attempts to answer can be stated as follows:

The overall problem this research is geared to solving is predicting Internet banking post-adoption behaviour. This requires a few research steps: examining Internet banking users' post-adoption behaviours; finding and implementing a wider and more comprehensive framework of influential factors; assessing cognitive learning

processes, the psychology of technology readiness, and the sociology of culture; developing a model that can account for cause and effect amongst these interrelated facets; and using an appropriate statistical analysis, one that can provide insights into the associativity of these factors.

## **1.7 Motivation and Research Questions**

The motives behind this research are, firstly, the interest in exploring the state of Internet banking usage among banks' customers within the Saudi Arabian context. The second motive is a theoretical one, which is necessitated by the need to rectify the imbalance created by using UTAUT variables (originating in organisational settings) in another setting. In this case, the UTAUT will be adapted to a marketing customer (MC) context. Such a change of use creates the need to address any limitations its variables might have in the new context. The UTAUT was originally used in an IS organisational context, so using it in an MC context needs more attention. The third motive is to find the best possible framework that can help researchers and practitioners alike to understand the key factors that determine the actual use of Internet banking among customers in a developing country. These goals dictate the questions of the research:

- 1. What are the main factors determining the continued usage behaviour of Internet banking customers within the Saudi Arabian context?*
- 2. Do users' cultural and psychological traits have any effect on the formation of perceptions and continuance intentions in relation to Internet banking products and services within the Saudi Arabian context?*
- 3. Are there perceptible trends in Internet banking usage patterns within the Saudi Arabian context and do they affect users' behaviours?*

## **1.8 Aims and Objectives**

The main aim of this research is to assess users' perceptions and views in relation to a specific IS system. The investigation includes a focus on beliefs, culture and psychological traits and their effects on decision making regarding customers' Internet banking behaviour within the Saudi Arabian context. In light of the above, this research's objectives are:

- 1. To identify and evaluate models for assessing the acceptance and post-acceptance of Internet banking.*
- 2. To develop and test a framework to be used in studying the factors that affect Internet banking users' continuance intention within the Saudi Arabian context with a special focus on the role of cognitive processes, culture and personal psychological traits.*
- 3. To conduct an empirical evaluation of the proposed research model.*
- 4. To evaluate and document the implications of the findings for business decision making and future research.*

## **1.9 Research Scope**

This research aims to consider the effect of culture, cognitive processes and psychological tendencies on customer post-adoption behaviour within the Saudi Arabian banking industry. This includes consideration of the effect of key factors that shape perceptions and continuance intention behaviours toward the use of Internet banking products and services. The target population for this research will be random banking customers with actual Internet usage experience.

In terms of the research process, a literature review underpinned the identification of appropriate models to be used as well as the methods to be applied. Piloting is an essential part of the research because this research involves adaptation and modification of previous researchers' work.

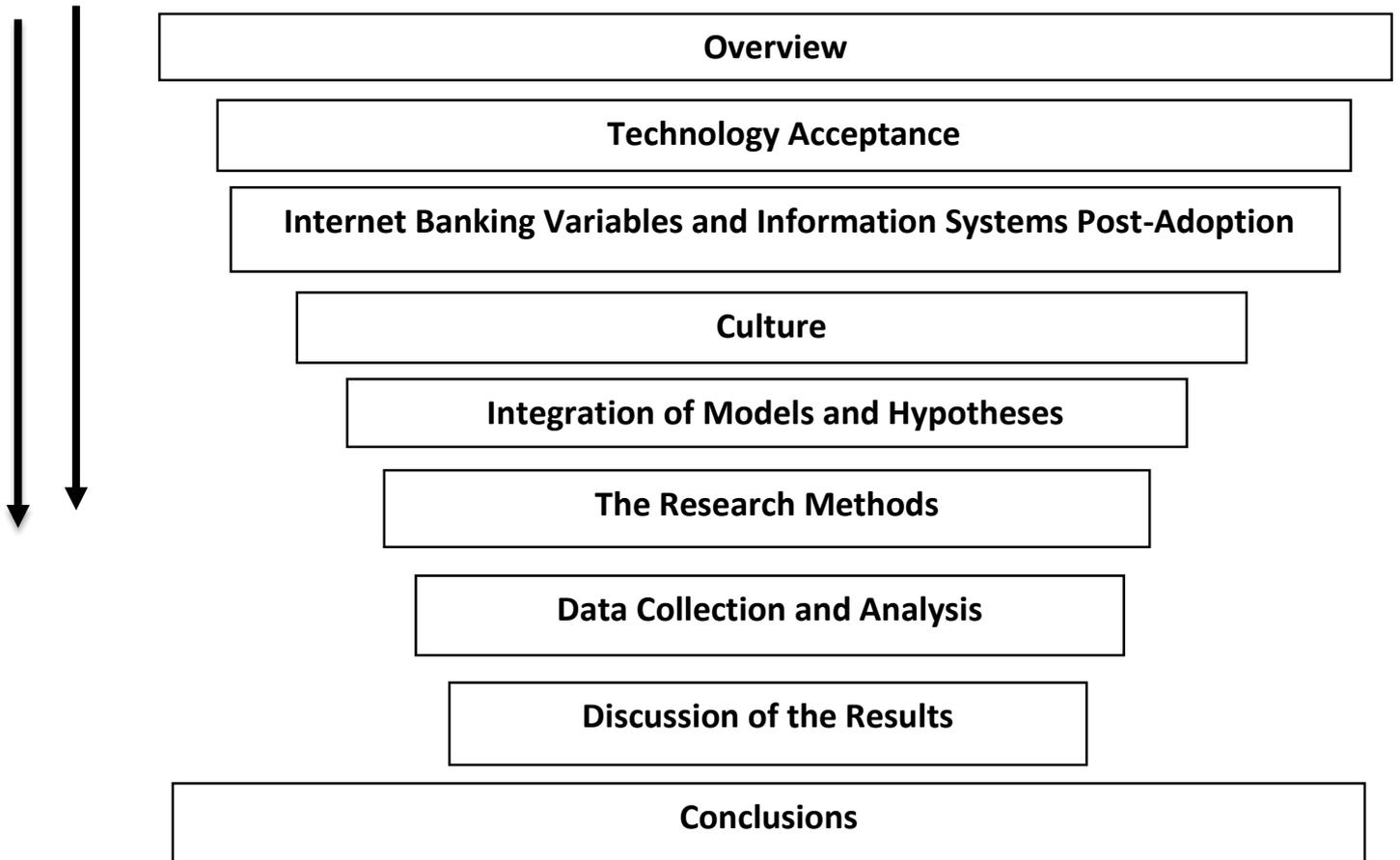
## **1.10 The Research Methods**

This study applies a quantitative methodological approach. The early phase includes a detailed literature review of users' technology acceptance in general and specifically within the banking sector. It includes a study of IS post-adoption and usage continuance behaviour. Literature on culture as well as the models used in cultural studies is included. Specific models as well as key variables are identified as part of the design of the research framework.

This study uses the survey approach, which involves the use of questionnaires administered to customers within the Saudi Arabian banking context. The results from the questionnaires are analysed, including statistical testing of the reliability and validity of the research instruments. The outcomes of the statistical analysis are interpreted and discussed.

## **1.11 Organisation of the Thesis**

This thesis is made up of nine chapters. The first chapter provides general background information and an overview of the problem statement. The second chapter provides a general review on technology acceptance. The third chapter presents a brief literature review on Internet banking. This includes Internet banking as a post-adoption behaviour. The fourth chapter reviews culture and its relationship with technology acceptance and Internet banking. The fifth chapter presents the research's proposed model and hypotheses. The sixth chapter provides general information on the research method adopted for the study. The seventh chapter covers data collection and analysis. The eighth chapter discusses the results. The final chapter draws together the conclusions.



**Figure 1.11 Organisation of the Thesis**

## **1.12 Summary**

This chapter has reviewed information about the Internet in general and Internet banking services in particular in Saudi Arabia. Although the introduction of the Internet in Saudi was comparatively late, the Saudi government soon realised its importance and encouraged public access to it. With government support, many private sector financial organisations adopted the new technology to gain comparative advantage. As early as the year 2000, all Saudi banks presented their services on the Web.

The adoption rate of Internet banking among Saudi Arabians is slow, compared with the United Kingdom and Western world. This shows that Saudis exhibit different behavioural patterns in relation to Internet banking use. These patterns

need to be investigated to explain why such differences exist as Saudi has one of the highest education rates worldwide and yet Internet adoption rates are slow.

IS researchers have made a shift in their attention when studying people's post-adoption responses to technology use. Now a substantial amount of research is focused on the actual IT usage behaviour rather than the acceptance behaviour. While this shift has been noticeable in many recent studies worldwide, few studies have applied post-adoption theories within the context of Saudi Arabia. Specifically, no other study of this kind has been found within the Saudi Arabian Internet banking context.

This research explores post-adoption behaviour patterns of actual Internet banking customers within Saudi Arabia. Post-adoption behaviour is a more urgent area for research because it has previously been overlooked in the Saudi Arabian context where acceptance behaviours have been the main focus of previous research.

Internet banking has been available for over a decade to all customers in the country but the post-adoption behaviours of the users have not been thoroughly investigated.

In light of the above context, this research aims to cover the gap in the knowledge by investigating customers' post-adoption behaviours in relation to Internet banking services within the Saudi Arabian banking context.

Different well-established IS models will be integrated in order to fulfil the research objectives of this study.

## *Chapter Two:* **Review of Adoption and Acceptance Models**

### **2.0 Introduction**

As part of information systems research, Internet banking studies have shown various determinants that influence customers' decisions to adopt and accept technology. For example, previous literature identified factors including usefulness, compatibility, self-efficacy, relative advantage, visibility and trialability, amongst others. The potential that technology has to enhance businesses' growth is affected by many factors, as evidenced by a comparatively slow rate of adoption and low actual usage rates. For example, the absence or limitations of user-friendly interfaces, data insecurity and privacy risks are core problems. Other factors include a lack of technology readiness and a preference for traditional ways of life. In addition, high initial set-up costs have been a major factor that mitigates against the widespread implementation of innovative technologies including Internet banking.

This chapter reviews the key perspectives and models of technology acceptance in previous literature. Empirical studies on information systems have used a number of models to explain people's perceptual and attitudinal responses towards new technologies. These include the Theory of Reasoned Action (TRA); the Diffusion of Innovation (DOI); the TAM; the Theory of Planned Behaviour (TPB); and the UTAUT. Other models include PC Utilisation, Social Cognitive Theory and the Motivational Model.

The review conducted in this chapter touches on some key important models from those above because they form the basis upon which other models are formulated. The Motivational Model, PC Utilisation and Social Cognitive Theory are excluded from consideration due to their limitations in relation to this research context. The Motivational Model deals mainly with psychological studies on employer- and work-related motivation, the model of PC Utilisation deals with the usage and

acceptance of personal computers, and the Social Cognitive Theory has its foundation in psychology and deals with performance-related concepts.

## **2.1 Theory of Reasoned Action (TRA)**

This is the earliest and one of the most remarkable technology acceptance models. It has enjoyed much patronage in both academic literature and empirical studies. It is a theory developed by Ajzen and Fishbein (1980). The central focus of the theory is to determine the factors that influence users' intended behaviour. This model is focused on motivation. People's behaviours, according to the model, have two motivational components. One is the individual's attitudes to their own behaviours; the other is their worry about what other important people would think of them in relation to the behaviour. Ajzen and Fishbein (1980) observed that attitude, along with subjective norms, determines the individual's behavioural intention.

There are three main components of the model: attitude, subjective norms and behavioural Intention.

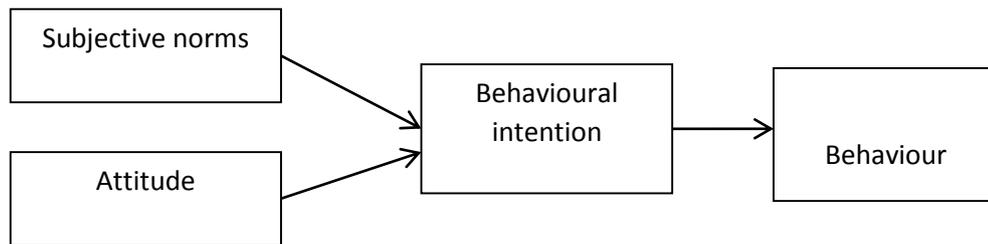
### **Attitude:**

Denotes people's negative or positive emotions about carrying out a specific behaviour. It is formed by their assessment that performing the behaviour will cause certain consequences to occur, and it is increased by the subjective evaluation of the impact of those consequences (Miller, 2005).

### **Subjective norm:**

This, on the other hand, denotes a person's awareness of the individuals who are important to him/her, and their feelings that he/she should or should not conduct a specific behaviour (Venkatesh et al, 2003). The influence that subjective norms have is sometimes so strong that a person will be more likely to perform a behaviour if he believes that important peers think he should do so, even if that behaviour is not favourable to him/her.

A pictorial representation of the model is presented in Figure 2.1 below. It proposes that behavioural intention is used to measure a person's intention to carry out a specific behaviour, and it is the only antecedent of actual behaviour. In turn, behavioural intention is determined by the two constructs attitude and subjective norms.



**Figure 2.1 Theory of Reasoned Action Model (TRA) (Ajzen & Fishbein, 1980)**

This model has been used in literature to predict behaviours and intentions in various research disciplines. Sejwacz et al (1980) used the model to study dieting and predict people's intention towards specific diets. Another study was conducted by Sparks et al (1995) on predicting individuals' behaviour in the consumption of genetically engineered foods. A third study, which is relevant to this research, was that of Vijayan et al (2005), where the authors used the model in analysing consumers' behaviour when using Internet banking.

TRA is highlighted as relevant by many IS researchers. The model's importance derives from its assertion that external influences on behaviour are fully mediated by attitude and subjective norms. For example, system design characteristics, user characteristics and task characteristics influence behaviour through subjective norms and attitudes (Vijayan et al, 2005). This therefore makes the model appropriate for use in online banking studies. It particularly justifies its relevance for this study because the theory is still used by academic researchers (Teixeira et al, 2012; Lee et al, 2013)

### **2.1.1 The Limitation of the Theory**

TRA possesses a weakness that comes from its assertion that behaviour is voluntarily controlled (Ajzen, 1985). Therefore, the theory does not cover behaviours that are not consciously considered. This includes habitual actions and irrational decisions. TRA assumes that behaviour is intended, purposefully and in advance.

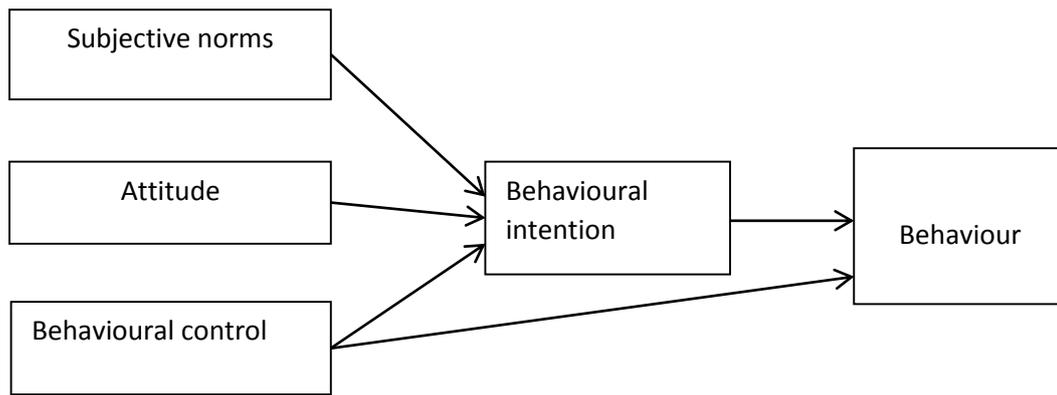
## **2.2 Theory of Planned Behaviour (TPB)**

This model was established in order to rectify the shortcomings in the TRA. It is complementary to the TRA, which does not consider behaviours that take place beyond individuals' wilful control. TPB addresses the settings in which people are not in full control of their behaviours by introducing perceived behaviour control (PBC) (Ajzen, 1985). PBC was positioned within a broader context, which included attitude, beliefs, intention and behaviour. It was theorised in order to specify cause-and-effect relations between intentions and behaviours.

TPB illustrates that human actions are influenced by three major factors (Ajzen & Manstead, 2007):

- Attitude towards behaviour, used to measure a favourable or unfavourable behaviour.
- Subjective norms, used to measure the perceived social pressure or influence on an individual to carry out or not to carry out certain behaviour.
- Perceived behavioural control, used to measure the extent to which an individual can perform a behaviour easily.

These three components cause the formation of behavioural intentions. Generally, when there is a favourable attitude and favourable influence from others, the two, coupled with perceived behavioural control, strengthen people's intentions to carry out a specific behaviour. If people have a high level of control over the expected behaviour, it results in a high intention to execute it whenever there is a chance. In turn, intention is the immediate antecedent of behaviour. Figure 2.2 shows a diagrammatic arrangement of the model.



**Figure 2.2 Theory of Planned Behaviour (TPB) (Ajzen, 1985)**

When people have full control of their behaviour, intention alone may be enough to predict their behaviour. However, in such cases, behavioural intention may only explain a few of the variations in the performed behaviour and adding PBC can enhance the explanatory power of the theory. PBC can sometimes independently predict the behaviour. Depending on the situation, intention can be more important than PBC and vice versa (Ajzen, 1991).

### **2.2.1 The Limitation of the Theory**

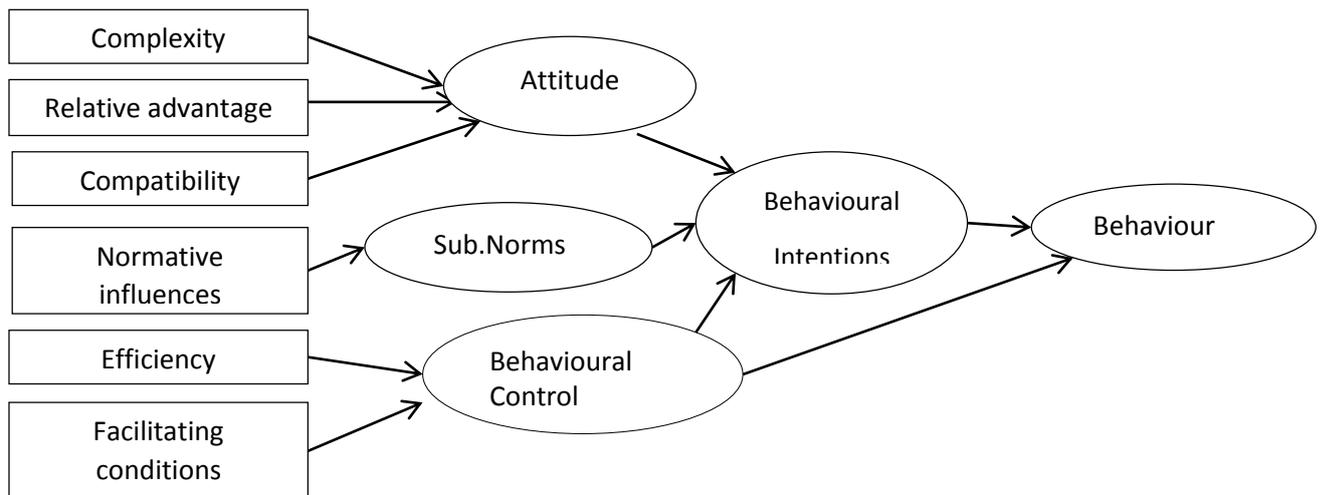
The theory was criticised for assuming that individuals need to be motivated to perform a specific behaviour (Taylor & Todd, 1995). The introduction of PBC by TPB was a response to all uncontrolled features of behaviour. However, this was a source of another criticism, because beliefs that formulate PBC perceptions were not specifically identified and their influence on the prediction of behaviours was not identified.

Despite criticism, TPB has been widely adopted by empirical studies in different disciplines. These studies embraced the model to predict people's performance of actual behaviour as well as their behavioural intentions. One of the areas of applications of TPB is health- and psychology-related studies. In this context, Ajzen and Manstead (2007) applied TPB in studying the manner in which people change their health-related behaviours. De Groot and Steg (2007) used the model

to predict customers' intentions to utilise a park-and-ride facility. The theory was also used to explain customers' intentions to stay in green hotels (Han et al, 2010). Morris and Venkatesh (2000) applied the model in studying the influence of age differences on people's adoption of technological innovation in the workplace, making it relevant to this study. The model is still used today in various research disciplines (e.g. Teo & Tan, 2012; Duncanson et al, 2013).

### 2.3 Decomposed Theory of Planned Behaviour (DTPB)

Taylor and Todd (1995) extended the TPB by incorporating variables from DOI into its structure. They classified the TPB constructs into a detailed instrument, naming the model that emerged the Decomposed Theory of Planned Behaviour (DTPB).



**Figure 2.3 Decomposed Theory of Planned Behaviour (DTPB) (Taylor & Todd, 1995)**

Taylor and Todd (1995) conducted two studies. In the first case, TPB beliefs were decomposed to possess constructs of multiple dimensions. The aim was to incorporate certain contextual factors that may improve the behaviour predictions in the technology context. They rely on previous research, which showed reliable significant associations among the main features of innovation, namely

compatibility, complexity and relative advantage and IT adoption and usage (Moore & Benbasat, 1991). Based on that, and on other similar findings, they integrated the three constructs mentioned above into the TPB attitude variable. Moreover, they integrated normative influences into subjective norms, and self-efficacy and facilitating conditions into PBC.

In the first study, the predictive ability of TRA and TPB and the DTPB were tested. The statistical tests of the relationships between the variables within these three theories showed that TRA and TPB were capable of explaining consumer behaviour while the DTPB enabled better prediction of it.

In the second study, the authors maintained the first DTPB structure of relationships. However, the normative influence was classified into two constructs: interpersonal influence (personal influence and word of mouth) and external influence (media influence). Facilitating conditions was also classified into two, which were resources facilitating conditions and technology facilitating conditions. Finally, due to their similarities, the TAM constructs of usefulness and ease of use were set to correspond to relative advantages and complexity, and were operationalised in the same directions.

The aim of the second study was to compare the predictive powers of TAM, TPB and the DTPB. Whilst running the statistical analysis, the authors found TAM and TPB to have similar predictive ability. The DTPB had comparably higher predictive ability and provided better analytic tools for bankers.

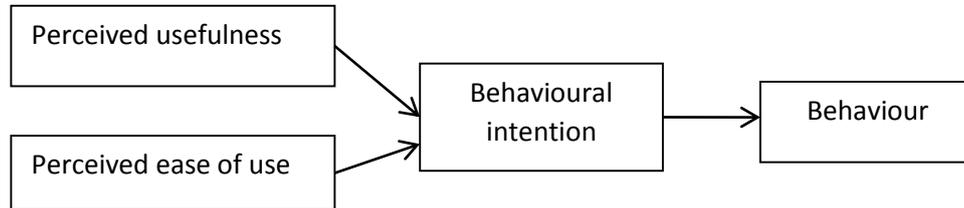
The authors recommend that systems providers could use the DTPB as a means to influence some aspects of behaviour that are likely to be changeable during the system design, marketing and implementation stages.

## **2.4 Technology Acceptance Model (TAM)**

TAM is a famous model that has seen wide application in empirical studies. Davis et al (1989) developed the model based on the TRA discussed earlier. The central focus of the model was to provide an understanding of users' acceptance and usage

behaviour across a variety of computer technologies. Amongst other technology acceptance and diffusion models, TAM is one of the models most widely used by IS researchers because of its cost-effectiveness and IS-specific nature (Mathieson, 1991; Mathieson et al, 2001; Venkatesh et al, 2003).

TAM proposes that users' behavioural intention determines their acceptance and adoption of new technologies. In turn, behavioural intention is determined by users' perceptions of the technology, namely usefulness and ease of use. Perceived usefulness is the extent to which individuals consider that using a specific technology will result in improving their productivity. Perceived ease of use, on the other hand, is the degree to which people think that using a specific technology requires minimal effort (Venkatesh et al, 2003). Other external influences (e.g. organisational factors) influence technology acceptance indirectly by affecting the user's perceived usefulness and perceived ease of use. Furthermore, perceived usefulness is influenced by ease of use. TAM is pictorially represented by the figure below.



**Figure 2.4 Technology Acceptance Model (TAM) (Davis et al, 1989)**

The authors eliminated the “attitude” construct from the model because of its failure to mediate the relationship between ease of use and behavioural intention. Despite its wide acceptability in the published literature, many researchers have introduced changes to the original TAM to allow it to reflect real-world situations. The work of Venkatesh and Davis (2000) in their TAM2 and that of Venkatesh et al (2003) in their UTAUT are essentially extensions to the TAM.

TAM was primarily established as a customisation of TRA for information systems research. The TAM structure of variables, and their cause-and-effect associations, offer a reliable base for explaining certain behaviours. The formation of individual

perceptions and how they lead to the intention to use Internet banking is researched in this study.

The use of TAM is specifically relevant to Internet banking. Suh and Han (2002) used the model to study Internet banking in South Korea. Bhattacharjee (2001) researched the customisation of TAM within the online banking post-adoption context. These two studies illustrate that TAM provides reliable instruments capable of explaining customers' behaviour within the banking context. In this regard, usefulness and ease of use do, on the one hand, reflect on the quality of the service level provided, and on the other hand, they explain why customers adopt or continue to use Internet banking in a cause-and-effect manner.

The original constructs provided within TAM offer useful tools that can explain cause-and-effect relations. Additionally, TAM is particularly useful because of its inbuilt ability to incorporate external influences. TAM's authors suggest that external influences can modify intention through their impact on usefulness and ease of use. There are, however, studies in the literature that do not restrict the incorporation of external influences into TAM via usefulness and ease-of-use mediation. Instead, they set external influences to directly affect intentions e.g. Song and Wang (2010).

Internet banking literature shows that there are a substantial number of external influences that have been incorporated into TAM. Song (2010) incorporated trust and service quality. Song and Wang (2010) added self-efficacy, while Al-Somali et al (2009) incorporated the construct awareness, security and quality of Internet connections. These studies confirm the validity of the integration of new constructs into TAM.

TAM is a strong model. It is also practical and provides genuine insights into acceptance behaviour. TAM's appropriateness to this research is also underpinned by the model's wide acceptance among information systems scholars, and its ability to be applied in different contexts. TAM has been applied across cultures and has demonstrated validity beyond its original geographical and organisational contexts. For example, the model was used to study Internet banking behaviour in

Saudi Arabia (Al-Somali et al, 2009), England (Yousafzai & Yani-de-Soriano, 2011), South Korea (Lee & Chung, 2009) and Vietnam (Chong et al, 2010).

### **2.4.1 The Limitations of the Model**

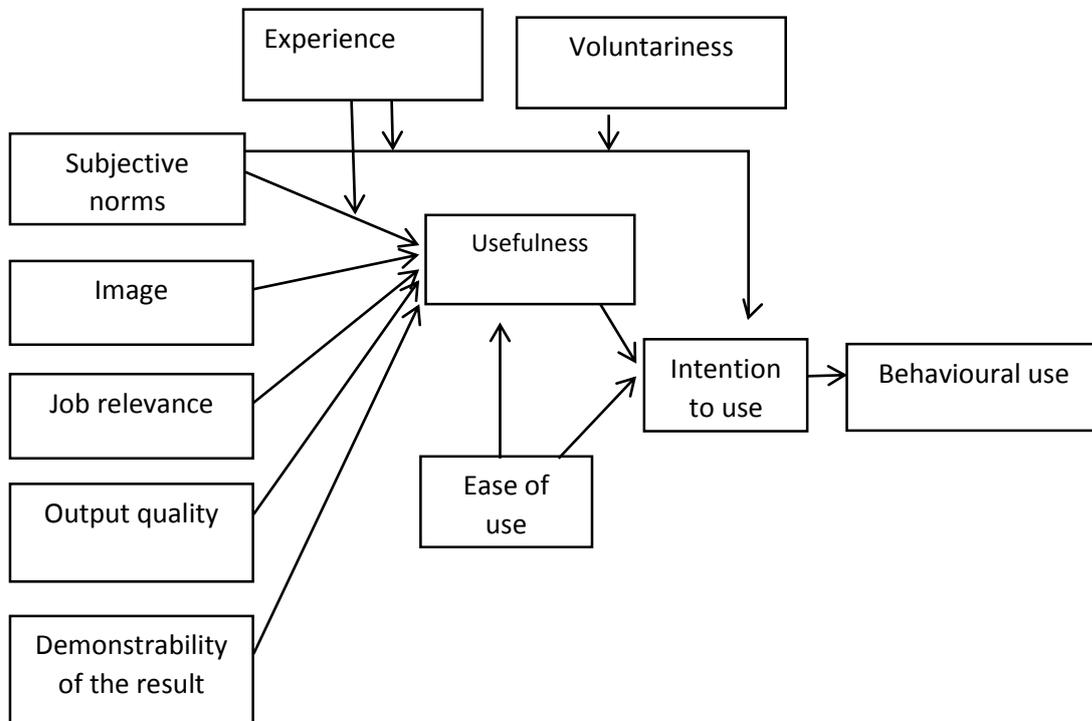
The most frequently mentioned limitation of TAM is its reliance on self-reporting measurement and its assumption that measuring the respondent's self-reporting can predict actual usage. Moreover, the TAM suffers a problem of generalisation because the model originated in student and organisational settings. This makes it difficult to generalise the TAM outcomes outside of these contexts (Legris et al, 2003). In addition, the TAM lacks the means to facilitate measuring the IS system usage changes throughout the implementation stages (Venkatesh et al, 2003). The TAM left out accounting for many factors that can enhance adoption other than usefulness and ease of use. In terms of the model's explanatory power, the TAM is a source of concern (40% on average). Occasionally the TAM suffers from inconsistency in its constructs' relations when measured by different methods or when applied in different settings and applications (Sun & Zhang, 2006).

## **2.5 TAM2**

Venkatesh and Davis (2000) extended the original TAM by including new predictions for the constructs' usefulness and intention to use. The aim was to investigate how users' growing experience with an IS system causes the effect of these two constructs to change over time. The authors incorporated additional constructs to the original TAM, borrowing from TRA and DOI. The study was conducted in mandatory and voluntary use settings of four IS systems, in three points of time: prior to system implementation and one and three months post implementation.

The authors described the new constructs as theoretical variables of cognitive instrumental processes that aim to compare what systems offer with what the users need. These are ease of use, job relevance and output quality as well as a construct that represents the demonstrability of the result. The authors also included

constructs that represent the so-called “social influence processes”, which facilitate innovation acceptance, namely image, voluntariness and subjective norms.



**Figure 2.5 Technology Acceptance Model 2 (TAM2) (Venkatesh & Davis, 2000)**

TAM2 illustrates that subjective norms influence intention through usefulness and perceived ease of use. This influence takes place in mandatory use settings. The model differentiates between mandatory and voluntary use by placing voluntariness as a moderating variable between subjective norms and intention. Subjective norms can still have an effect on intention via usefulness in both mandatory and voluntary usage settings. In turn, positive usefulness leads to higher intentions to adopt and use IT systems. Image (the extent to which innovation enhances one’s social status), on the other hand, is influenced by subjective norms so that a user would increase his intention to use a specific IS system if his peers thought that he should. The construct experience mediates the association between subjective norms and intentions, and between subjective norms and usefulness.

The association between subjective norms and intention is stronger in the mandatory use context as well as in the early stages of use. However, it decreases over time as a result of gaining more experience from actual usage. Experience also has an influence on the subjective norms and perceived usefulness relationship.

The cognitive instrumental process constructs in TAM2 assert that people compare system usage outcomes (job relevance) with their job goals in order to generate usefulness perceptions. Effective “output quality” and “result demonstrability” constructs lead to positive usefulness. However, user experience has no influence on the relationship here. It is worth remembering that TAM2 applied longitudinal methods to study different systems. The model predictive ability was 34% – 52% for “intention to use”. Researchers have used this model in various IT usage contexts, such as organisational (Ozag & Duguma, 2004), health (Chismar & Wiley-Patton, 2003) and online analytical processing technology (Hart & Porter, 2004), amongst others.

## **2.6 Diffusion of Innovation (DOI)**

DOI is another important model for evaluating users’ acceptance of new technologies. The model was developed by Rogers (2003) to explain how innovations diffuse through social systems. DOI describes how information on innovation reaches the public through social system networks over a specific period. According to DOI, individuals collect and synthesise information about an innovation (new technology) and the compilation of this information then forms their perceptions about the innovation. Based on these perceptions, individuals might decide to accept or reject an innovation (Agarwal & Prasad, 1997).

In general, the author categorises the factors involved in the DOI processes into three groups: the actual adoption process and the attributes of both innovations and innovators. In terms of the actual adoption process Rogers (1995) defined five sets:

- Knowledge of innovation: the process in which individuals get to know and be aware of the existence of the innovation, including having the required knowledge to use it.

- Attitude formation: developing a positive or negative attitude in relation to the innovation. In this process, people seek reliable information from social networks to reduce uncertainty.
- Decision: this process denotes people's evaluations that lead to the acceptance or rejection of the innovation. This process can take place before or after adoption.
- Implementation: people's actual use of the innovation. In this process, individuals rethink the innovation in terms of its actual features and what difficulties they face in learning and using the resources made available as well as the technical assistance that may be available.
- Decisions confirmation: this process denotes the positive responses of people towards the innovation after having the actual experience of using it. People might reject the innovation at this stage for two reasons: finding a replacement (finding a better innovation) or disenchantment (complete dissatisfaction with the innovation).

Rogers (1995) also asserts that there is a high likelihood of the innovation being adopted if the technology:

- Has relative advantage: this attribute denotes customers' tendency to accept the new technology when it is more advanced and better than the object it replaces.
- Is compatible: this attribute denotes that the innovation's customers can consider the new technology to be compatible with the present standards within the organisation. If the adopter is an individual, the innovation should be consistent with his/her values and lifestyle.
- Is not too complex: this attribute denotes the extent to which the innovation can be understood and used with ease.
- Is trialled: this attribute denotes the degree to which experimentations can be done with an innovation, before accepting it.
- Observability: this attribute denotes the extent to which the outcome of the innovation is obvious before making the adoption decisions (Pease & Rowe, 2004).

According to Rogers (2003), the diffusion has a process related to the characteristics of the innovators as individuals or groups. Some people are

comparatively faster than others in adopting new ideas and innovations. In terms of time, there are five types of innovators:

- Innovators or “system gatekeepers”: individuals who are competent and can engage different technical knowledge. They are also capable of coping with uncertainty attached to innovations, particularly during the diffusion course.
- The early adopters or “change agents”: the individuals who are typically leaders in their adoption. Other potential adopters take them as examples and gain the necessary advice and information from them.
- The early majority or “deliberators”: their adoption comes from their actual willingness. They are also faster than the general adopters of the social system in adopting innovation. Yet, they generally do not lead. They come in the middle between the late majority and early adopters.
- The late majority: generally, they adopt as a result of social pressure, including economic necessity and peer pressure. Individuals in this category have high uncertainty and scepticism about the innovation. Thus, they base their adoption on watching whether most people in the social system have actually adopted the innovation.
- The laggards or “traditional users”: they depend heavily on their personal judgments and experience. They resist change and have high uncertainty. Being traditional, they have minimal information and resources. Therefore, they rely on traditional ways to acquire knowledge about innovation and need extensive social pressure to explore it.

However, making a decision to adopt an innovation involves a large amount of uncertainty. Rogers (1995) posited that information about innovation flows through different channels such as mass media or/and interpersonal channels into the social system where adopters are located. Agarwal and Prasad (1998) noted that the potential adopters then form perceptions about the characteristics of innovations, which eventually influence their adoption decisions. Knol and Stroeken (2001) suggested that diffusion is about minimising uncertainty in a society through communication.

Rogers (2003) illustrated that, in addition to the innovation and innovators’ attributes, the rate at which the innovation diffuses can be influenced by other

external factors. These include the nature of communication (e.g. interpersonal versus media), the nature of innovation (e.g. authoritative versus optional) and the nature of the social system (e.g. differences in customs and interpersonal relationships).

The rate of diffusion is measured by the rate of adoption over a period of time. Only a few early adopters are characterised as being active in seeking information on new ideas, having less reliance on others' evaluations and having access to the resources necessary to adopt the changes. They also have a good formal education, are able to cope with risk and uncertainty and are willing to adopt innovation at an early stage. Observation shows that when early adopters begin to communicate with their peers about the innovation, the rate of adoption increases rapidly but then slows down in subsequent phases.

The theory has witnessed wide applications in empirical studies. The DOI model is utilised to understand consumer adoption of various innovations. Moreau et al (2001) investigated the psychological processes involved in consumer adoption decisions and reported that prior product knowledge has negative influences on adoption. Explaining this further, he argued that experts were likely to have more product-related goals. Therefore, if a product did not have the relevant characteristics, experts would not accept it, whereas novices, on the other hand, would be keen to adopt it. For example, consumers who have little camera knowledge but high computer knowledge are likely to buy a digital camera, whereas those with higher camera knowledge but low computer knowledge are less likely to buy a digital camera.

Technology-based consumer innovations such as Internet banking services represent a group of innovative products and services and an innovative medium of service delivery employing technological features. In the computer technology context, although Al-Gahtani (2003) found that relative advantage, compatibility and trialability influenced intention, complexity was found to be an unimportant factor in explaining users' acceptance of a new technology. This finding, however, contrasted with the previous findings of Taylor and Todd (1995). Explaining possible reasons for this deviation, Tan and Teo (2000) stated that since electronic

banking was at an early stage of implementation in Singapore, where few users had tried to use it, the perceived complexity of using such services was not significant. In another empirical study in Turkey, relative advantage was found to be one of the most important factors affecting users' adoption decisions (Polatoglu & Ekin, 2001).

Although DOI was originally designed to characterise people's general responses to new innovations, the theory was largely embraced by IS researchers and modified to explain IS-specific contexts. In IS, individuals' acceptance of technology is determined through the measurement of their perceptions and beliefs towards it. Agarwal and Prasad's (1998) study is one of the early examples of the adaptation of DOI to IS. This study can, for example, explain individuals' willingness to adopt new IT (represented by the traditional IS variable of intention to use) by setting DOI constructs as antecedents to the construct of intention.

The theory is still used by IS researchers to predict technology adoption in various research areas (e.g. Manning, 2013; Yusuf & Derus, 2013).

The relevance of DOI to this study comes from its assumption that Internet banking is a social phenomenon. The theory, in this regard, perceives people as having different levels of desires and intentions in relation to Internet banking usage. These desires and intentions are influenced positively by the period of exposure to relevant information received from various social channels, such as news, word of mouth, and/or from direct experience and interaction with the service.

Accumulated knowledge, gained over time, is an important factor according to DOI because it motivates individuals to adopt Internet banking and increases positive perceptions. Internet banking is an innovation that diffuses normally into the social system as gradually more and more people get to accept it.

DOI can be used to measure the perceptions and feelings customers have towards Internet banking. DOI categorises people's acceptance of Internet banking. According to the theory, people can be divided into five groups. Their position on an innovation distribution continuum that ranges from early adopters to laggards

can be established. The reason a person would fall into any of the five categories of DOI is the way they vary in relation to certain constructs. These include, but are not limited to, trialability and relative advantages as well as the extent of complexity. The factors that differentiate customers' adoption rates in the original form of the theory can be customised. This can be done in order to measure the variations in people's intentions.

Internet banking research has benefited from the DOI constructs and employed them to investigate customers' responses. Liao et al (1999) employed the constructs within the theory to investigate individuals' intentions to adopt virtual banking, including Internet banking, in Hong Kong. This study amongst others pioneered the use of DOI constructs in explaining acceptance behaviour. This includes influencing TAMs' independent variables. For example, Lee et al (2011) studied DOI constructs as external influences - trialability on usefulness-. Other studies looked at DOI constructs as internal influences - relative advantages on intentions- and - trialability.on adoption- (Eze et al, 2011)

### **2.6.1 Limitation of the Theory**

DOI was criticised for its inability to provide evidence on how people's attitudes towards innovation influence their rejection and acceptance judgments. It was also criticised for not explaining how the characteristics of innovation play a role in the final decision-making process (Chen et al, 2002). Different innovations involve different adopter categories, and the DOI does not have the ability to determine how attitudes are formed in each category.

### **2.7 Technology Readiness (TR)**

Technology readiness is about a consumer's inclination to adopt and use new technological products and services (Parasuraman, 2000). It has an index that assesses how customers' intention to adopt new technological products and services relates to their technology readiness. Parasuraman illustrates that some people are more eager to use technology than others and this is why certain people

have quicker technology adoption rates. TRI focuses on individual differences, which it uses to predict behaviour in adopting technology (Parasuraman, 2000).

The development of TRI involved an in-depth literature review and thorough qualitative research into how customers reacted to technology. The results showed that unlike many conventional products and services, the adoption of new technology consists of an elaborate belief system, which Parasuraman defined using the four dimensions, namely innovativeness, optimism, insecurity and discomfort, that are possessed on different levels by different individuals (Parasuraman, 2000). This work defined TR as being an individual's tendency to use new technologies to achieve objectives at work and in home life (Parasuraman, 2000).

People who are high in optimism exhibit a constructive perception of technology and a conviction that it provides people with more efficiency, control and flexibility in their daily issues (Parasuraman & Colby, 2001). People who display optimism towards technology tend to favour the use of the latest technological advancement, and believe that the increased use of technology provides people with more control over their lives, which in turn increases their efficiency at work.

People who are high in innovativeness display a propensity to be thought of as leaders and technology pioneers. The study assessed the degree to which an individual thinks that he or she is at the top in using innovative technology-based goods and is perceived by others as a leader of opinions on technological issues (Parasuraman & Colby, 2001). They normally have beliefs such as: people ask my advice about new technologies; I like the experience of working out how high-tech devices work; and, I stay up to date with the newest technological advances in relation to my personal objectives.

People who are high in discomfort experience have an apparent lack of domination over technology and a perception of being distressed with it. It denotes the degree to which individuals have a personal disbelief in technology-based products and services, thinking that they are restricted to some people rather than inclusive of all (Parasuraman & Colby, 2001). Their discomfort stems from a belief that they are

talked down to by technical support advisers and that system designers do not consider ordinary people as users.

People who are high in insecurity express doubts regarding technology and uncertainty about its ability to operate correctly; though to some extent linked to discomfort, this variable centres on particular features of technology-based dealings, rather than on a lack of comfort with technology generally (Parasuraman & Colby, 2001). Insecurity is typified by a belief that, in situations where a business exists solely online, it would not want to interact with them. Also, they would not trust a machine (or the Internet) to store or pass on information correctly.

The TRI divides people into the following broad groups: explorers, pioneers, sceptics, paranoids and laggards. The earliest adopters are explorers who are normally highly enthusiastic and groundbreaking. Next are the pioneers who want to take advantage of what new technologies have to offer them, but they allow any difficulties involved to hold them back. Sceptics are not sure whether they want the new technology. The paranoids fail to see any advantages in the new technologies; they also hold back due to their perceptions of danger. The laggards come last; they will only adopt a technology if circumstances necessitate it (Parasuraman & Colby, 2001). Each of these groups has its own recognisable patterns of beliefs, demographics and usage (Parasuraman & Colby, 2001). The TR scale was used in IS literature to account for individuals' psychological traits and their influence on the adoption and usage of technology.

Technology readiness in its essence is a survey designed to measure customers' anxiety in coping with technologically based services. The author established the scale as a result of a comprehensive literature review and a qualitative study that investigated people's responses to technology. Although the scale was not meant to establish cause-and-effect associations, it was developed into a reliable instrument showing customers' psychological tendencies. This instrument was then adopted by IS researchers studying traditional causal influences in TAMs. Therefore, the TRI could be used in determining intentional behaviour in relation to adopting and using Internet banking.

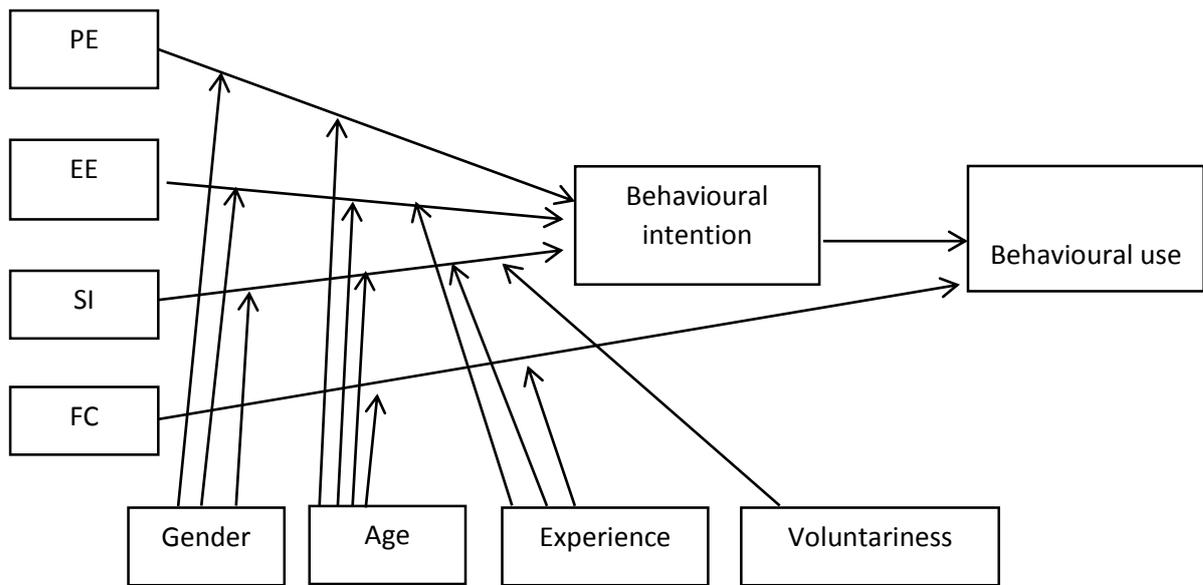
A considerable amount of previous IS literature has focused on modelling variables that explain acceptance and adoption processes, in a cause-and-effect structure. Internet banking studies have also maintained this trend. Internet banking is ultimately an IS phenomenon in which technological innovation is merely used as a means for service delivery. Therefore, developments in TAM studies have benefited researchers and practitioners within the financial sector.

One of these developments that have benefited Internet banking studies was the incorporation of TR indices into the structure of TAMs. In this regard, Lin et al (2007) set the four TR indices as independent variables that influence the TAM usefulness, ease-of-use and intention constructs. The study investigated individuals who are members of forums related to investment. These included chat rooms discussing online stock trading. This remarkable study succeeded in integrating TR into TAM. Similarly, Yousafzai and Yani-de-Soriano (2011) constructed TR indices as moderators of the relationship between TAM usefulness and ease of use and intention. This study is particularly important because it was conducted on Internet banking use in the UK.

## **2.8 Unified Theory of Acceptance and Use of Technology**

The UTAUT theory is the result of the efforts of Venkatesh et al (2003). The authors integrated the main previous technology acceptance models (TAMs). The UTAUT model aims to shed light on users' intentions to use technology and the resulting usage behaviours. The model underlines four key factors as important in understanding users' acceptance of a technology. These are performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC).

The authors observed that these four factors have a direct influence on usage intention and behaviour. They also suggested moderating factors, namely: gender, age, experience and voluntariness. They moderate the impact of the above-mentioned variables on intention and behavioural use. The relationships within the model are depicted diagrammatically below.



**Figure 2.8 Unified Theory of Acceptance and Use of Technology (UTAUT)**  
(Venkatesh et al, 2003)

In arriving at this comprehensive view, the authors reviewed eight different existing models, namely TRA, TPB, TAM, the combined theory of planned behaviour and technology acceptance model, the motivational model, the model of PC utilisation, the DOI and the social cognitive theory.

Having reviewed these models, the authors identified several weaknesses. Firstly, these models emerged as a result of cross-sectional studies. Secondly, these models studied simple technologies and their data were collected from limited respondent segments, mainly students. They also argue that these models overwhelmingly studied respondents after they had already made their decisions about the technologies concerned, and therefore there is a need to investigate technology acceptance in the decision-making phase.

The authors consolidated the eight models' constructs and validated a customised model in a longitudinal study. They subjected their unified view of the models to an empirical investigation and found that outcome – the UTAUT – accounted for 70% of the variation in consumers' intention to use. Due to the impressive output from this model, this study adopts its main cognitive facets. It is worth mentioning that the authors examined attitude, anxiety and self-efficacy constructs. However,

the result showed that these constructs had no significant effect on behaviour intention and behavioural use, so the authors eliminated them.

Although the UTAUT is a relatively new model compared to the other models, many researchers have adopted it to investigate the acceptance of various new technologies. This includes, but is not limited to, mobile devices/services in Finland (Carlsson et al, 2006), a new repayment metering system in India (Bandyopadhyay, 2008) and IT use by organisations' employees in Saudi Arabia (Al-Ghatani et al, 2007).

One notable study that used the UTAUT is that by Abu Shanab and Pearson (2007). They investigated the key determinants of the adoption of Internet banking in Jordan and the outcome revealed that the UTAUT is a productive model and presents a good foundation for future research into technology acceptance. In addition, Wu et al (2007) investigated the behaviour of 3G mobile communication users in Taiwan. They concluded that the UTAUT is a well-established model that has high ability to measure the influence of users' experience on behavioural intention to use 3G mobile telecommunication services. The UTAUT is still used currently to explain users' behaviour in various IS contexts (e.g. Alshehri et al, 2012; Lakhal et al, 2013; Tai & Ku, 2013; Bing Tan, 2013).

The relevance of the UTAUT to this research can be explained in many ways. Apart from being the result of a detailed analysis of the main technology acceptance theories, the model also received wide acceptance. Its instrument was validly replicated in different IS contexts. The relevance of the model in terms of this research context derives from its successful implementations within the Arabic culture. Several notable studies have used the model to study Internet banking behaviour in the Arab world (e.g. Al-Qeisi, 2009; Abu Shanab & Pearson, 2007). The model was also successfully implemented in studying acceptance of Internet banking behaviours in the context of developing countries such as Malaysia (e.g. Foon & Fah, 2011) as well as in countries outside the Western world, such as South Korea (Im et al, 2011)

Within the Saudi Arabian context, Al-Gahtani et al (2007) utilised UTAUT facilities to explain voluntary acceptance and use of desk computers at workplaces. The authors confirmed the validity of the model to explain technology acceptance behaviours within the Saudi Arabian context. Their study found the UTAUT to have explanatory powers of 39.1% for intention to use, and 42.1% for usage within their context of study.

The UTAUT, as repeatedly stated in this study, consolidates several important previous technology acceptance models in a unified view. Therefore, any previous study that used TRA, TAM, TPB, DTPB or any of the rest of the models that the UTAUT consolidates, to study Internet banking behaviours, justifies the relevance and appropriateness of the UTAUT in the current study investigations.

## **2.9 Comments on the Technology Acceptance Models (TAMs)**

Having reviewed the TAMs, it is worth mentioning here that these models, individually and collectively, have formed the basis for most of the technology acceptance studies in the last two decades. Their constructs have been proven to be reliable and significant in predicting IS behaviour. However, these constructs, including some strong ones such as usefulness and ease of use, present occasional internal inconsistency or correlation weaknesses and sometimes have an insignificant influence on intention and use. For example, Taylor and Todd (1995) did not find a significant relationship between subjective norms and behavioural intention. Ma et al (2005) found no significant relationship between ease of use and behavioural intention. Hsu and Chiu (2004) did not find significant relationships between perceived behavioural control and behavioural intention and behavioural use. Occasional insignificances and inconstancies within the TAM constructs do not undermine their credibility, because insignificant associations can be justified in the context where they occur.

Appendix [I] provides a review of some of the milestone studies on TAMs and their interactions and findings. IS researchers have worked extensively to merge different established IS models together to improve their predictive abilities.

Appendix [I] also shows how the TAMs construct are found to have occasional insignificances.

This research observes that TAMs were underpinned by concepts borrowed from psychology and sociology. The aim was to explain the motives driving people's responses to technologies. A particular focus was their adoption, acceptance and usage behaviours. Information systems research, on the other hand, is concerned with the interaction of the TAMs and the improvement of their productive abilities as well as how to establish the best formula out of TAMs to explain specific IS behaviours. Information systems also contain inputs from marketing research theories. Users' expectations of systems can be conditioned by marketing that modifies their expectations. This research is an attempt to merge more than one of the TAMs to explain the Internet banking behaviour of customers within the Saudi Arabian context.

## **2.10 Summary**

The current chapter has reviewed different models that were built to explain the factors that influence behavioural intention and use of technology. The review included TRA, TPB, DTPB, TAM, TAM2, DOI, TR and the UTAUT. Within these models, differences between hypothesised relationships exist. However, these models have a common theme: they all incorporate IS users' perceptions as key independent variables. In turn, these independent variables determine the changes that occur in IS users' behavioural intention and behavioural use. This trend found in previous research will be used to establish the theoretical framework of the current research.

From TAMs, this research will adopt the TR and parts of the unified view of Venkatesh et al (2003). Therefore, TR psychological indices and UTAUT cognitive beliefs will be included in the current research model. Justifications for these choices will be provided in the following chapters.

## *Chapter Three:* **Internet Banking in the Technology Acceptance Context**

### **3.0 Introduction**

This chapter reviews some of the previous studies on technology acceptance within the banking context, including their methods and outcomes. A special focus is provided in this chapter on the remarkable study by Bhattacharjee (2001), which established the ECM-IS and opened the door for many research studies that followed. This model is particularly relevant because it originated in business-to-customer online banking and because it is a post-adoption-oriented model, explaining actual users' behaviours.

### **3.1 Internet Banking in the Technology Acceptance Context**

A cursory look at the literature suggests that the TAM is the most commonly used model in online banking research. Sudarraj and Wu (2005) used a customised TAM to investigate the impact of usefulness and ease of use on online and telephone banking. Their model observes University of Canada students with the aim of empirically examining the use of online and telephone banking amongst the students and university communities. The outcome reveals that the TAM has reasonable predictive ability in explaining what motivates the university students to adopt telephone banking.

Lassar et al (2005) carried out a similar study in the USA. They adopted a customised TAM to study online banking adoption and acceptance in the country. The findings suggest that the intensity of Internet usage significantly influences individuals' acceptance and use of Internet banking. The more experience consumers have in using computers and the Internet, the more likely they are to start using Internet banking.

Pikkarainen et al (2004) used focus group interviews with banking professionals as well as previous technology acceptance research to extend the TAM. They

incorporated the constructs of privacy, security, enjoyment, information and Internet connection quality into the TAM. The results showed that online banking was influenced by all of the aforementioned factors. Notably, the construct of Internet connection quality has no influence. The TAM's perceived usefulness and information on online banking were the most significant constructs in determining online banking use. The relationship between privacy and security and online banking acceptance was found to be weak.

Ok and Shon (2006) adopted the TRA and TPB models to analyse individuals' willingness to accept and adopt online banking in Korea. The findings indicate that customers' attitude and perceived behavioural control of banking features significantly influence intentions to embrace online banking. The findings also suggest that both TRA and TPB predict customers' behavioural attitudes quite well. However, TPB performs better and is thus empirically more advantageous.

Suh and Han (2002) introduced the concept of trust into the TAM by examining the impact of trust on customers' willingness to adopt online banking. The study was conducted in five main banks in South Korea. The findings suggest that trust is a significant determinant of customer acceptance of online banking.

Eriksson et al (2005) studied Internet banking acceptance by Estonian customers. They extended the TAM by adding trust, but omitted the behavioural intention construct. Their results show that the construct of usefulness is the main influential factor driving customers to use Internet banking, while ease of use plays no role in increasing usage except through its influence on usefulness. Trust influences all the model constructs.

Tan and Teo (2000) used the TPB and DOI to explain customers' willingness to adopt online banking. The study model consists of three factors: attitude, subjective norm and perceived behavioural control. They found that all of these three factors influence customers' adoption and acceptance of Internet banking. The variables used for attitude were relative advantage, compatibility, complexity, trialability and risk.

Jun and Cal (2001) adopted service quality measures to explain the willingness of customers to adopt online banking. They emphasised the importance of customer service quality, online system quality and bank services as influential factors. Customer service quality includes responsiveness, reliability and access. Online systems quality includes ease of use and accuracy. Banking service includes product quality. They concluded that customer service quality is a major determinant of a customer's willingness to accept and adopt online banking.

Wang and Yang (2005) studied online stock control systems using the UTAUT. The authors eliminated the UTAUT moderator constructs of age, gender and voluntariness and tested only experience. The aim was to test the personal traits of openness, neuroticism, agreeableness, conscientiousness and extraversion with the model. They incorporated these personal traits into the model hypothesising that, in the first scenario, personal traits influence intention, and that UTAUT constructs mediate the relationship between the two. In the second scenario, personal traits were placed as moderators on the relationship between the UTAUT constructs and intention. The study results illustrated that placing personal traits as moderators – second scenario – is the best scenario because the predictive ability of the model reached 60% for intention. The results in the first scenario show that extraversion influenced intention through all UTAUT constructs. The effect of openness influence was via the facilitating conditions and effort expectancy constructs only. For the second scenario, Internet experience along with agreeableness positively moderated the social influence relationship with intention. Openness along with Internet experience moderated the relationship between performance expectancy and intention with negative effect. In addition, Internet experience with conscientiousness moderated the relationship between social influence and intention with negative effect. The facilitating condition and intention relationship were positively moderated by neuroticism.

Wang et al (2003) modified the original TAM by introducing perceived credibility (security and privacy concerns) and self-efficacy into the model. They investigated the determinants of users' acceptance of Internet banking. Their study population was Taiwanese banking customers. The results indicated that perceived ease of use and perceived credibility are the main significant determinants of users' acceptance

of Internet banking. The results further suggest that perceived credibility is more important than perceived usefulness in predicting the users' acceptance of Internet banking.

Sohail and Shanmugham (2003) studied the factors affecting the adoption and acceptance of Internet banking services in Malaysia. They reported that ease of use, Internet accessibility, awareness, trust and security concerns, convenience and attitude towards change are the main factors that affect the adoption of Internet banking services in Malaysia.

Rotchanakitumnuai and Speece (2003) conducted an empirical study on Thai banking customers, using a qualitative research method. The findings from the study illustrated that Internet banking customers within the Thai corporates' employees identified trust and security concerns as major determinants of their willingness to accept online banking. The authors also observed that a lack of organisational support is a major barrier to online banking acceptance in the country.

Curran and Meuter (2005) conducted an extensive study on American consumers to identify the factors that drive their adoption of specific technologies. They compared three self-service technologies in the banking industry: automated teller machines (ATMs), telephone banking (telebanking) and online banking. Their findings suggest that there is a statistically significant variation in users' attitudes toward these technologies. The results indicate that among the study sample, 79.5% adopted ATMs, 27.5% adopted telebanking and only 12.6% adopted online banking. Overall, online banking seems to have the lowest adoption rate. The results also indicate that usefulness was not a significant factor driving online banking use. However, it was a significant indicator of positive attitudes towards ATMs and telephone banking. The results also indicate that risk is the cause of low adoption of online banking only. Ease of use was a significant predictor of attitude towards ATMs but not for online banking or telephone banking. They concluded that there is a need for critical planning and management in establishing any self-service technology. In addition, they stated that bankers should focus on the critical factors that influence consumers' perception towards adopting technology.

Molina and Ben-Jadeed (2004) analysed the factors that influence the adoption of electronic banking technology within the Samba Financial Group, one of the major banks in Saudi Arabia. The study illustrated the need for banks to provide faster, easier and more reliable services to motivate e-banking adoption.

Wan et al (2005) applied TRA to study the factors driving customer adoption of branch banking, Internet banking, ATMs and telephone banking in Hong Kong. They measured the effect of demographic variables and psychological beliefs in relation to the above banking channels. Demographic variables included gender, age, income, education and occupation. The authors theorised that a customer's decision to adopt a certain channel is associated with holding positive beliefs about its features. They classified the banking channel features into convenience, assurance, informativeness and user-friendliness. Convenience includes convenience of time of operating, convenience of location and convenience in delivering the services quickly. Assurance includes transacted information accuracy and the consumer's information security. Informativeness includes information, professional consultation and financial service provision. User-friendliness includes the clarity and ease of use of the service instructions. The results showed that Internet banking had the highest scores in relation to convenience. The customer's beliefs about assurance were lower in the Internet banking channel than for telephone banking and ATMs. In addition, the analysis of the correlation linking all channel beliefs with their adoption reveals that Internet banking and ATMs had the highest positive associations among the channels. Correlation was also positive for telephone banking and no correlation was found for the branch channel. On the other hand, the demographic analysis showed that males have a higher adoption rate of Internet banking than females. In terms of age, the Internet banking adoption rate was lower for both young and old customers. In terms of income, middle-income customers show a higher Internet banking adoption rate while the wealthier customers handle their finances using various channels. Internet banking is used more frequently by customers with moderate education levels as well as by customers with high-ranking jobs.

It can be seen from the study by Wan et al (2005) that gender plays an important role in technology adoption. The importance of gender in the formation of

technology adoption and acceptance behaviours can also be derived from other research findings. For example, when gender was incorporated into the UTAUT, it contributed, along with other factors, to the increase in the explanatory power of the model to the extent of 70% of the variance in intention. The original TAM explains only 35%. This is because women have a tendency to be less task-oriented, and thus usefulness, which denotes task achievement, may not be particularly significant for women compared to men. However, ease of use and social influence are more salient factors for women than men, therefore they provide a better prediction of women's intentions to adopt technology (Venkatesh et al, 2003). Having said that, this research is not concerned with the influence of demographic factors on Internet banking use. This research investigates the actual use of Internet banking, while the role of demographic factors has been emphasised in technology adoption research.

Jaruwachirathanakul and Fink (2005) studied the adoption of Internet banking in Thailand using the DTPB. The goal was to provide bankers with deeper insights into how to build strategies to increase the rate of customer adoption of Internet banking. The research model included certain theoretical constructs that were incorporated into the DTPB dimensions. Some new constructs were incorporated. In terms of attitude, the authors incorporated perceived usefulness, adoption preference, features of the website, risk and privacy, and personal preference. In terms of perceived behavioural control, they incorporated "external environment". In terms of subjective norms, they incorporated culture. The authors classified the incorporated constructs into two categories based on the banks' ability to enhance adoption. The first category is for constructs that can be influenced by banks. These include adoption features, risk and privacy, perceived usefulness and online banking features. The second category is for constructs beyond the banks' influence, namely the "external environment" and customers' personal preferences and culture. The demographic moderating factors of gender, age, income, education and Internet banking experience were also incorporated. The authors used a questionnaire survey, which was distributed to large companies' employees who had Internet access. The results showed that the actual adoption and intentions were enhanced by attitudinal constructs, namely perceived usefulness and the features of the website. Subjective norms also motivated adoption, while perceived

behavioural control hindered it. All the moderators influenced the factors that promote the adoption of Internet banking, except for age. Among demographics, income was the most influential factor along with Internet experience.

Using the TAM and DOI, Kolodinsky et al (2004) investigated the determinants of the adoption of certain electronic banking technologies, namely phone banking, PC banking and pre-authorised debits. They examined the variances in these determinants over an extended time period, and how demographic factors influence them. The results showed that education and income had a strong influence on the adoption of the nominated services. Individuals with higher incomes are more likely to adopt. Middle aged individuals have a lower probability of adopting PC banking. Individuals with a college or higher education are more likely to adopt phone and PC banking than those who are less educated. In terms of electronic banking features, the results showed insignificant influence for trialability. Compatibility and relative advantage were significant across all channels. Simplicity was positively significant with the PC channel. Observability had a positive influence that increased the adoption of telephone banking. The results demonstrated that the impact of these factors on adoption does not change over time, while time causes adoption to change.

Kolodinsky et al's (2004) integration of TAM and DOI emphasised the role of demographic factors. TAM and DOI come from different disciplines but previous literature indicates that they have some characteristics in common. Previous research shows that the TAM perceived usefulness and ease of use are equivalent to relative advantages and complexity in DOI. Both TAM and DOI are consolidated within the UTAUT framework.

Al-Qeisi (2009) implemented an extended version of the UTAUT in Jordan and in the UK. Strikingly, the author found social influence to have no effect in either of the two countries. The explanatory power of the extended UTAUT was higher in the UK than in Jordan.

Im et al (2011) compared American and South Korean Internet banking users' perceptions using the UTAUT, and found that there was a greater influence of

effort expectancy on behavioural intentions within American customers. They also found the influence of behavioural intentions on behavioural use to be higher among American customers.

Yousafzai and Yani-de-Soriano (2011) investigated actual Internet banking usage behaviour among British customers using TAM and TR. They identified gender and age along with the four TR psychological indices of optimism, innovation, insecurity and discomfort as moderators of the relationship between perceived usefulness and ease of use and intention. The results support the vast majority of the hypothesised relationships. The predicted moderating role of insecurity between perceived usefulness and ease of use was not supported.

Yousafzai and Yani-de-Soriano's (2011) study modified the TR constructs to reflect Internet banking's specific psychological facets. They modified TR away from their original focus of investigating people's general psychological orientations towards technology. In addition, while the authors claim to investigate the actual use, they set behavioural intention and behavioural use as dependent variables. This research proposes that post-adoption dependent variables should have been used in this context.

Customer responses to Internet banking services are still a hot spot for IS research today (e.g. Foon & Fah, 2011; Ghalandari, 2012; Montazemi & Saremi, 2013; Varaprasad et al, 2013; Adapa & Cooksey, 2013).

Having discussed the above studies, Table 3.1 presents some information on previous Internet banking studies, including models, samples and analysis:

**Table 3.1 Data, Methods and Models Used to Study Internet Banking**

<b>Country</b>	<b>Author</b>	<b>Model</b>	<b>Sample</b>	<b>Data</b>	<b>Analysis</b>
Taiwan	Shih and Fang (2004)	TPB, DTPB TRA	425 Personal Banking Customers	Questionnaire	SEM

Singapore	Tan and Teo (2000)	TPB DOI	454 Online users	Online questionnaire	FA and multiple linear regression
Singapore	Gerrard and Cunningham (2003)	DOI	240 Employees	Questionnaire Interviews	FA
USA	Curran and Meuter (2005)	TAM	628 Individuals	Random Questionnaire by telephone	SEM
Finland	Pikkarainen et al (2004)	TAM	268 Individuals	Questionnaire	CFA and regression analysis
Estonia	Eriksson et al (2005)	TAM	1831 Individuals	Questionnaire	SEM and PCA
USA	Lassar et al (2005)	TAM	349 Students	Internet survey	Regression
Malaysia	Ndubisi and Sinti (2006)	TAM and MM	126 Individuals	Online questionnaire	Regression analysis and FA

Malaysia	Guriting and Ndubisi (2006)	TAM	133 Banks' customers	Questionnaire	Regression
Taiwan	Chen and Li (2010)	TPB and TR	488 Students using SSTs	Web-based survey	SEM
UK	Yousafzai and Yani-de-Soriano (2011)	TAM and TR	2000 Internet banking users	Questionnaire	Cluster analysis and CFA
KSA UK	2010	Revised TAM	386 232	Questionnaire	SEM

**Table 3.1 (the author)**

Table 3.1 illustrates some of the main IS research approaches in studying the use of Internet banking services. These approaches have built strong bases for the following research in the field. They have shown common patterns and their methods and instruments are quite similar. The similarities found among Internet banking studies may be caused by their adaptation of the TAMs' theoretical and methodological frameworks. For instance, survey questionnaires are commonly used instruments in Internet banking studies as well as in the TAMs.

Some Internet banking studies supported their findings by conducting interviews with bank managers and/or with bank customers. More evaluations of such approaches will be presented in the methodology chapter.

In light of the above findings and discussions, this research observes that merging more than one of the TAMs in studying Internet banking can enhance the outcomes and increase the results' explanatory power. In addition, adopting the TAMs'

methods and instruments facilitates the comparison of the findings against previous literature, which may be an important contribution in its own right.

Previous empirical research has shown a growing emphasis on the importance of the new service delivery channels. However, the factors that influence the use of these channels are clearly many and diverse. There are some differences among the findings of the previous TAMs. These studies focused mainly on specific segments (measuring system-specific variables such as usefulness). A few of them focused on analysing personal factors, which influence consumers' adoption of Internet banking technology. Some studies addressed environmental factors, as the researcher will discuss later in this research. This study aims to combine these segments to see how they can interact with each other. In other words, based on the review of the literature, this research needs to include customer characteristics and technology attributes as well as environmental factors.

The review of the relevant IS literature reveals the existence of different factors that are not parts of the original TAMs. Trust, security, privacy and personal enjoyment surfaced as being crucial in understanding online behaviour. In addition, Gefen and Keil (1998) assert that technology acceptance models with more social dimensions need trust to be incorporated as a determinant of ease of use and usefulness. Trust and enjoyment were found by many researchers to be relevant in explaining Internet banking acceptance behaviours (Bradley & Stewart, 2002; Page & Luding, 2003; Shalhoub, 2006; Eriksson et al, 2005; Pikkariainen et al, 2004; Al-Sajjan & Dennis, 2006). To account for these factors, this research incorporates technology readiness (TR) constructs into the research model. Justification for this choice will be presented later in this research.

Having discussed the main previous studies on Internet banking, the literature revealed one additional study, which was conducted using a new theoretical framework. Adapting a model from shopping research, Bhattacharjee (2001) introduced his ECM-IS into the IS research stream. Bhattacharjee integrated the TAM usefulness construct into a broader structure of IS post-adoption variables and proposed replacing the behavioural intention construct with continuance intention, to reflect the post-adoption context.

ECM-IS received wide acceptance from the IS researchers due to its useful theoretical implications. Therefore, this research devotes the rest of this chapter to discussing it. The relevance of the model to this study derives from its assertion that post-adoption behaviours differ from the IS acceptance and adoption behaviours. This study is concerned with actual Internet banking usage behaviour.

### **3.2 Internet Banking Usage as an IS Post-Adoption Behaviour**

This research is concerned with Internet banking “actual usage” behaviour. It operates within the discipline that considers IS post-adoption research as a kind of technology acceptance phenomenon. Thus, it is assumed that TAM-type models – reviewed in the previous chapters – can be relevant. In light of the above, this study will proceed to provide an overview of IS post-adoption research with a special focus on the ECM-IS of Bhattacharjee. This model initiated a new trend for IS research from 2001. Bhattacharjee’s (2001) model originated in an online banking context, and thus is particularly relevant to this research.

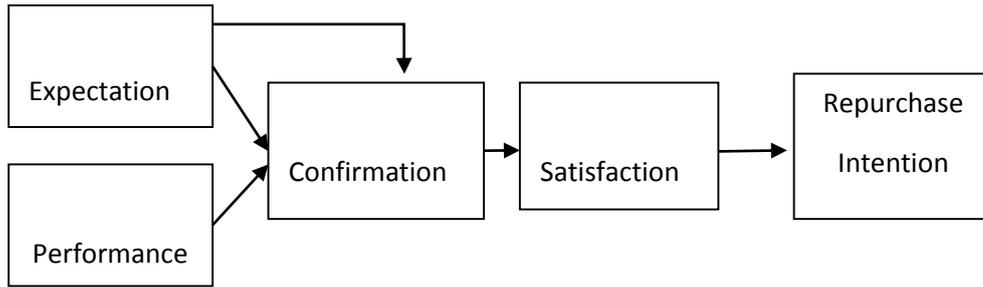
#### **3.3.1 Technology Acceptance versus Continuance**

In the past two decades most previous IS research has been conducted to understand users’ initial acceptance of new IT systems. This research takes place in a context within which the provision of Internet banking services has become routine in the financial services sector. The focus of IS has expanded to include customer retention as well as expansion of the customer base. This research aims to expose factors affecting the understanding of users’ initial acceptance as well as continued usage behaviour and e-customer retention. More IS researches are shifting accordingly. Originally, TAMs had built important bases to explain initial IT adoption behaviour; these bases are theorised to be valid for studying post-adoption behaviours with some modifications. TAMs are considered valid for IS continuance research because most of them were designed specifically to explain IT usage phenomenon.

IS researchers have incorporated shopping and marketing research into TAMs in order to elucidate post-adoption behaviour. In this regard, one important study in the online banking context is ECM-IS. The model was based on the marketing literature's ECT of Oliver (1980). Therefore, in the following section, the introduction of ECT to IS will be explained.

### **3.3.2 Expectation Confirmation Theory (ECT)**

Customer post-purchase behaviour has been one of the main areas of study in marketing research. The expectation-confirmation paradigm has been one of the robust theories established in this regard (Churchill & Surprenant, 1982). Its objective is to provide an insight into customer satisfaction and repurchasing behaviour of a product or service. ECT hypothesises that the intention of a customer to repurchase a product or service is determined by his or her level of satisfaction with it. This level of satisfaction, on the other hand, is determined by two things: firstly, the initial customer expectations (pre-purchase expectation), while the second determination is after-purchase differences found between initial expectations and the performance of the product or service (confirmation). Prior to making the decision to buy the product or service, the customer has a set of expectations on the performance of that product or service. When a customer acquires more in-depth after-use experience of that product or service, he or she develops a perception of its performance. Then the customer has confirmation or disconfirmation of his pre-purchase expectations. The process of customer evaluation and calculation of pre-purchase expectation in comparison to post-purchase performance determines whether the product or service performed as well as expected; if so, the pre-purchase perception is confirmed. If the product or service performed worse than expected, the expectation is positively disconfirmed (Oliver & DeSarbo, 1988; Yi, 1990; Anderson & Sullivan, 1993; Oliver, 1993).



**Figure 3.3.2 Expectation Confirmation Theory (ECT) (Oliver, 1980)**

ECT derived from the Customer Satisfaction/Dissatisfaction model (CS/D), which was built to predict how customer repurchasing behaviour can be predicted by studying satisfaction levels. CS/D was mostly used in service retention and product repurchase contexts (Tse & Wilton, 1988; Oliver, 1980, 1993; Anderson & Sullivan, 1993; Patterson et al, 1997). The ECT model has four constructs, namely acceptance, performance, confirmation and satisfaction. These four influence continuation decisions at the end of the process (Bhattacharjee, 2001). The relationship between these constructs is illustrated in the ECT diagram above. Empirical research has indicated that customer satisfaction with earlier use of a product or service is a key element in determining customer intention to repurchase. This has been investigated repeatedly in different settings using the ECT model (Oliver & Shapiro, 1993; Anderson & Sullivan, 1993).

In the customer research context, confirmation and satisfaction are connected and have been observed as the two main variables in the ECT model. Spreng et al (1996) suggested illuminating the connection between expectation and satisfaction constructs, arguing that the association between expectation and satisfaction is completely mediated by confirmation. In addition, it has been accepted that various performance perceptions effect satisfaction (Tse & Wilton, 1988). Specifically, it is evident from previous research that expectations and satisfaction emerge repeatedly as the constructs that influence repurchasing behaviour.

ECT has been researched in many contexts. Its ability to predict repurchasing behaviour has been successfully confirmed in different settings, including

automobile repurchasing (Oliver, 1980) restaurant and catering services (Swan & Trawick, 1981), business and professional services (Patterson et al, 1997), disaster prevention and rescue systems (Shih et al, 2012), medical tourism (Chou et al, 2012) and e-learning (Lee, 2010).

ECT has some limitations. For example, it has been criticised for paying insufficient attention to changes that are likely to occur in consumer expectations subsequent to their utilisation experience. Customer preferences can change as a result of the consumption experience. ECT emphasises pre-use expectations more than customer post-purchase experience. Prior expectations with a product or service may come from external sources rather than personal experience: public media, adverts and personal recommendations. The personal experience of actual use of the product is a more realistic indicator of post-purchase expectations (Fazio & Zanna, 1981).

The customer perceptions of post-purchase experience against pre-purchase expectations are affected by the actual value they find in the facilities provided in the product. Despite criticism, ECT remains one of the most powerful models used in measuring continuance intentions in IS, marketing and shopping contexts (Bhattacharjee, 2001; Deng et al, 2010; Liao et al, 2009).

### **3.3.3 ECT in the IS Context**

As stated earlier in this research, past TAM studies have been attributed as being models designed mainly for users' initial IS acceptance (Lee et al, 2003). In the IS research domain, a substantial amount of attention has been paid to investigating IS acceptance using models such as: TRA (Ajzen & Fishbein, 1977), DOI (Rogers, 1995), TAM (Davis, 1989), TPB (Ajzen, 1991) and UTAUT (Venkatesh et al, 2003). These models aim primarily to illustrate processes affecting decisions to adopt and accept new IS systems. The ability of TAMs to explain post-adoption behaviour has been criticised since TAMs are for users' initial IS acceptance (e.g. Lee et al, 2003). Post-adoption research is a newer trend in IS research that has started to attract more attention. Researchers attempt to consider the role of continuance in IS success. This is studied by paying more attention to IS

continuance versus IS acceptance. Initial acceptance of IS was found to be a crucial element. However, IS continuance is important, more important than IS initial acceptance. This is because gaining new customers is very costly and more difficult than retaining existing customers. IS continuance emphasises the implementation stage as an indicator of continuance success. Satisfaction perceptions of actual use in the implementation phase affect the likelihood that users will continue to use the system in the long term. While achieving new customers is the focus of IS adoption and acceptance, IS continuance is rather concerned with keeping existing users (Bhattacharjee, 2001; Parthasarathy & Bhattacharjee, 1998). Empirical research of electronic service providers illustrates that this sector cannot depend solely on users' acceptance of their services to reach their maximum potential (Kim & Son, 2009). With the importance attached to attracting new customers for electronic services, electronic service providers depend heavily on the income stream from the continuity of their existing customers (Venkatesh, 1999; Santhanam & Hartono, 2003; Venkatesh et al, 2003; Kim & Malhotra, 2005). Maintaining existing customers decreases the operational expenses ratio and increases profits significantly (Crego & Schiffrin, 1995). The ease with which customers can change providers is a very important issue (Chea & Luo, 2008). Previous researchers found that maintaining the continuity of e-service use is a more complex issue because it is relatively easy for customers to change to other providers in the electronic service provider sector. Users of electronic services can, at low cost and with less effort, choose other service providers by using their computer or mobile at home. Managers should therefore place the utmost focus of their attention on maintaining current customers. The failure of IS system providers is caused by the low use of their services and customers switching to other providers. Unexpectedly, there is less focus on the study of customer continuance than acceptance. The revenue streams and long-term success of IS businesses are underpinned by post-adoption beliefs and customers' intention to continue (Parthasarathy & Bhattacharjee 1998; Reichheld & Scheffer, 2000; Khalifa & Liu, 2007). The service providers who attempt to understand what drives customer intentions to continue to use their services should consider first investigating the usage patterns of existing users at individual level (Limayem et al, 2007).

Electronic services are a competitive market with an easily available wide range of alternatives. Therefore, electronic-customer research should emphasise the importance of continuance by studying customer post-adoption behaviour (Chea & Luo, 2008; Anderson & Srinivasan, 2003). The conclusion from this review is that it is of great importance to study the factors influencing continuance. Studying individuals' intentions to continue using IS systems in order to better understand the factors that influence their decisions is what this research is about.

### **3.3.4 Information System Continuance**

Limayem et al (2007) defined IS continuance as a kind of post-adoption behaviour, arguing that IS continuance is similar to the term “post-adoption phase” referred to in IS research domain. However, the term “post-adoption” within IS research also incorporates various behaviours that take place after acceptance, including adoption, diffusion, continuance and compliance, amongst others (Karahanna et al, 1999; Rogers, 1995). Bhattacharjee et al (2008) define it more generally: for them, IS continuance can be defined by examining user intentions and their decisions to continue using IS in the long term without dividing it into subphases (Bhattacharjee et al, 2008).

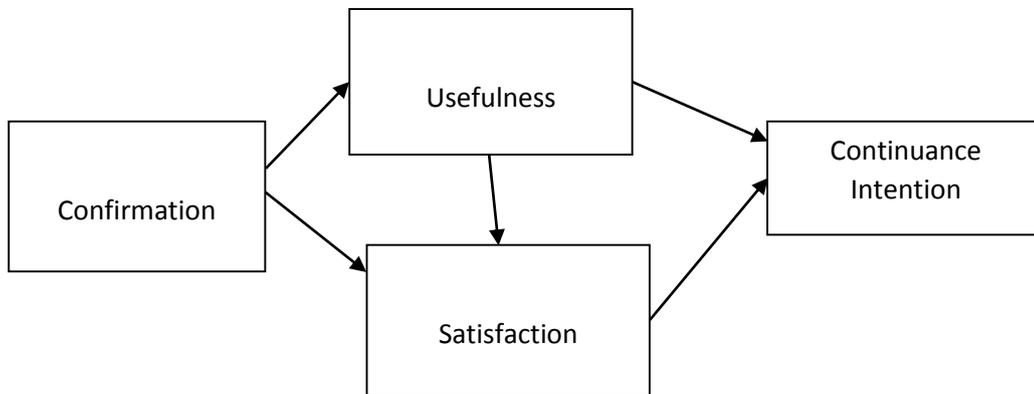
A closer look at IS literature reveals the fact that IS continuance research is gaining growing consideration by researchers and practitioners. Some academic research centres on investigating IS continuance at individual level. Such researchers will study IS from an individual point of view, attempting to find explanations for various patterns of system usage behaviours (Hsieh et al, 2008; Cenfetelli et al, 2008; Liao et al, 2009; Gefen & Straub, 2000). Research focused towards individual users tends to prioritise either acceptance or continuance. IS acceptance research emphasises studying the influence of demographics, lifestyle and previous experience of IS system usage (Recker, 2010; Venkatesh et al, 2003; Zeithaml & Gilly, 1987; Chan, 1997). IS continuance research places emphasis on exploring the role of trust and satisfaction in forming user continuance behaviours. The relationship between actual usage of an IS system and the formation of satisfaction, confidence and trust is part of continuance research rather than acceptance research. This is because acceptance research tends to focus only on the initial

phases of users (Limayem et al, 2007; Deng et al, 2010; Bhattacharjee, 2001; Qureshi & Compeau, 2009).

In marketing research, repurchasing behaviour is assumed to be influenced by customer satisfaction with a product or service (Hallowell, 1996). Oliver's (1980) ECT was introduced to the IS field by Bhattacharjee (2001). He did this in order to study IS continuance behaviour and thus created a completely new research stream. This research uses the work done by Bhattacharjee, specifically his ECM-IS.

The merging of the research streams mentioned above has been utilised in information system research to illustrate the reasoning behind the changes that occur in users' responses to IS over time and the way in which changes take place. Users will reassess their earlier adoption choices, made with regard to IS systems, and then choose whether to continue or discontinue use. Users' unspoken beliefs and perceptions of information systems are represented by the constructs included in ECM-IS. These facilitate the study of aspects of users' prior experience. These include things such as confirmation and satisfaction with the experience of current information system use. Anderson and Srinivasan (2003) studied the connection between the intention to continue construct and the satisfaction construct and found that satisfaction has a strong association with continuance intention and this association is proven to be correlated. Bhattacharjee (2001) recommended that TAM should be integrated with ECT in order to further understand IS continuance. In his ECM-IS model he places confirmation as an external variable. Confirmation influences satisfaction, which in turn leads to behaviours indicative of continuance being likely. Continuance intentions within ECM-IS are influenced by individuals' perceptions about technology referred to as perceived usefulness, which replaces performance in the original ECT. Usefulness and satisfaction result from comparing individuals' prior experience, which forms their own expectations. These include a person's particular usage patterns of the previous system compared to the facilities designed into the system they are currently using. In the model, confirmation is a prerequisite to both usefulness and satisfaction, and usefulness influences satisfaction. It is worth mentioning that IS continuance research may

incorporate other beliefs that influence users' continuance intention. The diagram below represents the Bhattacharjee customisation of ECT for IS usage.



**Figure 3.3.4 Expectation Confirmation Model of IS Continuance (ECM-IS)**  
**(Bhattacharjee, 2001)**

ECM-IS has become a window for IS research participants to study various post-adoption behaviours. However, as far as the researcher is concerned, studies that built upon ECM-IS made little contribution to the original theory. They either applied longitudinal methods or incorporated more of the TAMs' constructs, such as ease of use and social influence, into the original ECM-IS structure; few studies did both. Assessments on these studies will be presented in the fifth chapter.

### **3.4 Summary**

As the literature review in the previous chapter illustrated, there is a substantial body of IS literature that investigated the Internet banking phenomenon and its adoption and acceptance. In this literature, it is clear that TAMs form the core upon which researchers relied. To contextualise TAMs for Internet banking studies, IS researchers followed different approaches, which included extending TAMs. New contextual constructs such as enjoyment were also incorporated. Technology acceptance research involved the process of merging one of the TAMs with another, such as integrating TAM and DOI. To account for banking characteristic variables and contexts, TAMs' constructs were modified and customised in order

to measure specific Internet banking behaviours. Some studies included more than one of the above approaches. One notable study that extended the tradition in TAMs for the banking context is by Bhattacharjee (2001). Bhattacharjee argued that Internet adoption or initial acceptance is different from technology usage continuance, and therefore the actual experienced users of technological services should be dealt with differently. Borrowing from retail literature, he built a new model called ECM-IS in which satisfaction and continuance intention constructs were set as dependent variables instead of behavioural intention and behavioural use as in the traditional TAMs. The other constructs of ECM-IS include confirmation along with the TAMs' famous construct of usefulness. Bhattacharjee's work gained wide acceptance and marked a new era for IS post-adoption studies. IS researchers used the model to study IS users' post-adoption behaviour in various contexts. The model has been subject to many extensions; however, these extensions were mostly about adding more cognitive constructs from TAMs.

In terms of methods and instruments, previous studies of Internet banking have mostly applied quantitative methods. Their measurement instruments have been mostly prebuilt survey questionnaires derived from TAMs, modified to fit the Internet banking context as can be seen in Table 3.1.

The next chapter reviews the relationship between culture and technology. In particular, it discusses relevant literature on culture and models that will be used in this study.

## *Chapter Four:* **Culture and Internet Banking**

### **4.0 Introduction**

Culture was found to influence behaviours within technology acceptance contexts in general and the Internet banking context in particular. Therefore, this part of the thesis focuses on culture, which is difficult and complex as a concept to define. It gives some definitions of this key concept by key anthropologists so as to enhance the reader's understanding and provide a framework for analysing culture with reference to this particular study.

The section starts by providing definitions of culture and then proceeds to discuss some models and variables used that are relevant to this research. It also discusses how these variables are applied to the study of Saudi as an Arabic culture. The section concludes by identifying the models and variables to be used in this study.

### **4.1 Definition of Culture**

Del Galdo and Nielsen, (1996) opines that culture is a group's or society's learned behaviour, acquired from their immediate surroundings and environment, including the traditions and history they were raised to respect, as well as communication practices they have become familiar with, and social rules. In fact, this describes a set of people recognised by certain factors, such as language, history, values and symbols.

Hall (1989) defines the term "culture" as the style of life of a set of individuals, including their material things, attitudes and learned behavioural patterns. His general description of culture proposes that individuals within one culture have a common understanding or perceptions of each other. This common understanding is founded on the way they were raised.

Hofstede et al (2010) describes “culture” as a mental programming that differentiates the affiliations of one group of people from another. In addition, Hofstede emphasised the cognitive nature of culture, arguing that culture is not genetically inherited, and individuals obtain specific patterns of thinking, feeling and action that remain effective throughout their lifetime. Culture also affects the social setting in which people interact. He also suggests that within one culture, individuals can have different behavioural patterns, depending on their religion, profession, gender, education and language.

Bourges-Waldegg (2000) defined culture as a system of social aspects such as language, social behaviour, traditions, values and religion. However, he cautioned that cultural characteristics are not always distinctive and that the boundaries of “cultures” are not usually precisely defined. This suggests that there are certain cultural values that transcend beyond a particular geographical boundary; hence, there could be certain behaviours that are common to all people and all races.

In summary, from the foregoing, this research can conclude that the term “culture” is used to describe a set of shared values that affect a certain group behaviour. Moreover, culture influences human behaviour from large societies to small groups of organisation employees. Culture is particularly relevant to this study. It enables us to see that within an identifiable group, such as banking customers, culture affects significantly their behaviour and preferences, especially in their use of Internet banking in the country of reference. Hofstede (2010) illustrated that people from the same culture share the same learning processes and therefore tend to think in the same way.

## **4.2 Culture and Information Systems**

In the literature, relations between culture and IT have been exhaustively discussed. The notable scholars Leidner and Kayworth (2006) reviewed 82 articles on the subject, and Gallivan and Strite (2005) reviewed more than 70 articles. The issues covered by most studies include culture in relation to IT development, IT management and strategy, IT adoption, and IT use and outcomes.

Leidner and Kayworth (2006) observed that the differences among cultures often lead to differences in perceptions and approaches in information systems development. They indicated that culture has been observed to affect the reporting of information systems failure, both in individualistic cultures like America and collectivistic cultures like Saudi Arabia (Tan et al, 2003).

Some studies have documented the influence of culture on IT adoption and acceptance (Leidner & Kayworth, 2006; Al-Qudah & Ahmad, 2013). Straub et al (1997) observed that adoption of e-mails has been found to vary across different cultures. Using IT is assumed to be inherently risky, therefore uncertainty avoidance is an important factor in the adoption and acceptance of IT.

The central focus of most studies has been to determine what cultural dimensions are the most capable of predicting user satisfaction with IT adoption (Leidner & Kayworth, 2006). The main finding from some of these studies is that IT is more positively adopted in countries with lower uncertainty avoidance and power distance than in cultures with high power distance and high uncertainty avoidance (Calhoun et al, 2002; Al-Qudah & Ahmad, 2013).

Culture can be studied at group level, national level and organisational level. Gallivan and Strite (2005) stated that cultural studies at national level are more popular in the IT context than cultural research at organisational level.

In summary, the studies presented above show how IT-related studies use culture as a determinant of adoption and acceptance. This study focuses on how culture impacts upon IT usage patterns in Saudi Arabia, as will be discussed later in this chapter. This justifies the relevance of this study as this issue is gaining currency in the research community and yet is inconclusive in the literature.

The next section assesses various cultural models proposed in the literature, some of which have been empirically tested.

## 4.3 Cultural Models

Modelling culture means studying the differences and similarities between two cultures, and demonstrating the observed variations as variables (Hoft, 1996). A number of researchers developed specific culture models using different research instruments. These include surveys, questionnaires, focus groups, extensive interviews, and long-term observations and experience. Every cultural model establishes its own variables and scopes to classify cultural features.

This section reviews five famous models. They are frequently referred to in culturally based research. They are: Hall (1989), Hofstede et al (2010), Schwartz (1994), Trompenaars (1996) and Victor (1992).

### 4.3.1 Hall's Cultural Model

Hall (1989) described culture as a programme of behaviour. His analysis of cultural dimensions focuses on *context*, *space* and *time* to explain the way individuals from different countries are likely to react to various situations. These are briefly described below:

- *Context*: This dimension is used to measure the amount of functioning information, within a specified communication, in relation to the purpose of the meeting.
- *Space*: This dimension refers to the amount of space or boundary an individual within a society feels he has.
- *Time*: This dimension is also considered as the speed of messages or the speed velocity continuum, and is used to refer to the speed at which people decode and act on messages.

Hall connects “space” with “context”. He claims that in Germany, where “context” is low, a loud discussion is supposed to overstep into another person’s private “space”, while in Italy, a loud discussion is allowed, and it is not viewed as overstepping personal boundaries because Italians are high in “context”. In

addition, Hall and Hall (1990) linked “context” and “time”. They argue that, in cultures with high context attributes, people are more familiar with polychronic time where different activities are allowed to occur simultaneously and interruptions are tolerated, while in cultures with low context, people are familiar with monochronic time, where a single activity is performed at a time and interruptions are not tolerated. Moreover, high context cultures imply that personal relationships and connections are highly appreciated, information flows more freely in the social channels, and less formality is involved, while in low context cultures, formality is deep-rooted and everything tends to have procedures to follow (Hoft, 1996).

### 4.3.2 Hofstede’s Cultural Model

Hofstede (1980) analysed personal values of employees in relation to their jobs. He used the responses from a multinational survey to propound his theory of cultural relativism. The survey included more than 100 items and covered around 120,000 IBM employees in 70 countries. The survey covers 40 different occupations and 20 languages. The participants in the survey are workers employed by multinational corporations in different countries. The findings from the study suggest the importance of culture in the behaviour and attitudes of workers.

Hofstede underlined the cultural differences among nations. He based his cultural dimensions on measuring individuals’ integration into groups, women’s social roles, the existence of inequality and tolerance of the unknown. These were categorised into cultural dimensions as follows:

- *Power Distance* (the perception of the distribution of power within a society)
- *Collectivism versus Individualism* (the subjugation of the individual to a group)
- *Femininity versus Masculinity* (the individual’s preference for assertiveness and achievement versus caring and quality of life)
- *Uncertainty Avoidance* (the extent to which individuals feel uncomfortable with the unknown)

- *Long-Term versus Short-Term Orientation* (the individual's preference for achieving quick results versus being more dedicated to future objectives)
- *Indulgence versus Restraint* (the extent of fulfilling needs for enjoyment).

The aforementioned dimensions represent Hofstede's model of national culture. They have scores in each country. For instance, the power distance scores indicate that Arab countries have high power distance with unequal distribution of power and authority among people. Great Britain, on the other hand, scores comparatively low in power distance, which means power is distributed more equally. In such a culture, employees are more expected to dare to challenge their leaders. In addition, in cultures with high individualistic scores, people have less social cohesion and higher tendencies to care for themselves first.

In collectivist cultures, individuals have absolute loyalty to the group, while in high uncertainty avoidance cultures, unstructured situations are a threat, and ambiguity must be avoided. The Saudi culture was found to be high in uncertainty avoidance, where uncertainty is not a usual aspect of life.

Several empirical studies tried to validate Hofstede's theory. Among them is Sondergaard (1994), who satisfactorily reviewed 60 replications of Hofstede's work confirming the five dimensions. Others are Shane (1995), Mouritzen and Svava (2002) and Van Nimwegen (2002).

### **4.3.3 Schwartz's Cultural Model**

Schwartz (1994), however, posited that seven values could account for cultural differences among people:

- *Conservation* (this indicates characteristics of societies based on the strength of social ties, where tradition, conformity and security are the main concerns). These values emphasise the status quo and propriety, and deter actions by individuals that attempt to alter the traditionally established order such as social order, obedience, family security, respect for tradition, and self-discipline.

- *Hierarchy*. This cultural dimension emphasises the acceptability of the hierarchical structures, particularly in the ascription of roles and fixing of resources such as wealth, social power, authority and humility.
- *Intellectual autonomy*. This dimension indicates the potential for individual autonomy to pursue goals and intellectual interests.
- *Affective autonomy*. This is similar to intellectual autonomy in ascribing autonomy to individuals in endorsing and maintaining the attainment of positive affective experiences such as excitement and pleasure.
- *Competency*. This dimension gives priority to self-affirmation, ambition, success and risk to support the dominance of the surroundings.
- *Harmony*. This dimension focuses on individuals' harmonious fit with the environment and nature, such as protection of the environment and unity with nature.
- *Egalitarian compromise*. This dimension emphasises mutual concern for other people's well-being, such as help, responsibility, social justice and equality.

#### 4.3.4 Trompenaars' Cultural Model

Another famous cultural model is Trompenaars' model, named after Fons Trompenaars in 1996. He proposed a three-layer onion model, which consists of: first, the outer layer, which contains all the aspects of life, including dress language and rituals; second, the core layer, where we find the unspoken and implicit assumptions that motivate the way people handle their surroundings; and third, the middle layer of the onion, which contains the values and norms that define whether things are wrong or right and bad or good.

Trompenaars empirically tested his theory using a large multinational survey. The survey had 16 questions administered to 15,000 managers in 30 companies across 50 countries. He defines culture as a community's way of solving problems.

A key dimension of culture in this theory is *universalism versus particularism*. Particularists are relationship-oriented individuals. Arabs are examples of particularists. They centre their response to difficult situations on the connection that they have with other people. On the other hand, universalists are rule-oriented. They tend to apply rules in identifying ethics and morality. British people are attributed with being universalists. They have a tendency to stick to the rules more than the relationship in response to problems.

For the *specific versus diffuse* dimension, universalists are also attributed with being specific in value orientation because their private and public affairs are separated, whilst particularists are more diffuse in their orientations and values, because there is little or no difference in their public and private life.

Another important variable in Trompenaars' model is differences in *Achievement versus Ascription*. In issues of personal choice and status, some individuals have a high taste for fashions and image quality relating to that achievement. Others merely ascribe quality to known or familiar things. Hoft (1996) thus suggested that this difference tends to link the perception of quality for some customers with some ascriptive perceptions such as brand name and reputation.

#### **4.3.5 Victor's Cultural Model**

One of the most popular cultural models in business environments is David Victor's cultural model (Victor, 1992). The model analyses culture from the business perspective. The model centres on determining the features of culture that are most likely to affect business communications. He identified the following as key determinants:

- *Language*: This reflects the degree of fluency, accent and regional dialects and how they affect business communications.
- *Environment and technology*: This refers to the larger issues of how geography, population, physical space and perceptions of technology influence business communication.

- *Social organisation*: This relates to the effects of educational, economic, social, political and religious systems on business communication.
- *Contexting*: This is similar to what is found in Hall's (1976) model, discussed above.
- *Authority conception*: This considers differences and similarities in power, authority and leadership.
- *Non-verbal behaviour*: This dimension covers aspects of non-verbal behaviour such as movement, sight and touch, and sound, as well as passive behaviour such as the use of colours, symbols and smells in their relation to business communication.

From the aforementioned models, it is clearly explicit that language, environment, technology and social organisation all relate to objective cultural behaviour, whereas contexting, non-verbal behaviour, authority and temporal conceptions all relate to subjective cultural behaviour. This therefore suggests that Victor's model contains both objective and subjective variables.

Table 4.1 below presents a summary of the cultural models discussed, identifies the variables, offers a brief description of the model and mentions the proponent or author of the model.

#### **4.4 Cultural Variables**

From the last section, it can be seen that the models of culture involve different dimensions by which groups of individuals are categorised. These dimensions compare the differences and similarities between two or more cultures. This process enables the assessment of the degree of fitting into a particular culture.

Table 4.4 provides a summary of some of the cultural dimensions as defined by the above cultural models.

**Table 4.4: Summary of the Commonly Used Cultural Variables**

<b>Cultural Dimension</b>	<b>Description</b>	<b>Authors</b>
Power distance	The degree to which the less powerful individuals in organisations and institutions within one national culture admit and expect equality in power distribution.	Hofstede et al (2010)
Uncertainty avoidance	The degree to which the affiliates of a certain culture feel uncomfortable in ambiguous or unstructured situations and conditions.	Hofstede et al (2010)
Individualism/collectivism	The degree of the integration of individuals into groups.	Hofstede et al (2010)
Femininity/masculinity	The extent to which the social roles of women versus men are not the same.	Hofstede et al (2010)
Long-term orientation	The extent to which the society holds long-term dedication to now versus future.	Hofstede et al (2010)
Conservatism	The extent to which the characteristics of societies are based on interdependent social ties, where tradition, conformity and security are the main concerns.	Schwartz (1994)
Intellectual autonomy	This dimension comprises the beliefs that identify the individual as an autonomous entity to fulfil his/her objectives and interests.	Schwartz (1994)

Affective autonomy	A person's curiosity in fulfilling the attainment of positive affective experiences (excitement, pleasure).	Schwartz (1994)
Hierarchy	This dimension places emphasis on the acceptability of the hierarchical ascription of roles in society.	Schwartz (1994)
Egalitarianism	This dimension is representative of societies that have a concern for and interest in the welfare of others, such as in help, social justice, equality and responsibility.	Schwartz (1994)
Competency	This dimension considers those values that give main concerns to the dominance of the surroundings by way of self-affirmation such as success, risk and ambition.	Schwartz (1994)
Harmony	This dimension centres on individuals' harmonious fit with the environment and nature, such as preserving the environment and compliance with nature.	Schwartz (1994)
Universalism/particularism	The degree to which individuals build their solutions to problems on relationships with others rather than on rules.	Trompenaars and Hampden-Turner (1998)
Individualism/communitarianism	The extent to which people view themselves primarily as individuals as opposed to viewing themselves as part of the community with a focus on group interest and consensus.	Trompenaars and Hampden-Turner (1998)
Neutral/emotional	The extent to which cultures perceive relationships.	Trompenaars and Hampden-Turner (1998)

Specific/diffuse	The extent to which individuals separate private and public life.	Trompenaars and Hampden-Turner (1998)
Achievement/ascription	The extent to which a society places emphasis on “being” versus “achieving”, achieving means more action oriented culture.	Trompenaars and Hampden-Turner (1998)
Communication context	The extent to which the amount of information given in a communication relates to its context.	Hall (1976), Hall and Hall (1990), Victor (1992)
Perception of space	The extent to which cultures perceive spaces or invisible boundaries. These are categorised into such things as territoriality, personal space and unconscious reactions to spatial differences.	Hall (1976), Hall and Hall (1990)
Time perception (Monochronic/polychronic )	The extent to which time variable is perceived.	Hall (1976), Hall and Hall (1990)
Language	This dimension refers to the objective culture and includes the degree of fluency, accent, regional and dialects and their effect on business communications.	Victor (1992)
Environment and technology	This dimension is used to refer to the larger issue of how geography, population, physical space and perceptions of technology influence business communication.	Victor (1992)
Social organisation	This dimension includes the effects of educational, economic, social, political and religious systems on business communication.	Victor (1992)

Non-verbal behaviour	This dimension covers aspects of non-verbal behaviour, such as movement, sight and touch, sound, and passive behaviour such as the use of colours, symbols and smells.	Victor (1992)
Authority conception	This dimension considers differences and similarities in power, authority and leadership.	Victor (1992)

Adapted from (Zakour, 2008 & Al-Qeisi, 2009)

Based on the review of the existing cultural models in the literature, this research prefers Hofstede's model. However, a further assessment of the model is necessary before adopting it for the study. Thus, this section evaluates the Hofstede model so as to determine its appropriateness for this study.

#### 4.5 Evaluation of Cultural Models

Hofstede is considered to be a pioneer in the study of culture and his research and publications are widely quoted. His model, however, remains one of the most highly criticised cultural models. It is accused of being too simple. It is accused also of perceiving culture as stable in nature. The model identifies gross differences between cultures without taking into considerations their conflicts and contradictions. Spector and Cooper (2002) criticised Hofstede's scale for the weakness in the correlations between the items that measure each variable within the model. They state that the scale may be misleading because it does not measure a single construct. Hofstede, however, replied saying that the scales was intended for use in comparing country-level data. He explained that instruments designed to be used at a level of analysis with the country as the unit of analysis can only be tested across countries. Reliability and validity instruments targeted at assessing individual-level analysis are not suitable for work done on whole countries.

These critics argue that cultures are essentially heterogeneous, and claim that there is considerable evidence against researching national culture by using a set of scores on particular variables (Hoft, 1996; Korpela, 1996; Walsham, 2002). In particular, Hoft criticised the research instrument of Hofstede. He is of the view that Hofstede's Value Survey Model (VSM) questionnaire is lopsided in favour of Western values.

It is worth mentioning that despite these criticisms, Hofstede's model is important for several strong reasons. Hofstede's groundbreaking work contains a lucid classification of different cultures. His model offers an intuitive, simple approach that supports empirical research in many contexts. The model offers instruments for measuring values. The model was the first study to offer a broad data set for empirical analysis. In addition, the Hofstede model resonates well with other cultural dimensions in the research literature. Zakour (2008), for example, identified some similarities between Hofstede's cultural dimension and other culture models.

Because of these factors, the model has enjoyed wide usage, including business and information system studies. Some of the information systems researchers that incorporate cultural variables within their work have relied on Hofstede's work. Myers and Tan (2003) in their study evaluated 36 cultural information systems-related studies and found that about 67% of these studies used parts or all of Hofstede's cultural model. This indicates that this model is still useful and can be applied to this study.

Hofstede's model has been considered superior to others, like that of Trompenaars, in terms of the applicability of his model. In contrast, the seven variables identified by Trompenaars seem difficult to apply in real-life situations. For example, the variable "attitude to environment" is complex to comprehend and apply. The stability of the model and its level of abstraction show why it has low applicability. However, due to its similarities with Hofstede's model, some studies do apply the model in research. Similar observations can be made for the models of Schwartz and Victor.

Within this research, it is only appropriate to assess the relevance of this model to the country of interest, which is Saudi Arabia. Specifically, the next section analyses the Arab culture in general and that of Saudi Arabia in particular.

## 4.6 The Saudi Culture

Saudi culture is part of Arab culture and a number of studies have investigated Arab culture when creating their cultural dimensions. These studies include Hall (1976), Trompenaars (1996) and Hofstede et al (2010). A brief analysis of these studies is undertaken as follows:

Hofstede's et al (2010) work is particularly interesting to this study, because it was one of a small number of studies that especially investigated the Saudi culture. The authors involved several Arab states in their study, namely Saudi Arabia, Libya, Kuwait, Lebanon, UAE, Iraq and Egypt. His finding suggests that Saudis exhibit a high level of uncertainty avoidance. They have a high tendency to view or perceive unfamiliar situations as intimidating, and a high level of risk aversion in the business environment. The findings also suggest that their culture exhibits a large scale power distance. These combine to produce a predominantly authoritarian and autocratic influence.

Trompenaars (1996) attributed a high level of *ascriptive* behaviour to the Arab culture. This implies that the major facets of behavioural determination include such things as individuals' background, their family and social connections. These are given more precedence or preference than actual achievements and actions. Zaharna (1995) posited that Arab culture has strong affective elements demonstrated in *oral dominant* behaviour. Emotional reverberation and symbolism are more influential than factual accuracy and analytical content of communication. This is similar to the findings of Hofstede.

Hall (1976) used the term "polychronic" to describe the aspect of Arab culture and noted that an average Arab prefers to undertake several tasks simultaneously. An example of such behaviours is noting that Arabs have a high tolerance level for interruptions during business meetings. Other features identified by Hall led him

to describe Arab culture as *high context*. Communications have several equally important components such that social mores and ritual exchanges of pleasantries context are as influential as the content matter under debate. In high context situations, digression frequently means that the main purposes of meetings may be lost, and in such cases, intervention is required to restore the theme.

Saudi culture is considered to be homologous, which manifests itself in the shared Arabic language, the common political system of monarchical rule, and the common religious beliefs through the adoption of Sunni Wahhabi Islam. These facts make it more convenient to apply Hofstede's dimension scales to study that culture.

#### **4.7 Hofstede's as the Selected Cultural Model**

Although this research presented and discussed several cultural models in the previous review, Hofstede's model will be used as the main cultural basis for this research model. This is so because, among other things, the model is seen as the most influential cultural model used by researchers when conducting culture-related studies (Pavlou & Chai, 2002). Another reason for the choice of Hofstede's model is its reliability and validity. His scales are supported by an extensive number of studies in various disciplines including in IS contexts. In addition, Hofstede's dimensions have been applied in research situations of critical relevance to this research. Studies centring on online consumer behaviour in general and online banking in particular using Hofstede's dimensions are numerous (Jones & Alony, 2007; Sornes et al, 2004; Laforet & Xiaoyan, 2005; Cairns & Thimbleby, 2008). In addition, this research use of Hofstede's variables will allow the researcher to compare the research outcome in relation to the findings of previous research conducted in similar sectors using the same metric.

##### **4.7.1 Power Distance (PD)**

Power distance suggests that there is an unequal relationship among people in terms of power and authority. This affects the way each class behaves and reacts

in the society. Hofstede provides power distance indices (PD) scores for several countries, based on his study. PD scores inform us about dependence relationships in a country, place and firm or even in a family. Inequality can be measured in all kinds of situations, for example in families, in the workplace or between different social classes. This indicates that this way of measuring culture can be used in other social systems besides organisations.

In addition, PD has been used in Middle Eastern studies. According to Hofstede, PD countries in the Middle East including Saudi Arabia have a PDI score of 80 (Hofstede et al, 2010), and this indicates that it is common and acceptable within the society to have a situation where leaders are seen to be different from their subordinates and the people they serve (Hofstede et al, 2010).

#### **4.7.2 Uncertainty Avoidance (UA)**

To measure the tolerance of uncertainty in a society, Hofstede also developed an uncertainty avoidance index (UAI) score. His findings suggest that the Arab world has a high uncertainty avoidance index (UAI) score of 68, indicating that the society exhibits a low uncertainty tolerance level and a high uncertainty avoidance, which makes them relatively risk-averse. Thus, strict laws, rules and regulations and other policies are often enacted so as to minimise or reduce the level of uncertainty (Hofstede et al, 2010).

#### **4.7.3 Individualism versus Collectivism (ID)**

Hofstede uses the ID index to measure the degree of individualism or collectivism. His study indicates a negative correlation between the PD and ID score. In other words, many countries with a high score on the PD index will score low on the ID index. The ID score for the Arab world is 38, one of the lowest on Hofstede's scales. This indicates that the Arab world tends towards the collectivist end of the continuum (Hofstede, 2013).

#### **4.7.4 Masculinity versus Femininity**

Hofstede's model specifies that masculinity in his model includes a tendency towards behaviours that are predominantly characterised by achievement, heroism, assertiveness and material success, while femininity encompasses affective behavioural preferences that focus on relationships, modesty, caring for the weak and quality of life. Furthermore, the most important aspect of this dimension is that it highlights the way in which a society allocates social roles based on gender. To measure the impact of these social roles, a masculinity index can be constructed.

#### **4.7.5 Long-Term versus Short-Term Orientation**

This dimension orientates towards future rewards, in particular thrift and perseverance. It represents the possession of virtues related to the past and the present, especially the extent to which a society emphasises preserving of face, admiring tradition and satisfying social obligations (Hofstede et al, 2010). Short-term orientates towards qualities such as spending, enjoying and having control over personal life. Previous studies have applied this dimension in studying the effect of culture in societies.

#### **4.7.6 Indulgence versus Restraint**

Indulgence denotes cultures in which people are permitted comparatively fair fulfilment of fundamental and normal ambitions in relation to having fun and enjoying life. Cultures that comparatively deny these desires and restrict them by strict norms fall under the restraint kind of culture (Hofstede et al, 2010).

In summary, though there are several cultural models referred to in the literature, this study has a preference for the Hofstede model. The reasons are as follows. Firstly, the model is the most widely used in the field of IS and has been cited by many cross-cultural studies (Hoft, 1996; Smith et al, 2004). Secondly, many researchers have empirically confirmed the validity of these dimensions (Lee et al, 2007; Hoft, 1996). Thirdly, Hofstede's model is seen to have a direct relevance to

the studies of user behaviour undertaken voluntarily (Lee et al, 2007; Hoft, 1996). Fourthly, these variables focus on human values as opposed to others that focus mainly on general belief. Hofstede’s dimensions are thus deemed to be applicable for use in this study.

**Table 4.7.6 Cultural Differences between UK and Saudi Arabia**

<b>Country</b>	<b>Individualism Collectivism</b>	<b>Uncertainty Avoidance</b>
Saudi Arabia	25	80
Great Britain	89	35

**(Hofstede, 2013)**

From the Hofstede cultural dimensions, this study will integrate only individualism-collectivism (ID) and uncertainty avoidance (UA) into the research model. Choi et al (2010) also used only these dimensions, arguing that this selection is in line with the previous IS literature. This research will present more justifications that support the relevance and appropriateness of these variables in the next chapter.

#### **4.8 Information System Acceptance and Hofstede’s Cultural Model**

A wide stream of researchers in the IS domain have studied the cultural factors that are believed to cause the variations of IT acceptance across cultures (Straub et al, 1997; McCoy et al, 2005; Al-Sajjan & Dennis, 2010). This indicates acceptance of the proposition that cultural differences among nations exist in relation to technology acceptance. In this regard, Hofstede’s work is the most celebrated research in the IS context (Al-Qudah & Ahmad, 2013; Lee et al, 2013).

National culture studies in the IS context fall under the umbrella of three groups. The first group includes studies conducted across cultures whose findings were justified *ex post facto* with reference to Hofstede’s country-level cultural scores. The second group consists of studies that incorporated the influence of Hofstede’s

dimensions across cultures at the outset. The last group contains studies that examined Hofstede's dimensions within one culture.

The first group involves the largest set of studies. They aimed to verify the applicability of the technology acceptance models. They contrasted different countries and focused specifically on comparing the predictive ability of these models, which, this research must note, all originated within Western cultures. Hence the need for such comparative studies to examine these models' validity and reliability outside of that context (Seyal et al, 2004; Oh et al, 2003; Khoubati et al, 2007; Wu et al, 2007; Hu et al, 2003; Al-Sajjan, 2008). Most of these studies did not measure cultural dimensions.

The second group used Hofstede's cultural dimensions in the technology acceptance domain by incorporating them directly and conducting their tests across countries (Parboteeah & Parboteeah, 2005).

An example of this group, this research cites the work of McCoy et al (2005). They examined the effect of Hofstede's dimensions between American and Uruguayan users. ID, UA, MF and PD were incorporated into a modified TAM. The authors concluded that culture has a moderating influence on PBC. The study also found that the influence of PBC on behavioural intention was stronger in Uruguay than it was in the US. The result was striking in that no significant difference was found between behavioural intention and each of the three constructs, perceived usefulness, ease of use and subjective norms in either country.

The third group of studies, working within a single country, incorporated Hofstede's cultural dimensions into the IS acceptance domain. They examined the influence of culture on individuals' behaviours in this regard.

Srite and Karahanna (2006) studied the influence of ID, MF, UA and PD as moderators. They examined how these moderators influenced perceived usefulness, perceived ease of use and subjective norms in relation to behavioural intention. They found that the relationship between subjective norms and behavioural control was moderated negatively by both MF and PD. The

relationship between subjective norms and behavioural control was moderated positively by UA.

#### **4.9 Hofstede's Cultural Model in the Internet Banking Context**

Internet banking can be categorised as an IS phenomenon. This categorisation derives from the fact that Internet banking falls under the umbrella of self-service technologies. This means the technology is used for service delivery, and customers are supposed to be able to use the service independently without external help. If such characteristics exist, then customer behaviours within that context can be investigated using technology acceptance theories. Internet banking has already been investigated using TAMs, which incorporates an opportunity to study cultural effects on behaviour. As Internet banking contains an element of self-service and choice to use or not to use, studying culture seems to be very important and TAMs provide this facility.

Having said that, Internet banking customers' behaviours are particularly sensitive to cultural influences. In the Arabian context, Al-Qeisi (2009) illustrated that research applying the UTAUT to actual users of online banking has reported differences in the features that motivate customers' engagement with online banking options, across different cultures. Al-Sajjan and Dennis (2010), using an extended TAM, studied Internet banking acceptance behaviour between England and Saudi Arabia and showed that differences in behaviour patterns are found between the two countries. Therefore, they highlighted the important role of culture in causing such variations.

Using the UTAUT, Im et al (2011) investigated Internet banking acceptance across cultures. They compared American and South Korean customer acceptance behaviours and found that in the USA sample customers express greater influences of effort expectancy on behavioural intentions. In addition, American customers were found to experience a greater effect of behavioural intentions on behavioural use than the South Koreans.

For the above-mentioned reasons, culture is important to consider as an effect within the research model.

#### **4.10 Summary**

In this chapter, models of national culture were reviewed. This included the work of Hofstede, Schwartz, Trompenaars, Victor and Hall. The reason for reviewing these models is that culture influences IS usage behaviours.

Evaluations on the cultural models were conducted to select from among the many qualified theories. Then Hofstede's cultural model was selected due to its importance and useful implications. Hofstede's model has been the theory most frequently cited by IS researchers. Hofstede's dimensions are a needed integrator for the current research model because incorporating cultural effects can explain the causes behind the reported variations in users' adoption and acceptance behaviours when applying TAMs across cultures. Saudi Arabian culture has different cultural patterns compared with Western culture.

## *Chapter Five:* **Research Model and Hypotheses**

### **5.0 Introduction**

This chapter presents the integrated research model. It re-presents briefly the main components of the UTAUT, ECM-IS, TR and Culture. Then it presents the theoretical bases, which back the integration and interaction of these models. These models are combined accordingly into one structural model. Justifications for this integration are provided along with the research hypotheses.

### **5.1 Selected Models and Variables**

Based on this research literature review, it can be said that Internet banking variables can be divided into three categories: personal psychological tendencies, system-specific cognitive beliefs, and environmental influences.

Personal psychological variables such as trust and enjoyment have been widely studied (Bradley & Stewart, 2002; Page & Luding, 2003; Shalhoub, 2006; Pikkarainen et al, 2004; Al-Sajjan & Dennis, 2006; Chen & Barnes, 2007; Yousafzai & Yani-de-Soriano, 2011; Wakefield, 2013; Çelik & Yilmaz, 2011; Goi, 2012). Al-Somali et al (2009) studied the acceptance of online banking in Saudi Arabia and illustrated the importance of trust and resistance to change among other factors.

To account for such variables, this research will incorporate the TR constructs into the research model, because these constructs were specifically designed to account for people's feelings in relation to technology, including trust feelings. TR includes a variety of constructs that measure different psychological factors that are distributed throughout the literature. The theory categorised personal tendencies into two groups, drivers and inhibitors. Drivers include optimism and innovativeness whilst inhibitors include discomfort and insecurity.

Optimists have feelings of ease at using technology including Internet banking. People with these inclinations feel that they are progressive in their use of the services because they take pride in making the best use of technology. They have an inherent preference for doing business using technology. They believe that they can solve any problems that might mitigate against them adopting Internet banking.

One of their inclinations relates to their belief in technology. They support technology use by people around them and think that most people are not aware of, or do not take advantage of, the benefits that technology can deliver. Even if the interface is a little difficult to use, they are still less likely to find fault with it. They also tend to think positively about technology, although sometimes its benefits are not clearly demonstrated to them.

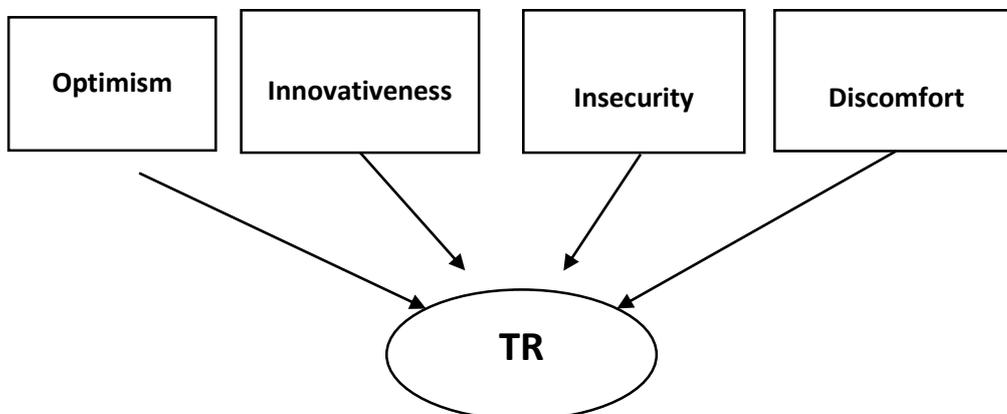
People with innovativeness inclinations perceive themselves to be leaders in technology use to whom other people come for advice. They emphasise the importance of being better informed about technology and they want people to recognise their superiority in this regard. They are proud to be among the first people to adopt and use new technology and like to show a determination to work out high-tech products and services without help. In the Internet banking domain they keep up with the latest developments because of their interest in technology upgrades, and they even enjoy challenges and ignore obstacles. They also encounter comparably few problems in making the service work for them. They do not display technology avoidance because they are open to learning about different technologies and services provided to them. They become so confident and fluent that they actively search for new updates.

Individuals with discomfort inclinations have the feeling of not being supported to use technology by service providers. They think that the information provided and its means of delivery are not helpful because they are not spelled out in an understandable way. They think that technologies are not designed for ordinary people and that the manuals should be more helpful by using less complicated language. They find that any support provided makes them feel inadequate. Their lack of skill and confidence makes them resentful of the people who provide the support. They prefer to use the basic level of technological services and do not

want to get involved beyond that. It embarrasses them when they have problems with technology in front of other people. Additionally, they have reservations about replacing people with technology because of faults and malfunctions, which could cause a total breakdown of service provision.

On the other hand, people who have feelings of insecurity towards technology worry about the risks of financial information exposure. This is particularly important when giving credit card information over the Internet. The same thing can be said of their use of Internet banking services. People with insecurity inclinations also feel that they lack the confidence to do business via a medium that can only be checked by being expert in the technology. They prefer any operation conducted online to be confirmed later in writing. They do not trust the accuracy of machines in general, and they expect the worst outcomes. They predict that the systems will let them down at the busiest and most inconvenient times. To them, human contact and word of mouth are more important in financial work.

TR is an important theory that accounts for a wide range of psychological issues. As far as this research is concerned, it is the most appropriate of the theories that measure the influence of personal tendencies within the IS acceptance domain. This is because its instrument was built, and specially developed, within that domain. The theory has been repeatedly validated. Importantly, it accounts for tendencies that are causative of many important constructs found in the literature such as enjoyment and trust.



**Figure 5.1 (A) TR Constructs Used in the Current Research**

The second category is the system-specific cognitive variables, such as usefulness and ease of use. To account for such variables, the UTAUT constructs PE, EE, FC and SI will be used. These four were selected because they are part of the UTAUT, which consolidates eight of the most important and empirically validated TAMs.

One study that validated the UTAUT within a banking context in a developing society was that of Abu Shanab and Pearson (2007). Their study was confined to validating the model within the context of banking customers in Jordan. They, like many other researchers, did not give due consideration to the cultural factors, psychological traits or even the IS post-adoption context. These are vacuums, which this research model will address.

The UTAUT in the context of this study examines the extent to which Internet banking is perceived as useful by customers for the purpose of managing their finances. The model also includes customer perceptions by incorporating a self-reporting element. This produces information about the effectiveness of the service provision mechanism. The model thus can examine the extent to which customers feel productive when using the service.

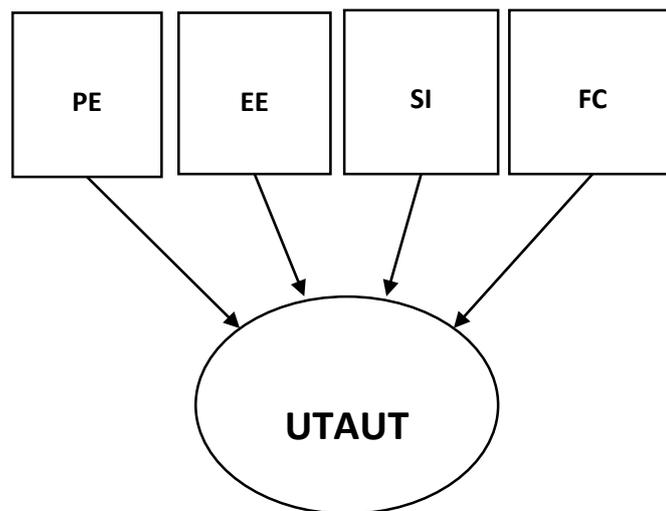
The model also examines the interactions between customers and Internet banking in terms of feeling at ease when using it. In addition, it examines the extent to which customers consider the system to be worth investing time in. This includes how understandable the service is and the extent to which customers feel they can get sufficiently skilful to use it properly.

Moreover, the UTAUT accounts for the influence of the social contexts. Customers' intentions to use the Internet banking facility include the influences of important others. Relatives, friends, peer groups, work colleagues and bank staff have a positive social influence in this regard. These people make Internet users feel less or more encouraged in their use of Internet banking.

The theory examines the extent to which other available resources help customers in their use of Internet banking. This includes having adequate help and support

from the bank for problems they may face. It also includes having the right knowledge and connections with the support services provided such as manuals, information, computers and so on.

The UTAUT, as mentioned repeatedly in this research, consolidates eight previous models of technology acceptance. Its cognitive constructs will be adopted for use in this research for two reasons. Firstly, the cognitive construct element of this model is the most widely used and validated within the technology acceptance domain. Secondly, the superiority of the formation of these constructs (resulting from a detailed analysis of many other cognitive beliefs) is such that they prevail in the domain. Most pertinently, these constructs have actually been validated in the online banking context and seem suitable for explaining behaviour in this domain.



**Figure 5.1 (B) UTAUT Constructs Used in the Current Research**

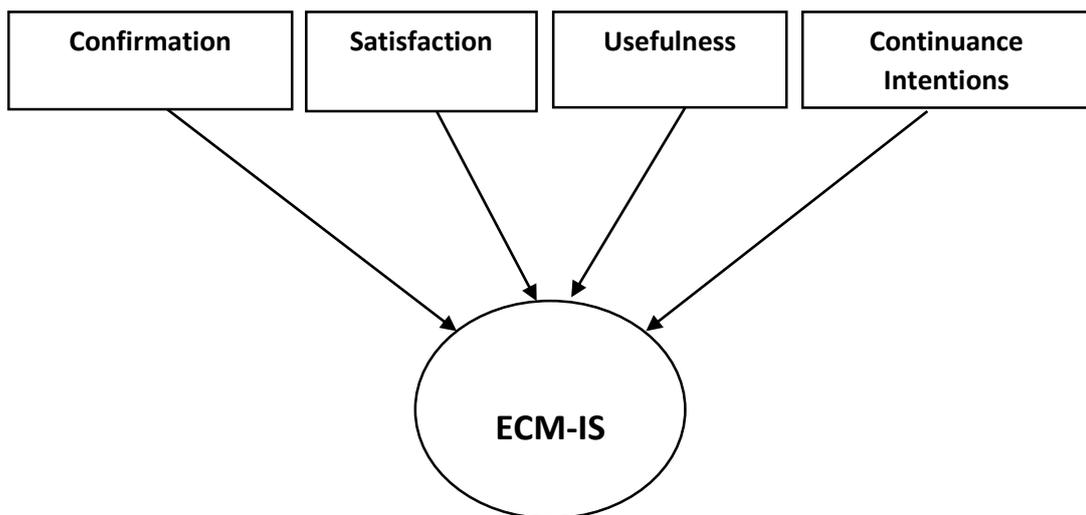
Also, within the second category (system-specific variables), this research also incorporates Oliver's (1980) ECT constructs of confirmation, satisfaction and continuance intention. This theory is of relevance because this research focuses on post-adoption behaviour.

The theory measures “confirmation” in a self-reporting manner, where customers are requested to reflect on their current experience with Internet banking use compared to what they had previously anticipated. They are also asked to reflect on the service level provided and their general expectations about Internet banking and the extent to which their expectations were confirmed.

Another important construct in ECM-IS is “continuance intention”. This is set as a dependent variable within the model structure formula. It examines, in this research context, users’ intentions to continue using Internet banking rather than discontinue their use. The construct also examines users’ intentions to keep using Internet banking in the future compared to their present frequency of use.

“Satisfaction” is the part of ECM-IS in which users report their feelings about the service in terms of the extent to which they are pleased, contented, delighted and satisfied.

The last construct in ECM-IS is “usefulness”, renamed “performance expectancy”, and placed within the UTAUT constructs in this research because the two correspond to each other.



**Figure 5.1 (C) ECM-IS Constructs Used in the Current Research**

The third category is the environmental factors, which influence the users of Internet banking as groups. This research identifies two national cultural variables to be used to represent these factors in the research model. These are individualism-collectivism (ID) and uncertainty avoidance (UA).

From among the many cultural variables used in the literature, this study adopts the two aforementioned dimensions because they are parts of Hofstede's theory, which found wide acceptance amongst IS researchers (Smith et al, 2004; Al-Qudah & Ahmad, 2013). The validity of the Hofstede dimensions has been repeatedly confirmed (Lee et al, 2007; Hoft, 1996; Srite & Karahanna, 2006).

In addition, this study focuses on respondents who wanted voluntarily to adopt and use Internet banking technology and Hofstede's model is seen to be of direct relevance to such settings (Lee et al, 2007; Hoft, 1996).

The ID and UA dimensions are particularly important to this research. These indices are theorised to be causative of the highest differences between cultures (Hofstede, 1980; Gefen & Straub, 1997). Also, other robust studies have justified choosing a subset of Hofstede's five dimensions (Erumban & de Jong, 2006). Chau (2008) reported ID to be particularly robust. This dimension is strongly influential as a determinant of affective, cognitive and interactive behaviours. UA is also important for this research as it represents the emotions attached to risk, which are exposed when handling technology generally, and specifically when using personal information online.

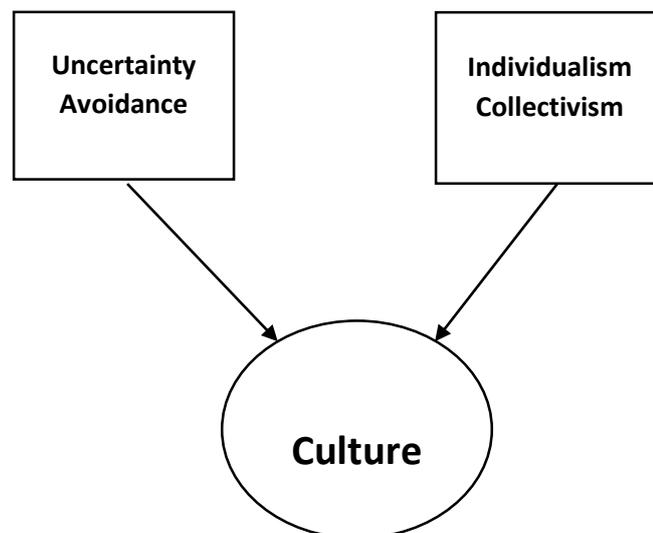
UA and ID, as dimensions, are measured by accounting for individuals' attitudes towards work. These attitudes were theorised to reflect the extent to which individual values in life affect their behaviour in every respect, Internet banking behaviour in particular.

In order to account for people's uncertainty avoidance level, UA in this research measures individuals' views on regulations, structure and order in the work environment. It also questions their opinions on the importance of the existence of

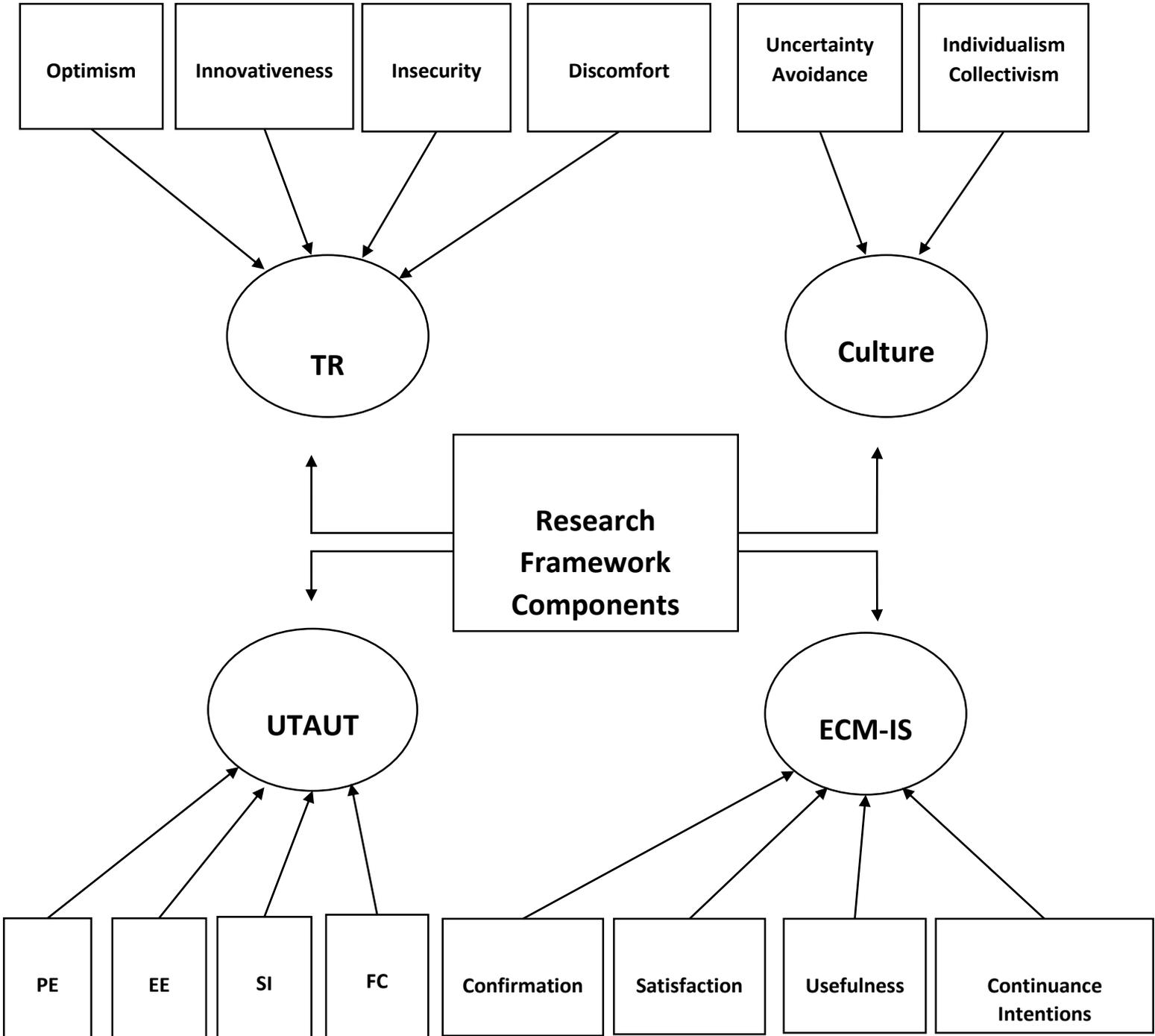
instructions. Additionally, it elicits opinions on negative situations and compares them to better but uncertain situations.

In the same vein, this research instrument accounts for ID by measuring the importance of opportunities to innovate versus having standardised work procedures. In addition, it questions how individuals perceive the importance of being accepted as a member of a group versus being independent and having autonomy. Moreover, it elicits perceptions of the relative importance of group success versus individual success.

As stated earlier, measuring these work values provides indications of cultural tendencies in daily life. These are considered to be factors that influence behaviour in general, and Internet banking behaviour in particular.



**Figure 5.1 (D) Culture Constructs Used in the Current Research**



**Figure 5.1 (E) Research Framework Components**

## 5.2 Behaviour within the Current Research Context

In academia and practice, technology users' post-adoption behaviours have enjoyed a substantial amount of attention. Although marketing and information system (IS) studies recognise the importance of the first-time use of a product or service, they emphasise that the ultimate success of the product or service relies heavily on customers' continued usage of it (Bhattacharjee, 2001; Kwon & Wen, 2010). Continuance intentions in technology usage have therefore become a central focus in IS research (Karahanna et al, 1999; Bhattacharjee, 2001; Bhattacharjee & Barfar, 2011). Continuance intention is critical because customers' interest in information technology (IT) systems adoption changes after they have had the real experience of using it.

For organisations and IT system providers, maintaining customers' use of the IT system is not only necessary for securing long-term profitability (Reichheld & Schefer, 2000; Parthasarathy & Bhattacharjee, 1998; Bhattacharjee & Barfar, 2011; Bhattacharjee, 2001) but is also important for guaranteeing a substantial decrease in operating costs (Reichheld & Sasser, 1990; Crego & Schiffrin, 1995; Bhattacharjee & Premkumar, 2004). Therefore, studying continued usage, as a post-adoption behaviour, is essential (Yim et al, 2013; Xue et al, 2011; Kim, 2010; Park et al; 2011).

Recognising the utmost importance of understanding post-adoption behaviour, IS researchers have investigated IS continuance under various names and theories, such as reutilisation (Cooper & Zmud, 1990), e-customer retention (Khalifa & Liu, 2007) and e-loyalty (Floh & Treiblmaier, 2006). Some studies have used the traditional Technology Acceptance Models (TAMs) to study IS post-adoption behaviour as an acceptance behaviour.

One of the earliest pieces of research to theoretically validate a model of IS continuance was the Expectation Confirmation Model of IS Continuance (ECM-IS) of Bhattacharjee (2001), which theorised that there is a distinction between IS "continuance" and IS "acceptance" or initial use. The ECM-IS was based on the strong shopping literature expectation confirmation theory (ECT) of Oliver (1980),

and has been the basis for a wide stream of IS post-adoption research in the past decade.

Ever since ECT introduction to the stream of IS research, ECT has been subject to different extensions within the IS context, aimed at capturing more predictions of satisfaction and continuance intention. The vast majority of these extensions have been about adding more cognitive beliefs and perceptions based on Bhattacharjee's customisation. Bhattacharjee (2001) used the TAM's construct of 'usefulness' (level of confirmed usefulness expectations) to represent 'performance' in the original ECT. The subsequent extensions of ECT have mainly involved adding more cognitive beliefs based on the TAM's traditional variables, such as ease of use (Min & Sheng-hua, 2007), and/or adding of the contextual perception variables that have been incorporated into the TAM's extensions, such as enjoyment and trust (Thong et al, 2006).

ECT customisations by IS researchers ignored one important fact. The ECT process was simulated to explain the IS post-adoption context, theorising that a user's continuance intention behaviour is similar to the conventional repurchasing behaviour found in the shopping literature (Bhattacharjee, 2001; Chen et al, 2012). However, conventional shopping differs from using IS technology-based services (such as Internet banking), because the latter (1) involve judging and using more resources (e.g. an Internet account, a computer, an Internet connection, and judging the means of delivery of the "products"), (2) involve revealing personal, sensitive information with every payment or access (e.g. name, address, password, credit/debit card details, date of birth), which makes the user subject to fraud and information hacking, and (3) lack the assurance of human contact, which is an even more important factor in societies, such as Saudi Arabia's, with a high context rate and human presence preferences (Hall, 1976). Thus, the customer's decision-making process in the IS marketing-services context is psychologically more complex than in conventional shopping (Parasuraman, 2000). This raises the need to account for personalities and psychological traits, because using technology can cause fears and scepticism, and individuals will always require better knowledge,

familiarity and resources in order to become comfortable with it (Parasuraman, 2000; Venkatesh et al, 2011).

In addition, some individuals have certain attitudes of associating Internet and technology usage with a high risk of information exposure, and feeling uncomfortable with using computers and with embracing innovative ways of handling personal finance (Parasuraman, 2000). McKechnie et al (2006) showed that customers sometimes believe in the benefits of SSTs, such as Internet banking, but they may stop using them if they feel not ready or not comfortable. This also necessitates taking individuals' emotional tendencies towards technology into account in this research.

### 5.3 Integration of the Theories



**Figure 5.3 ECM-IS Repeated (Bhattacharjee, 2001)**

Oliver's (1980) ECT measures the cognitive belief and affect leading to repurchasing behaviour. In order to expand ECT's cognitive beliefs so as to make more predictions in line with the ECM-IS incorporation of 'usefulness', the four main cognitive constructs of the UTAUT will be incorporated into ECT. The UTAUT is selected because the model consolidates the main existing empirically proven TAMs. In addition, the UTAUT's four constructs have already been theoretically validated as appropriate integrators for ECT (Venkatesh et al, 2011).

This research's extension of the ECT model is justified by the fact that the UTAUT and ECT are similar, that they both measure cognitive belief and affect leading to IS behaviour, and they both originated in a different context from the IS marketing-customer. ECT comes from the shopping literature and therefore this research theorises that ECT has shortcomings in explaining behaviour around psychologically sensitive technology-based services, while the UTAUT comes from the IS organisation-employee context, where system usage is a kind of obligatory task required by organisational objectives. Again, such an environment differs from the non-binding marketing context where customers have other alternatives.

The UTAUT has been subject to different modifications in order to be applicable to various customer and marketing environment studies (Anderson & Schwager, 2006; Pu Li & Kishore, 2006; Reunis et al, 2006). A pioneer study combined TR into the UTAUT for customer and marketing research respondents (Claffey & Brady, 2009). Lin et al (2007) previously used similar reasoning to validate integrating TR into TAM. TR embodies the hidden personality and psychological effects that can still influence Internet banking customers' behaviour. These effects may also be evident even after customers have experienced actual usage. Both cognitive processes and psychological traits are considered to be important in the context of B-C online behaviour.

To be brief, as this research is extending ECT, the extended model needs to integrate TR. TR is needed as an integrator with ECT in the IS context for several reasons. Firstly, ECT originated in conventional shopping literature whereas the IS context is sensitive to psychological traits because it involves higher risk. The total environment within which Internet banking is used also includes more complex processes: the machine, the software, consequences of error, the risk of data interruption and theft as well as the communication of important private personal information (Parasuraman, 2000). The second reason is that the UTAUT constructs used in this research originated in an organisational context (as parts of the UTAUT). This research context falls under the umbrella of IS customer marketing, and the UTAUT was theorised to be integrated with TR for such a context (Claffey

& Brady, 2009). TR is also incorporated in order to address the variation in perceptions that are not related to system-specific reasons. It is accepted that respondents in research may vary between being technologically experienced and lacking familiarity with the technology. In such cases, TR has the ability to explain the variations in users' psychological traits (Lin et al, 2007). Moreover, Internet banking is part of the self-service technologies (SSTs). Users of SSTs are often influenced by their feelings of being not ready or not comfortable with technology (Yousafzai & Yani-de-Soriano, 2011).

In order to give more consideration to the external influences on Internet banking cognitive processes, it is also imperative to study other situational factors shown to effect IS usage. In this regard, culture represents the collective psychology that influences people's cognitive processes and behaviour. Attitudes, values and cognition vary among people from different cultures and countries (Hofstede et al. 2010). IS is influenced by both the individual and the situation. Research applying the UTAUT on actual users of online banking has reported differences in the features that motivate customers' engagement with online banking options across different cultures (Al-Qeisi, 2009). Such studies justify their findings by referring to Hofstede's framework of culture dimensions, which is the most widely recognised and used cultural model in IT research (Chau, 2008; Gaspay et al, 2008; Choi et al, 2010).

Although Hofstede's scale was built to measure national-level culture, it has been validated for assessing cultural traits through personality tests at the individual level of analysis. Therefore culture values can be treated as individual difference variables. Srite and Karahanna (2006) theorise that the national culture dimension affects the cultural values of an individual, which in turn affect technology acceptance. Building on that idea, culture in this research represents both individual psychological differences and national culture as a whole.

As stated earlier, from Hofstede's framework, this research selects two dimensions: individualism-collectivism (ID) and uncertainty avoidance (UA). These are selected for several reasons. Firstly, they are reported to differ most widely

between cultures (Hofstede et al. 2010; Gefen & Straub, 1997). Secondly, ID is particularly important because it can affect and change individuals' cognitive perceptions, and behaviour (Chau, 2008). Thirdly, Grabner-Kräuter and Kaluscha (2003) illustrate that the influence of UA that exists in traditional settings is doubled in the virtual world of Internet technology, which has particularly significant influences on online financial behaviour. Fourthly, UA has been underlined as relevant in most IT research studies based in Arabic countries, because it has a significant influence on the perceptions and attitudes of Arabs towards technology (Shoib & Jones, 2003).

### 5.4 Conceptual Model and Hypotheses

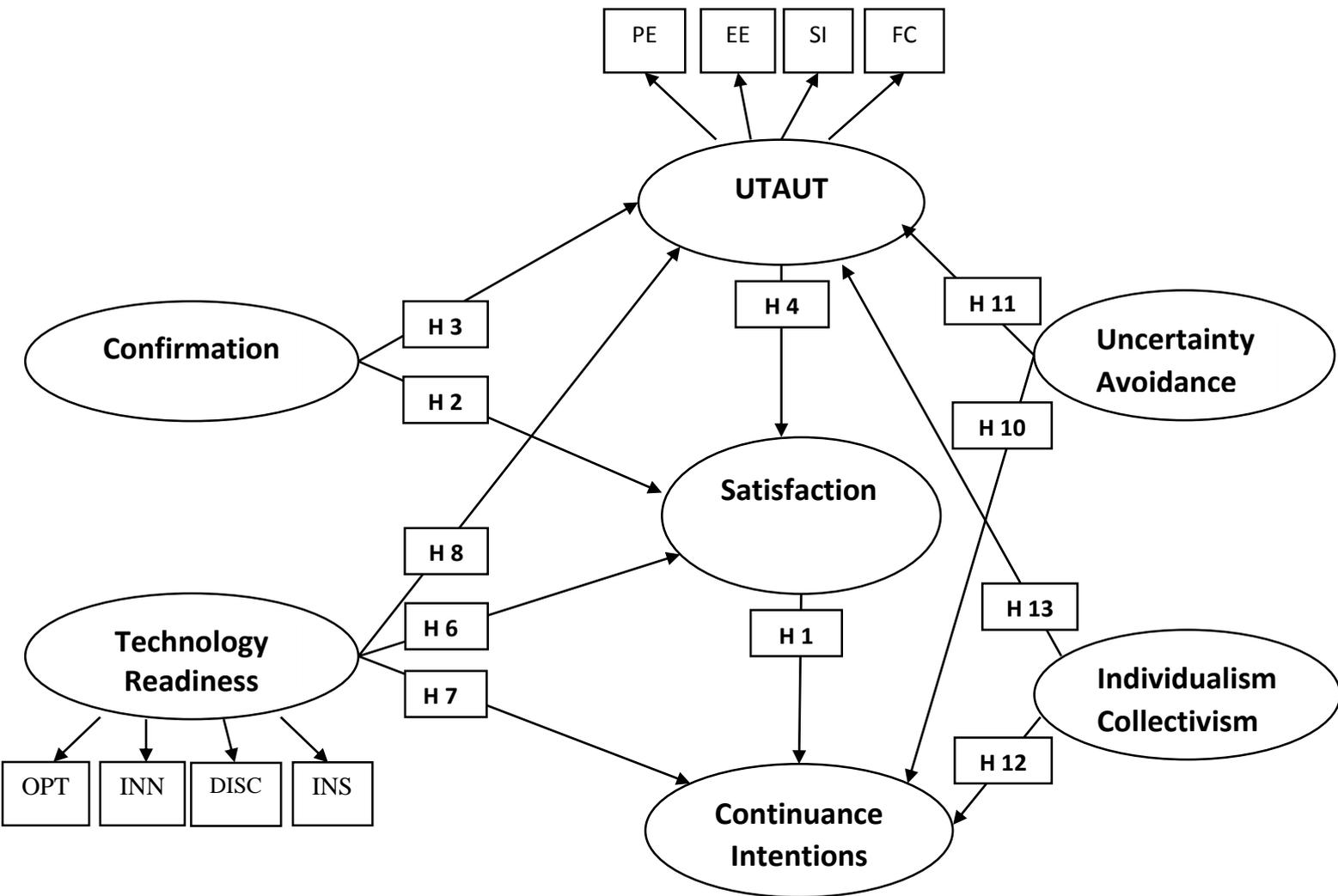


Figure 5.4 The Research Model Direct Effects

**UTAUT**: The unified theory of acceptance and use of technology. **OPT**: Optimism. **INN**: Innovativeness. **DISC**: Discomfort. **INS**: Insecurity. **UA**: Uncertainty-Avoidance. **ID**: Individualism-Collectivism. **PE**: Performance expectancy. **EE**: Effort expectancy. **SI**: Social influence. **FC**: Facilitating conditions.

#### **5.4.1 ECT and ECM-IS**

Bhattacharjee's (2001) ECM-IS explains the process that leads to IS continuance behaviour based on Oliver's (1980) ECT. Researchers used ECT to study consumers' satisfaction and repurchasing behaviour in marketing services in general (Oliver, 1980, 1993; Tse & Wilton, 1988; Anderson & Sullivan, 1993; Patterson et al, 1997; Dabholkar et al, 2000). ECT predictive ability was confirmed on many products and services in the context of continuance of services and repurchase of products (Oliver, 1993; Spreng et al, 1996; Patterson et al, 1997). ECT manifests customer intentions to repurchase a product or service, which are primarily determined by their satisfaction with previous use of the product or service and perceived performance (Oliver, 1980, 1993; Anderson & Sullivan, 1993; Hsu & Chiu, 2004). The ECT process is demonstrated as follows. First, a customer has initial expectations of acquiring a product or service. Next, these expectations are generated by recalling previous experiences. Then, if the customer's post-use experience confirms their initial expectations positively, he or she will have high satisfaction perceptions. These will result in a high tendency to repurchase. On the other hand, disconfirmation of the initial expectations will mean negative satisfaction and negative repurchasing behaviour.

The ECM-IS of Bhattacharjee (2001) presumes that users' IS continuance intention is influenced by their satisfaction with IS and the extent to which their expectations have been confirmed, represented by perceived usefulness. ECM-IS starts from the presumption that there are two key antecedents of satisfaction, namely, the extent of user confirmation and the perceived usefulness (based on confirmed expectations). Expectations provide a basic level, while confirmation is an evaluation of those expectations. Confirmation and satisfaction are positively

associated in ECM-IS, because confirmation means the realisation of the expected benefits from IS use. This research will use ECM-IS as the base for building its structural model. Therefore, UTAUT cognitive constructs will be integrated into the research model following Bhattacharjee's incorporation of the construct "usefulness" into ECT.

#### **5.4.2 ECT and Satisfaction**

Satisfaction refers to the overall psychological state that emerges when the emotions surrounding confirmed expectations are coupled with the consumer's prior feelings about the consumption experience (Oliver, 1981, p. 29). This research review of the previous literature reveals that satisfaction with an IS system is determined by cognitive beliefs about usage and, in turn, that satisfaction is the main determinant of continuance intention (Limayem & Cheung, 2008; DeLone & McLean, 1992; Brown et al, 2008; Chiu et al; 2007). Perceived satisfaction was not constructed in the original TAMs, while it is included in ECT. However, theoretical extensions of TR, the UTAUT, TAM and TPB, among others, have included and validated the satisfaction construct in various technology usage contexts. For instance, some studies have incorporated satisfaction as a result of integrating ECT with IS (Bhattacharjee, 2001). Other studies have incorporated the satisfaction construct following the theoretical recommendation of integrating the two research streams of customer satisfaction and technology acceptance (Wixom & Todd, 2005; Hermans et al, 2009). A third group of studies has incorporated the satisfaction construct as part of the process of measuring the influence of service quality on technology acceptance and e-loyalty (Chang et al, 2009). Based on those three approaches, the satisfaction construct will be integrated into this research model.

Limayem and Cheung (2008) indicated that both IS usage rate and user satisfaction have to be sustained and enhanced to maintain IS usage success. Brown et al (2008) argued that user satisfaction, rather than behavioural intention, is the most appropriate variable in certain IS use environments. DeLone and

McLean (1992) illustrated that satisfaction is widely acknowledged as a key factor for IS success. There is a growing trend in IS research to incorporate the satisfaction construct into the factors that contribute to customer loyalty, retention and continuance intentions (Chen et al, 2012; Floh & Treiblmaier, 2006). This research hypothesises that:

H1: The extent of satisfaction with Internet banking use is positively associated with Internet banking continuance intention.

### **5.4.3 ECT Confirmation**

Building on the ECT framework, previous IS studies have shown that confirmation has a positive and significant association with satisfaction (Bhattacharjee, 2001) and with various other cognitive constructs from TAMs, including perceived usefulness (Bhattacharjee, 2001), perceived ease of use (Thong et al, 2006; Hsieh & Wang, 2007) and perceived behavioural control (Hsu et al, 2006). Venkatesh et al (2011) added four UTAUT constructs (discussed below) to the ECT framework and illustrated that all four are influenced by confirmation. Therefore, this research hypothesises that:

H2: The extent of the user's confirmation is positively associated with their satisfaction with Internet banking use.

H3: The extent of the user's confirmation has a positive influence on the UTAUT perceptions of Internet banking use.

### **5.4.4 The UTAUT Constructs**

The UTAUT model assesses and compares the constructs of eight previous models of IS acceptance. It has four main variables influencing intentions and the use of technology: performance expectancy (PE) represents the degree to which the user

thinks that by using a technology he/she will accomplish their goals in relation to carrying out certain activities; effort expectancy (EE) is the user's perceptions of how easy it is to use a technology; social influence (SI) is how strongly a user perceives that important others encourage the use of a technology; and facilitating conditions (FC) denote the environmental factors enhancing individuals' likelihood to use technology (Venkatesh et al, 2003).

PE, EE and SI are hypothesised to directly affect individuals' behavioural intention (BI). Then BI and FC jointly predict technology use. The model has four moderating variables: age, gender, experience and voluntariness of main relationships.

As stated earlier, the satisfaction construct was not originally a part of the UTAUT. However, Chan et al (2010) proposed that user satisfaction may be more appropriate than behavioural intention in certain use environments. This research hypothesises that this is applicable in the post-adoption beliefs context. This is because users have already overcome the initial stage of behavioural intention to use, and are in the later stage of generating experienced evaluations of the system's usage, which leads to either usage continuance or discontinuance. At this stage, the satisfaction construct matters (Venkatesh et al, 2011). It is important to note that satisfaction and continuance intention are theorised and validated as being key elements in understanding post-adoption behaviour (Limayem & Cheung, 2008; Venkatesh et al, 2011). Also, the work of Wixom and Todd (2005) illustrates that combining user satisfaction and technology acceptance may lead to a better understanding of the features related to IS usage (usage continuance in this research). In fact, all four of the external variables of the UTAUT have been integrated with ECT in previous research. Thus, as the satisfaction construct is part of ECT, it too has been integrated with the UTAUT. In addition, ECT has been integrated with other previous models underpinning the UTAUT itself, such as TAM (Bhattacharjee, 2001) and TPB (Lee, 2010).

When Bhattacharjee (2001) introduced ECT to the IS context, he ascertained that perceived usefulness and user satisfaction were two basic and key predictors of IS

usage continuance, usefulness being equivalent to PE in the UTAUT. Venkatesh et al (2011) incorporated the satisfaction construct with EE, SI and FC. In terms of EE, customers are more satisfied with self-service technologies that are easy to use (Meuter et al, 2000; Meuter et al, 2005). Based on the reasoning of Bhattacharjee (2001), drawn from ECT, positive confirmation of SI is positively related to satisfaction as it implies the realisation of expectations. In the context of IS, Bagozzi (1992) theorises that an individual comparing their own expectations and perceptions with those of important others results in the so-called normative influence. If a person intends to behave in a certain way, he/she will have prior expectations of the outcome, and usage will confirm or disconfirm these expectations, in relation to what important others think. People can adjust their pre-usage SI expectations (e.g. by changing who they are friends with, or by watching other people's performance when using the system) and such adjustments influence satisfaction (Venkatesh et al, 2011).

In the same manner, positive confirmation of FC is positively related to satisfaction. FC concerns beliefs related to a feeling of control regarding the use of IS. Venkatesh et al (2011) followed Ryan's (1982) argument that the effects of some beliefs (e.g. attitude, control) can cross over to influence other beliefs. In addition, Venkatesh et al (2011) stated that the dissonance theory (Festinger, 1957) backs the suggestion that, in circumstances where the FC acts as an inhibitor, people may change their attitudes negatively in line with those circumstances. On the other hand, if suitable resources are provided, there will be fewer reasons for not performing the behaviour in question, and people will be more likely to have positive attitudes towards it. Pre-usage perceptions of FC may be confirmed or disconfirmed after accessing the system resources. For example, more system assistance and online help than expected will mean a positive confirmation of FC and therefore more satisfaction. This research therefore hypothesises that:

H4: Positive UTAUT perceptions have a positive influence on satisfaction with Internet banking use.

H5: Positive UTAUT perceptions have an indirect positive influence on continuance intentions regarding Internet banking use, through their influence on satisfaction.

### **5.4.5 The TR Constructs**

TR is related to the degree of preparedness customers display when adopting and using new technology in order to achieve goals in their life (Parasuraman, 2000). The TR (TRI) measures individuals' overall beliefs about technology. The index has four dimensions: optimism, innovativeness, discomfort and insecurity. Optimism reflects an optimistic view of technology and a conviction that technology provides people with increased flexibility, organisation, control and effectiveness. Innovativeness is associated with a tendency to be a technology explorer and leading user of technology. Individuals with high innovativeness scores tend to be technology pioneers. Discomfort is related to a perception of a lack of control over technology and feelings of being overwhelmed by it. Insecurity consists of not trusting technology and having doubts about its ability to work correctly. Optimism and innovativeness promote TR, while discomfort and insecurity undermine it. Positive and negative beliefs about technology may coexist (Lin et al, 2007). People can be placed at different levels on the scale of TR beliefs, from a highly positive to a highly negative attitude. The connection between people's TR and their preference to use technology has been empirically confirmed. Positive TR has an impact on customers' online usage intentions and online behaviours in general (Parasuraman, 2000; Lin et al, 2007; Liljandera et al, 2006).

TR is associated with satisfaction and involves having positive feelings towards a service (Lin & Hsieh, 2006; Rust & Oliver, 1994; Cronin et al, 2000). Customers' assessments and emotional reactions generate their satisfaction with a service (Oliver, 1997). When customers use Internet banking services, positive and negative feelings are likely to coexist. The TR constructs of positive optimism and innovativeness and negative discomfort and insecurity are hypothesised by Lin and

Hsieh (2006) to be similar to the positive emotions of comfort and relaxation and the negative discomfort and anxiety generated when dealing with conventional service representatives, as proposed by Social Comfort Theory. Such emotions have been shown to affect satisfaction (Butcher et al, 2001; Lin & Hsieh, 2006). For example, Meuter et al (2003) attribute technology anxiety to consumers' satisfaction with SSTs. Customers with better feelings about technology, greater ability and more readiness to use technology will be expected to have and express more satisfaction with technology use (Yen, 2005; Liljandera et al, 2006). Building on these evaluations and conclusions, this research hypothesises that TR will influence Internet banking satisfaction levels:

H6: TR has a positive effect on satisfaction with Internet banking use.

TR's role has not been thoroughly investigated in the IS post-adoption context. TR has been studied in the technology acceptance context before now (Yen, 2005; Liljandera et al, 2006). However, most TR studies have followed traditional TAMs in setting behavioural intention as a dependent variable. This research takes this work one step further by giving more consideration to the context and examining the influence of TR on continuance intentions. In fact, people with a high TR score have less difficulty in dealing with technology. Liao et al (2007) suggested that it would be useful to investigate how certain mechanisms that help customers to use online services with ease promote the retention of customers and their continuance intentions. Chen and Li (2010) illustrated that users with high TR deal with IT more openly and positively, and may be less likely to care about its negative side. The more positive customers' optimism and innovativeness are, the greater will be their continuance intentions regarding an e-service. Therefore, this research hypothesises:

H7: TR has a positive effect on continuance intention to use Internet banking.

## 5.4.6 TR and UTAUT Constructs

The UTAUT was created for use in organisational and work settings, whilst this research context of Internet banking usage falls under the umbrella of customers and marketing. The technology usage behaviour studied here is not mandatory, unlike those in organisational settings, and customers have other alternatives (Lin et al, 2007; Venkatesh et al, 2011; Claffey & Brady, 2009). This distinctive environment is sensitive to individual differences because the decision to adopt a system and continue using it depends heavily on personal desires and evaluations, rather than external influences or work obligations. Therefore, classifying and measuring individuals' mental and psychological processes for valuing technology, by incorporating TR constructs, is likely to be a necessity. TR explains individuals' mentalities, and conceptualises their general beliefs about technology. Moreover, the TR theory was built for technology products and services in general (Parasuraman, 2000), while the UTAUT is system-specific and designed to explain individuals' perceptions regarding adopting and using a particular system (Venkatesh et al, 2003). In fact, the models are correlated with each other because people's internal emotions derived from prior experience may be recalled to influence their current system perceptions, and while the psychological beliefs of TR are employed at first, specific system cognition then takes place as a result of system usage evaluations. Both cognitive processes and psychological traits thus have an integral influence on system use (Lin et al, 2007; Claffey & Brady, 2009).

There is strong evidence of the integration between TR and the UTAUT in the IS literature. Pu Li and Kishore (2006) warned against using the UTAUT in a customer environment and argued that it can be misleading because there are substantial differences in effort expectancy across different user groups depending on their experience and familiarity with computers. In addition, social influence (SI) depends on contextual factors such as the voluntariness of use and whether usage takes place in an individual base use or an organisational base use (Venkatesh & Brown, 2001; Karahanna et al, 1999; Lin et al, 2007). Incorporating TR into the UTAUT can address such problems. For example, optimists are defined as perceiving technology to be more useful and easier to use, since they have fewer

worries about negative consequences (Walczuch et al, 2007; Liljandera et al, 2006). Optimists also have a lower rate of contradictory perceptions that undermine the use of technology (Walczuch et al, 2007; Matthing et al, 2006). In addition, greater innovativeness results in a higher tendency to use technology (Walczuch et al, 2007; Midgley & Dowling, 1978). Innovators tend to be more at ease with technology because of their positive attitude and intentions (Citrin et al, 2000; Lüthje, 2004). These authors explained that innovators have a problem-solving orientation and are more likely to take advantage of their abilities and knowledge in order to gain satisfaction. Additionally, innovators tend to think that they will lose one way or another by not using new technology, and they are more likely to take a risk on using new innovations even if their benefits are hidden or ambiguous (Walczuch et al, 2007). Also, they have high expectations of new products and services, which are often related to the fulfilment of new needs that are not addressed by existing market offers (Lüthje, 2004).

People's scepticism over whether technology will work correctly is related directly to their individual characteristics. Some individuals minimise their use of computers because of their inherent fears of technology, including security and privacy concerns (Parasuraman & Colby, 2001; Walczuch et al, 2007; Liljandera et al, 2006). Security and privacy anxieties undermine technology acceptance (Liljandera et al, 2006; Chen et al, 2002), and therefore reduce its perceived usefulness and other positive perceptions (Walczuch et al, 2007; Davis, 1989). This research therefore suggests the following hypothesis:

H8: TR has a positive effect on UTAUT perceptions of using Internet banking.

H9: TR has an indirect positive effect on satisfaction with Internet banking use through its influence on UTAUT perceptions.

### 5.4.7 Cultural Dimensions

Hofstede et al (2005) describe the term “culture” as the collective mentality set that differentiates the members of one group of people from another. Hofstede’s model of national culture consists of five dimensions: (1) Power distance is the degree to which less powerful individuals in society believe and admit that power should be distributed unequally. (2) Uncertainty avoidance relates to a society’s acceptance of ambiguity and uncertainty. It shows the degree to which a culture’s members are comfortable or uncomfortable in situations that are unstructured (Hofstede et al, 2010). (3) Individualism versus collectivism illustrates that Eastern cultures have a more collectivistic sense of self than Western individualistic cultures (Hofstede et al, 2010). (4) Masculinity versus femininity is about how male and female emotional roles feature within a society (Hofstede et al, 2010). (5) Long-/short-term orientation is about prioritising efforts towards the future or present (Hofstede et al, 2010). (6) Indulgence versus restraint concerns the extent to which a culture allows reasonably free fulfilment of basic and natural human ambitions relating to having fun and enjoying life. Restraint represents a society that suppresses the gratification of desires and controls it by means of strong social norms (Hofstede et al, 2010).

Hofstede’s model is the model most widely used in IT research to explain how culture affects IT acceptance and use cross-nationally (Chau, 2008; McCoy et al, 2005; Gaspay et al, 2008). To investigate the role of culture, this research uses Hofstede’s cultural dimensions of individualism-collectivism (IC) and uncertainty avoidance (UA), for the reasons stated earlier. These two cultural dimensions are shown to be among the most important cultural dimensions in terms of causing variations in IS perceptions (Choi et al, 2010; Gaspay et al, 2008).

UA influences PE, EE, SI, FC and continuance intentions as follows. High UA in a society generally results in an undermining of individuals’ desires to adopt and willingness to innovate (De Man & Van den Toorn, 2002). A high level of uncertainty causes fear and doubt in new situations, which restrains or completely

removes individuals' ability to see the benefits of technology usage. Questions such as what needs the technology will address and to what extent particular needs will be met are difficult to answer, making technology usage decisions difficult and full of doubt (Moore, 2002). In the virtual world of Internet banking, UA's negative role is doubly strong, and individuals may be even more doubtful about the risky nature of dealing with Internet banking systems. High UA decreases the PE relating to technology. In the context of online shopping, the literature shows that higher UA causes greater fear of online purchasing, and makes the process of generating positive attitudes toward technology longer and more difficult, and therefore creates lower EE perceptions (Moore, 2002). In terms of SI, if a society is low in individualism and high in collectivism, individuals will have a greater tendency to follow the group's thinking. This kind of collective mentality makes individuals feel more assured than if they are making their own unilateral decisions regarding a new situation. Individuals in a collective culture will have a tendency to be more conscious of and more strongly influenced by the perceptions of those around them (Mao & Palvia, 2006). As for FC, people with high UA generally perceive themselves as having less control over new situations, and have less appreciation for and a more negative opinion of the actual resources provided. Users from high UA cultures tend to be slower and need more information when engaging in online behaviour than their counterparts in other cultures (Al-Kailani & Kumar, 2011; Huang et al, 2010).

The Hofstede dimension of individualism (ID) positively influences individuals' intentions to use innovative technology for performance enhancement, convenience and as a way of finding solutions to the problems of daily life (Stephens et al, 2004). Cultures that are characterised as individualistic encourage their members to emphasise speed, performance and efficiency by utilising all suitable tools available, regardless of how challenging they might be (Hofstede et al, 2010). Therefore, more individualistic inclinations increase PE. As individualistic cultures encourage people to use all resources available, no matter how difficult it may be to use them, this normalisation of challenging situations gives people more of a feeling of ease when using Internet banking. In terms of SI, those with higher scores for collectivism will tend to attach themselves to groups.

Thus, SI is likely to have a stronger influence on their use intentions. In terms of FC, members of individualistic cultures are characterised as having a greater feeling of control over their life than those in collective cultures. This may make them more realistic about using technology (Huang et al, 2010), and thus more aware of the actual resources provided by Internet banking technology in this research case. As stated earlier, these cultural dimensions are also valid for explaining psychological differences at an individual level. Therefore they are also indicators of the personal differences between individuals that influence IS behaviour. This research therefore proposes that:

H10: Uncertainty avoidance has an influence on Internet banking users' continuance intentions.

H11: Uncertainty avoidance has an influence on the UTAUT perceptions of Internet banking use.

H12: Individualism-Collectivism has an influence on Internet banking users' continuance intentions.

H13: Individualism-Collectivism has an influence on the UTAUT perceptions of Internet banking use.

## ***Chapter Six:*** **Research Methodology**

### **6.0 Introduction**

This chapter explains the research methods to be used in this study. The scientific processes followed in gathering the research data are expounded. In addition, the approaches for analysing and interpreting the collected data are included. Explanations of the reasons for choosing certain methods and processes are provided. The chapter also includes, among other things, specification of the research strategy, the operationalisation of the constructs, the ethical considerations and the research design.

In academic research, there are a number of techniques and patterns established to explain research approaches in relation to social sciences and information systems: for instance, induction versus deduction, positivism versus interpretism and quantitative versus qualitative. These are presented in this review.

### **6.1 The Study Purpose**

The main purpose of conducting this study is to identify the factors that influence customers' continued usage intentions in relation to Internet banking in Saudi Arabia. As far as this research is concerned, the literature review revealed clear limitations in explaining the factors that motivate customers' Internet banking post-adoption behaviours in the country. As a result, this research is an attempt to provide a deeper understanding of the phenomenon under study.

### **6.2 Ontology, Epistemology**

Guba and Lincoln (1994) categorised the complexity of research into three perspectives: ontology, epistemology and methodology.

- Ontology is related to the nature of the world; it deals with the nature of reality and addresses the principles of being. It assumes that the researcher is concerned with uncovering the existence of something.
- Epistemology is related to how we come to know the world. It involves the study of knowledge and theories. It questions the link between the problem under investigation and the research. It perceives reality to be dynamic and the job of the researcher is to find the true reality.
- Methodology, on the other hand, represents the study of the various techniques followed in the process of collecting empirical evidence to validate the researcher's claims.

The above categories, to some extent, overlap and intersect. However, it is important to clarify the current research position in relation to these categories.

Kim (2003) explained that, in academia, there are two wide research paradigms: the positivist and the interpretive paradigms. The positivist paradigm assumes that there are common rules controlling social events and discovering such rules allows researchers to predict, explain and deal with social phenomena. This paradigm has its foundation in scientific realism, which assumes that things exist independently from the researcher and independently from the way in which they are discovered by the researcher (Kim, 2003). The emphasis of this paradigm is on using empirical methods. These methods can identify the right structure for scientific research and how it can be formulated and tested (Kim, 2003). Positivism also emphasises the use of quantitative data as well as applying statistical tools. Hypotheses formulation or causal relationships between variables are commonly posited within this paradigm. Moreover, the positivist paradigm method of inquiry often includes surveys, observations, questionnaires and statistical analysis amongst others tools (Choudrie & Dwivedi, 2005).

Taking the above into consideration, positivism is the appropriate approach for this study. This is because the current study is investigating the predictions of Internet banking usage and continuance intentions in Saudi Arabia using constructs and hypotheses obtained from previous theories, and the relationships between the constructs are causal.

In the interpretive paradigm, the purpose is to identify phenomena by the meanings people attach to them. For instance, within the information systems domain, it aims to provide an insightful understanding of the context and the process whereby aspects of information systems are influenced by the context (Kim, 2003).

**Table 6.2 Analysis of Positivist and Interpretive Research Paradigms**

<b>Dimension</b>	<b>Positivist Paradigm</b>	<b>Interpretive Paradigm</b>
Ontology	The researcher and the reality (domain of study) are separate.	The researcher and the reality (domain of study) are inseparable.
Research object	The qualities of the research object are different to those of the researcher.	The interpretation of the meanings attached to the research object is based on the researcher's experience.
Form of data	Data are objective.	Data are subjective.
Method of analysis	Statistical (involving content analysis).	Hermeneutics, phenomenology etc.
Validity	Certainty: data truly measure reality.	Defensible knowledge claims.
Reliability	Replicability: it is feasible to repeat the research and obtain similar results.	Interpretive awareness: the implications of the researcher's subjective interpretation of the outcome are adequately considered.
Generalisability	Generalisation derived from sample population.	Generalisation mainly from one setting to another.

**Adapted from: (Hussey & Hussey, 1997)**

It is worth mentioning that other researchers identify other research paradigms such as post-positivism and critical theory (Lincoln & Guba, 2000). The author, however, assumes that adopting Kim's categorisation is sufficient to explain the method of handling this research.

According to Lincoln and Guba (2000), positivism can be viewed from the perspectives of ontology and epistemology. When positivism is considered in terms of ontology, it emphasises realism and that the existence of actual reality is assumed to be separate from people. It is also possible to be understood clearly enough to be measured and functional in a form of cause and effect.

If positivism is under the umbrella of epistemology it emphasises objectivism, the reality and the researcher are assumed to have no effect on each other. In many cases, social reality has no fixed rules and people always build and rebuild their realities. The cause-and-effect relationships are investigated as the aim of the research and the results of enquiries represent true interpretations of aspects of reality.

In terms of the position of this research concerning the two paradigms, in positivist ontology the researcher's role is to unveil the social and physical realities of the objective by creating accurate measures that can identify and judge the scopes of reality under investigation. Therefore, this research could be justified under positive ontology (Orlikowski & Baroudi, 1991, p. 9). However, this study could also fall under positivist epistemology, which emphasises using a hypothetical-deductive approach and empirical testable theories as a means to verify whether the beliefs about knowledge are true or not (Chua, 1986). The main objective of this research involves combining previous theoretical perspectives with an identical number of variables to build a new conceptual framework.

### **6.3 Deductive versus Inductive**

The deductive approach, in research methods, is about testing a specified theory. In other words, the researcher clearly states the theory or some underpinning of it in the form of a statement of hypothesis, which he will then test through conducting

a statistical analysis. Usually, a hypothesis is formulated in a framework that the researcher believes is suitable to enable the study to adequately test the theory. For instance:

*H: Ease-of-use perceptions will have a positive influence on customers' intention to use Internet banking services.*

The research hypotheses are specified in detail to guide the data collection process. The analysis process is carried out in order to critically evaluate the research methods in relation to its findings so that reasonable inferences can be drawn from the research results. The data are analysed and the results will indicate whether the hypotheses are confirmed or not. If the hypotheses are confirmed, the statement of the research is supported. In most cases, researchers investigate a variable known as the *dependent variable* and observe how it is influenced by modifications in other variables; these are known as the *independent variables*.

The inductive school of reasoning is considered to be the opposite of the deductive school. It involves starting from certain observations and developing them into generalisations. The researcher identifies patterns, and outlines certain provisional suggestions that can be investigated. This eventually leads to forming theories and broad conclusions (Sekaran & Bougie, 2010).

The inductive approach to research methods is distinguished from the deductive approach in that the researcher does not include hypotheses at the start. Instead, the theory emerges during or after the data analysis. In brief, there are no research hypotheses but an interest in exploring the problem domain to see what emerges. Such an approach is perceived as a sort of grounded argument. The truth of individual premises would not guarantee the truth of the conclusion; however, some evidence is expected (Shaffer, 1989).

A deductive method involves a range of procedures for operating thoroughly testable perspectives in actual life in order to assess their validity (Lancaster, 2005). It has limited characteristics and involves testing preformed assumptions.

Its process can be explained. First, the researcher creates theories and hypotheses based on personal experiences or derived from previous literature by integrating different ideas. Second, the researcher conducts a concept operationalisation procedure where he prepares the new theories or hypotheses for empirical observations and measurement. The following step is identifying and choosing from different techniques and approaches to measure the new concept operationalisation appropriately. This stage also includes planning and selecting the research methods that will be used such as sampling arrangements, data collection procedures, methods of data analysis and results interpretation. The fourth and last step is the falsification and removal step where the researcher determines the level to which selected theories and hypotheses are falsified fully, partially or not falsified at all (Lancaster, 2005; Sekaran & Bougie, 2010). This school involves a process in which the researchers draw from actual analysis readings. The values have to be significant to be conclusive.

For the inductive school of reasoning, the foundations of an argument are assumed to back the conclusion without ensuring it. Hence, this school observes a specific phenomenon to reach conclusions. This understandably creates a general proposal dependent upon the observed phenomenon.

In the deductive approach, the researcher has a clear plan to follow, while in the inductive approach there is a generalisation in the research goals. Deductive reasoning is most common in formal scientific laboratory experiments that take place in order to confirm a theory, which can then be used in further experiments. This research obviously uses the deductive approach. The positivist paradigm uses a deductive process to examine reasoning (Hirschheim & Klein, 1992).

Having said that, another important concept to consider here is the research style. There are two kinds of research style: qualitative and quantitative (Guba & Lincoln, 1994; Hussey & Hussey, 1997).

## 6.4. Qualitative versus Quantitative Research Style

Qualitative style indicates processes and implications that are not examined in terms of amount, frequency, quantity or intensity (Guba & Lincoln, 1994). It provides a deep insight into the phenomenon within its context. Quantitative style, on the other hand, deals with numerical values, their presentations and manipulations as a means of highlighting the issues that are covered in the results (Guba & Lincoln, 1994). It places more emphasis on the analysis and measurement of causal relationships between constructs (Zikmund, 2003; Neuman, 2006).

Quantitative methods are used in the current study. Quantitative methods fall under the umbrella of the deductive approach (Bryman & Bell, 2007). They employ numerical instruments and methodical examinations to demonstrate the relationships between the aspects of the problem under study. They allow the researcher to know how people observe and understand a social reality and how it may change over time. The drive for applying such methods is also because of their advantages in studying social and natural sciences. They allow for testing and establishing the validity and reliability measures and for comparing them with previous research findings and theories based on experimental and measurement techniques.

The qualitative style is preferable in situations where there is a need to investigate the social phenomenon in a subjective way and where there is insufficient or no previous research available to outline constructs and variables and the relationships between them (Gilbert, 2001).

This research is conducted in an objective way, which requires providing different established perspectives and merging them together, allowing hypothetical testing. Clear relationships between constructs are therefore required to discover the consistency of the data using statistical assessments. In such cases, qualitative methods are not productive (Collis & Hussey, 2003). The aim of this research is to generalise the findings, validate certain perspectives and compare the outcomes to other studies. In fact, IS studies that are similar to this study use a quantitative method in order to allow for numerical testing and interpreting.

## **6.5 Research Process**

There is a range of possible processes to be followed in academic research. The most important ones are exploratory, explanatory and descriptive research processes. Exploratory research is carried out in order to give a general understanding of a research problem; this kind of research process is usually used as an input to further research (Malhotra, 1999). In the explanatory research process the aim is to provide evidence of cause-and-effect relationships (Krauss, 2005). Typically, the researcher manipulates the independent variables of interest and tries to control the influence of other variables (Krauss, 2005). Descriptive research, on the other hand, is a process that goes further and tries to describe different characteristics of a phenomenon (Yin, 2003). The main purpose of the latter is to provide details about people, events or situations. It is usually carried out as a result of the need to extend either exploratory or explanatory research.

One key issue to be considered here is the need for the researcher to have a good understanding of the phenomenon prior to broadening the data collection process. This research uses established variables, dimensions and theories and therefore falls under the umbrella of an explanatory-type research process.

Having looked at the three main processes involved in research it is essential to have a brief discussion on the instruments available to the researcher, mainly for data collection purposes.

## **6.6 Data Collection Instruments**

Data collection instruments enable researchers to systematically collect information about the samples and objects under study, especially the variables of interest. There is a need for a systematic approach to conduct the data collection processes. When the data collection is unorganised, there will be an overwhelming probability of the data being incapable of answering the research questions.

There are various instruments used in data collection and these include:

- Interviews - Unstructured, semi-structured and structured
- Questionnaires - Unstructured, semi-structured and structured
- Observation - Unstructured, semi-structured and structured
- Case Studies - In-depth analysis of one individual or organisation
- Experiments
- Focus Groups
- Document Review - Reviewing results, discussions or other forms of document from a number of sources

Interviews consist mainly of presenting a set of predetermined questions to the respondents, who can either be individuals or a group of individuals, and the responses are then written down or recorded. In most cases, responses are tape-recorded and then transcribed for the purpose of analysis. There are three types of interviews, namely structured, semi-structured and unstructured.

Interviews can be conducted individually (one to one) or as a group. The reliability and validity of the data collected from the interviews varies with the type of interview employed as well as the experience of the interviewer. Any potential participants to be interviewed should be carefully selected because random selection is not usually recommended (Snowball, 2007).

Structured interviews involve a series of questions presented to the participants for their responses. Structured interviews are generally closed in nature as a result of the provision of expected responses. This sometimes results in participants providing answers that are not necessarily representative of their views about the issues considered (Snowball, 2007). Semi-structured interviews, on the other hand, ask an initial question followed by further probing questions. These types of interviews are favoured widely by researchers and are often based on the knowledge or an assumption that the respondents have had a particular experience that they can elaborate upon. In these types of interviews, the situation has often been analysed before the interview and the aim of the researcher is to gain further insight into the phenomenon. In this case, the researcher guides the respondent and

specifies the topics of interest, seeking to capitalise on the respondent's subjective experiences of the phenomenon. This kind of interview should be used with people who have high management status, such as bank managers. Since these people have limited time, the researcher should prepare and know the information that they want to gather from the interviewee (Snowball, 2007). Unstructured interviews, however, are often seen as an informal interview that is not structured by a standard list of questions. Fieldworkers are free to deal with the topics of interest in any order and to phrase their questions as they see fit. An unstructured interview is particularly useful for a preliminary study in order to test what the responses might be to a particular issue (Snowball, 2007).

Observation, as a method of data collection, is used mainly with case study research, and, as the name implies, respondents are observed in their natural places of work or at home. This is to enable the researcher to gain a better understanding of the subject's environment as well as the activities within this environment. This method is useful in the sense that it can validate information gathered from other forms of data collection, as well as provide further insight into key issues (Neuman, 2006).

Case study involves comprehensive investigation of a particular example of a class of phenomenon. Case study is unable to provide reliable information about the broader class. However, it may be a powerful instrument in the initial phases of an investigation because it provides hypotheses that may be tested systematically with a larger number of cases (Flyvbjerg, 2006). Case studies are useful when used in the development of the researcher's way of thinking about the domain. Yin (2003) recommends the use of this instrument as part of a carefully designed research study that includes, amongst other things, field procedures and specific questions that the investigator must keep in mind during data collection.

Questionnaires are the main instruments used for surveys. They are generally structured in such a way that specific questions are asked of respondents whose replies are specified and documented, in order to facilitate analysis and interpretation. As with interviews, questionnaires can be structured, semi-structured or unstructured. The reliability and validity of the data collected from the use of

questionnaires varies with the type of questionnaire used as well as the experience of the respondents (Snowball, 2007).

The other methods are not directly relevant here and hence will not be discussed. In the next section a discussion of the specific methods to be used in this research is presented.

## **6.7 Choice of Methodology**

In terms of methodology, as mentioned earlier, the deductive approach has been adopted. This is because there is a specific set of hypotheses based on a customised model, and the current research aims to validate these hypotheses. This type of process falls under the “positivist research paradigm”.

In terms of the research processes, research is considered to be explanatory in general. However, exploratory and explanatory processes will be used. The exploratory process is used in reviewing issues relating to this research domain such as Internet banking, psychological tendencies and culture. In addition, an exploratory survey using structured questionnaires as instruments will be used. This will provide input into the search for further information as well as providing insights pertinent to the research problem. From these processes certain factors emerge as consistently being influential in the adoption, acceptance and use of Internet banking services in Saudi Arabia. This research is primarily explanatory despite the use of the literature review as an exploratory phase. This research is underpinned by the use of previously validated constructs. In the explanatory phase of the research, a customised model based on several other models will be tested using a quantitative style.

## **6.8 Surveys as the Preferred Research Approach**

The survey approach is used in this research. It offers a fast, affordable, effective and precise way of measuring information from the target population (Zikmund, 2003). There are three key identifiable situations where implementing a survey is preferable. The first is where the research involves an inquiry using the quantitative

method about a subject with identical information relationships between variables and hypotheses. The second is when there is a need for data collection in which questions are to be asked with a preformed structured instrument. The third and final situation is where research is intended to generalise information on a whole population's behaviour and attitude through a portion of the sample (Pinsonneault & Kraemer, 1993). In addition, the current research is considered within positivism, and a survey is part of that paradigm. Moreover, this research uses quantitative measurements, which, in turn, have identical hypotheses and variable relationships that can be tested by survey. The research instrument derives from well-established previous research.

The unit of analysis in this study involves individual customers of Internet banking in Saudi Arabia. Thus, the survey is the appropriate approach in this context because of its ability to facilitate a large quantity of respondents' replies, cheaply and without consuming much effort and time (Gilbert, 2001). This research context involves investigating the factors that influence intention to continue Internet banking usage. This involves dealing with large numbers of individuals, which makes it difficult to use interviews, ethnography, observation and/or similar methods within the interpretist epistemology. In addition, because this research uses variables that are sensitive to sample size (i.e. culture), the survey is the appropriate approach.

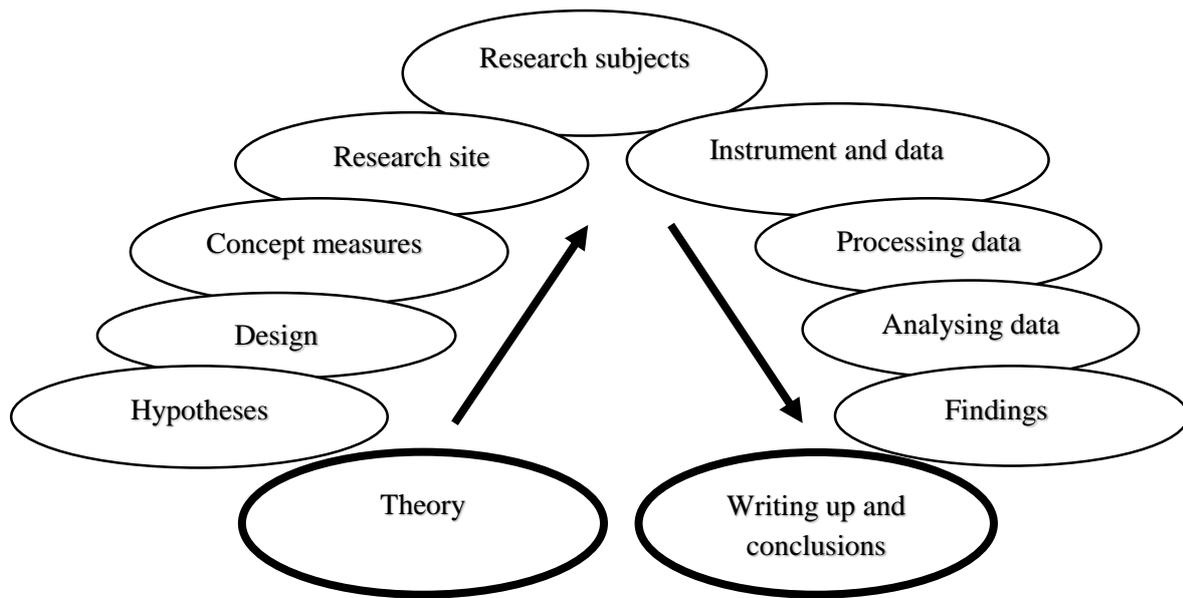
Conducting random samples of a population to generalise the findings also makes the survey method more appropriate than other approaches. Survey methods were used by nearly all TAMs (i.e. TR, TAM, DTPB and the UTAUT (Venkatesh et al, 2003; Davis, 1989). Finally, one very important reason for the suitability of this approach is that the target respondents are directly accessible, and the data to be collected are of a personal, self-reported nature.

## **6.9 Research Design**

The research design is defined as the total process for outlining the research problems. It includes identifying the location for data collection. Ethical issues within the research should be clarified in the research design as well. Then follows

the process of choosing methods for data collection and analysis and illustrating the role of the researcher in the above issues.

De Vaus (2001) stated that the purpose of a research design is to guarantee that the evidence gathered can allow us to answer the opening questions as clearly as possible.



**Figure 6.9 The Process of Quantitative Research (Bryman & Bell, 2007)**

The figure provided above was used as a reference in designing the current study.

### **6.10 Study Nature: Testing Certain Hypotheses**

Academic research can be grouped into categories depending on the nature of the investigation. These are hypothesis testing, exploratory and descriptive phases (Sekaran & Bougie, 2010). This study aims to reveal the knowledge needed to accomplish a specific goal. For instance, while exploratory study is favoured for exploring new factors, descriptive study is favoured when there is a need for specific features of the research to be described.

This study is built on existing theories and on hypotheses of previous research in order to solve a particular problem. Therefore, hypothesis testing is the preferred

technique that suits the nature of the study where the problem has previously been explored and defined using hypotheses. In addition, the positivist approach involves collecting data using a survey method to consider how independent and dependent variables are theoretically associated. Hence, hypothesis testing will help in accomplishing the research goal. Hypotheses testing provides a wider explanation of the relationships existing among variables.

### **6.11 Researcher Interference (minimal extent)**

Selecting a research approach depends heavily on the extent to which the researcher is involved as a part of the context of study. Therefore, defining the role of the researcher is vital. In fact, estimating the degree of the researcher interference determines the appropriate method for collecting data, for example, using case study, a survey or another approach (Choudrie & Dwivedi, 2005).

The researcher has least interference when the research is conducted in a natural setting. A researcher must behave neutrally and in a similar way towards all respondents when conducting the research. Studies that manipulate variables to verify a cause-and-effect relationship fall under the category where there is high researcher interference. However, the selection of a positivist approach in this study reduces the impact of researcher interference. This research uses previously validated theories and sets of hypotheses. The researcher did not take part in the survey and did not influence respondents' choices directly or indirectly. Therefore, the effect of the researcher's interference in influencing the research is minimal.

### **6.12 Study Settings: Non-contrived**

Generally, academic studies, in terms of their settings, are grouped into two types. The first type is causal studies, which are usually investigated in labs and involve experiments. These studies are assumed to be conducted in contrived settings. On the other hand, the second type is for studies that apply a correlational type of investigation, such as field studies; they are known as studies with a non-contrived setting (Sekaran & Bougie, 2010). This study falls under the non-contrived type

due to its method of investigation because the data were collected via questionnaires handed out to bank customers to complete at their leisure.

### **6.13 Unit of Analysis**

The research unit of analysis represents the data collection's level of aggregation in the subsequent data analysis phase. The unit of analysis is an important aspect. It should be determined in the research problem or research question phase (Creswell, 2003). In terms of the current research, the individual unit of analysis is applied because our goal is to explore the predictors of Internet banking at the individual level. Customers' continuance intention in Saudi Arabia is investigated by incorporating a mixture of cognitive beliefs and physiological trait variables. Both the research problem and research questions require the application of an individual unit of analysis.

### **6.14 Research Timescale**

There are two types of studies with regard to timescales: cross-sectional and longitudinal. In longitudinal studies, the researcher collects data from at least two points over a period of time. Longitudinal study is preferred when there is a need to define the framework and the trend of change and stability within the respondent behaviour. It is also applied to identify a time-based order of events and the historical and developmental changes (Creswell, 2003; De Vaus, 2001; Sekaran & Bougie, 2010).

The second type is cross-sectional studies, where data are collected only once over a period of time. The goal is to find an answer to a specific question. Cross-sectional studies show correlation among variables without explaining the timing links between them. Therefore, they count on present differences not the differences that emerge over time. Also, they sort individuals in the data set based on present differences. The present study applies a cross-sectional survey. A cross-sectional survey is preferred here because it enables the collection and analysis of a substantial amount of data within a relatively short period of time. It is not

practical to wait for a long period. The researcher has no interest in investigating how changes occur over time.

### **6.15 Scale in Use**

There are two key kinds of scales to measure human attitudes: rating and ranking. The rating scale has several scaling methods; one of them is the Likert scale, which will be used in this study. The motive behind using the Likert scale is that it is the most famous, straightforward and practical scale for collecting data using the survey techniques (Viswanathan et al, 2004). This selection is also supported by the relevant literature of IS research (Venkatesh et al, 2003; Taylor & Todd, 1995; Bhattacharjee, 2001). This research uses a five-point Likert scale.

### **6.16 Research Conceptual Framework and Operationalisation of the Variables**

As was presented in the preceding sections, this research focuses on the theories of technology acceptance and their applications. The aim is to establish an integrated framework of these theories to explain Internet banking post-adoption behaviours by customers in Saudi Arabia. Many researches have attempted to merge different IS models in order to enhance their ability to determine behaviours in specific IS contexts.

Shih and Fang (2004) evaluated Internet banking acceptance in Taiwan by comparing TRA with TPB and DTPB. The results indicated that DTPB produced the highest predictive power followed by TPB and TRA. In particular, in explaining behavioural use and behavioural intention, the analysis shows that DTPB explained 23% and 66% of the variance, TPB explained 24% and 54% of the variance, and TRA explained 20% and 46% of the variance.

Within the traditional TAMs, the variables that explain technology acceptance are many and diverse. This research uses only the variables that had been validated within the UTAUT (Venkatesh et al, 2003) framework. Those variables will be

treated as the main antecedents of Internet banking post-adoption continued usage behaviour. This is because the UTAUT framework was the outcome of consolidating eight of the previous TAMs.

Many researchers adopted the UTAUT to investigate the acceptance of various new technologies such as mobile devices/services in Finland (Carlsson et al, 2006), a new repayment metering system in India (Bandyopadhyay, 2008) and IT use by organisations' employees in Saudi Arabia (Al-Gahtani et al, 2007). One notable study that utilised the UTAUT is that by Wu et al (2008) that investigated the usage behaviour relating to 3G mobile communications in Taiwan. All these studies have used similar questions in measuring the UTAUT constructs.

One of the main reasons for incorporating the UTAUT variables in this research is to rectify the ECM-IS shortcomings. ECM-IS suffers from relatively low explanatory power of IS continuance intention ( $R^2 = 0.41$ ). Weaknesses in explanatory power can also be found in many of the TAMs, including TRA, TPB and TAM. Although these are well-established models, they have been criticised for their relatively low explanatory power of behavioural intentions ( $R^2 =$  between 30 and 40 %). In fact, one of Venkatesh et al's (2003) justifications for establishing the UTAUT was the weaknesses found in TAMs' explanatory abilities.

Venkatesh's model originated in the "technology acceptance" context. Therefore, there is no guarantee that the model will maintain its high explanatory power in the IS post-adoption settings. The model, however, is deemed a suitable integrator to the proposed model of this research. It validates 18 items to measure performance expectancy, effort expectancy, social influence and facilitating conditions.

The other cognitive variables in this research will be Bhattacharjee's (2001) ECM-IS variables, namely confirmation, satisfaction and continuance intention. Bhattacharjee's model has had wide acceptance and, among other things, is a post-adoption-specific model.

In terms of psychological traits, Parasuraman's (2000) TRI will be used; these are optimism, innovation, discomfort and insecurity. Their incorporation into this

research will show how personal tendencies can affect cognitive processes in the Internet banking context.

In terms of the cultural variables, as discussed in the preceding sections, the cultural variables used in this research will be based on Hofstede’s model. Pavlou and Chai (2002) and Al-Qudah and Ahmad (2013) illustrated that the model is seen as the most influential cultural model used by researchers when conducting academic studies. Moreover, many academic studies in a number of disciplines backed the use of its scales. Studies centred on the behaviour of online consumers, including online banking, that investigated the effect of culture on the use of online services were based mainly on Hofstede’s model (Sornes et al, 2004; Burgmann et al, 2006; Jones & Alony, 2007). Adopting Hofstede’s model will enable a comparison to be made between the outcomes of this research and previous literature findings.

The items within the Likert scale of many of the previous relevant IS researches were based on a five-point range, going from strongly disagree at the lower end of the scale to strongly agree at the upper end.

Table 6.16 reviews the operationalisation of the current research construct in the previous literature.

**Table 6.16 The Research Model Constructs’ Origins and Operationalisation in the Literature**

The construct	Origin
<b>Performance Expectancy</b>	
I would find the system useful in my job	Davis (1989), Davis et al (1989) [Perceived Usefulness]
Using the system enables me to accomplish tasks more quickly	Moore and Benbasat (1991) [Relative Advantage]
Using the system increases my productivity	Moore and Benbasat (1991) [Relative Advantage]
If I use the system I will increase my chances of getting a rise	Compeau and Higgins (1995) [Outcome Expectations]

Using the system would enhance my effectiveness in the job	Davis (1989), Davis et al (1989) <b>[Perceived Usefulness]</b>
Use of the system can significantly increase the quality of output in my job	Thompson et al (1991) <b>[Job Fit]</b>
If I use the system, I will increase the quantity of output for the same amount of effort	Compeau and Higgins (1995) <b>[Outcome Expectations]</b>
<b>Effort Expectancy</b>	
My interaction with the system would be clear and understandable	Davis (1989), Davis et al (1989) <b>[Perceived Ease of Use]</b>
It would be easy for me to become skilful at using the system	Davis (1989), Davis et al (1989) <b>[Perceived Ease of Use]</b>
I would find the system easy to use	Davis (1989), Davis et al (1989) <b>[Perceived Ease of Use]</b>
Learning to operate the system is easy for me	Moore and Benbasat (1991) <b>[Ease of Use]</b>
I would find the system flexible to interact with	Davis (1989), Davis et al (1989) <b>[Perceived Ease of Use]</b>
Working with the system is so complicated, it is difficult to understand what is going on	Thompson et al (1991) <b>[Complexity]</b>
<b>Social Influence</b>	
People who influence my behaviour think that I should use the system	Ajzen (1991) <b>[Subjective Norm]</b>
People who are important to me think that I should use the system	Ajzen (1991) <b>[Subjective Norm]</b>
The senior management of this business has been helpful in the use of the system	Thompson et al (1991) <b>[Social Factors]</b>
In general, the organisation has supported the use of the system	Thompson et al (1991) <b>[Social Factors]</b>
People in my organisation who use the system have more prestige than those who do not	Moore and Benbasat (1991) <b>[Image]</b>
<b>Facilitating Conditions</b>	

I have the resources necessary to use the system	Taylor and Todd (1995), Ajzen (1991) <b>[Perceived Behavioural Control]</b>
I have the knowledge necessary to use the system	Taylor and Todd (1995), Ajzen (1991) <b>[Perceived Behavioural Control]</b>
The system is not compatible with other systems I use	Taylor and Todd (1995), Ajzen (1991) <b>[Perceived Behavioural Control]</b>
A specific person (or group) is available for assistance with the system difficulties	Thompson et al (1991) <b>[Facilitating Conditions]</b>
Guidance was available to me in the selection of the system	Thompson et al (1991) <b>[Facilitating Conditions]</b>
<b>Culture</b> <b>Uncertainty Avoidance (UA)</b> <b>Individualism Collectivism (ID)</b>	
Rules and regulations are important because they tell workers what the organisation expects of them	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
Order and structure are very important in a work environment	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
It is better to have a bad situation that you know about than to have an uncertain situation that might be better	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
Providing opportunities to be innovative is more important than requiring standardised work procedures	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
People should avoid making changes because things could get worse	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Uncertainty Avoidance]</b>
Being accepted as a member of a group is more important than having autonomy and independence	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Individualism Collectivism]</b>
Being accepted as a member of a group is more important than being independent	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Individualism Collectivism]</b>
Group success is more important than individual success	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Individualism Collectivism]</b>
Being loyal to a group is more important than individual gain	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Individualism Collectivism]</b>
Individual rewards are not as important as group welfare	Dorfman and Howell (1988), Srite and Karahanna (2006) <b>[Individualism Collectivism]</b>
It is more important for a manager to encourage loyalty and a sense of duty in	Dorfman and Howell (1988), Srite and Karahanna (2006)

subordinates than it is to encourage individual initiative	[ <b>Individualism Collectivism</b> ]
I do not have sufficient time left for my personal or family life	Dorfman and Howell (1988), Srite and Karahanna (2006) [ <b>Individualism Collectivism</b> ]
<b>ECM-IS Continuance Intention</b>	
I intend to continue using OBD rather than discontinue its use	Bhattacharjee (2001) [ <b>IS Continuance Intention</b> ]
My intentions are to continue using OBD rather than use any alternative means (traditional banking)	Bhattacharjee (2001) [ <b>IS Continuance Intention</b> ]
If I could, I would like to discontinue my use of OBD (reverse coded)	Bhattacharjee (2001) [ <b>IS Continuance Intention</b> ]
I intend to continue using mobile Internet services in the future	Thong et al (2006) [ <b>Continued IT Usage Intention</b> ]
I will always try to use mobile Internet services in my daily life	Thong et al (2006) [ <b>Continued IT Usage Intention</b> ]
I will keep using mobile Internet services as regularly as I do now	Thong et al (2006) [ <b>Continued IT Usage Intention</b> ]
I intend to continue using SmartID to access government services	Venkatesh et al (2011) [ <b>Continuance Intention</b> ]
I plan to continue using SmartID to access government services	Venkatesh et al (2011) [ <b>Continuance Intention</b> ]
I will continue using SmartID to access government services	Venkatesh et al (2011) [ <b>Continuance Intention</b> ]
<b>Confirmation</b>	
My experience with using OBD was better than what I expected	Bhattacharjee (2001), Thong et al (2006) [ <b>Confirmation</b> ]
The service level provided by OBD was better than what I expected	Bhattacharjee (2001), Thong et al (2006) [ <b>Confirmation</b> ]
Overall, most of my expectations from using OBD were confirmed	Bhattacharjee (2001), Thong et al (2006) [ <b>Confirmation</b> ]
<b>ECM-IS Satisfaction</b>	

Very dissatisfied – Very satisfied	Bhattacharjee (2001), Thong et al (2006) [ <b>Satisfaction</b> ]
Very displeased – Very pleased	Bhattacharjee (2001), Thong et al (2006) [ <b>Satisfaction</b> ]
Very frustrated – Very contented	Bhattacharjee (2001), Thong et al (2006) [ <b>Satisfaction</b> ]
Absolutely terrible – Absolutely delighted	Bhattacharjee (2001), Thong et al (2006) [ <b>Satisfaction</b> ]
Extremely displeased – Extremely pleased	Venkatesh et al (2011) [ <b>Satisfaction</b> ]
Extremely frustrated – Extremely contented	Venkatesh et al (2011) [ <b>Satisfaction</b> ]
Extremely dissatisfied – Extremely satisfied	Venkatesh et al (2011) [ <b>Satisfaction</b> ]
<b>Technology Readiness Optimism</b>	
Technology gives people more control over their daily lives	Parasuraman (2000) [ <b>Optimism</b> ]
Products and services that use the newest technologies are much more convenient to use	Parasuraman (2000) [ <b>Optimism</b> ]
You like the idea of doing business via computers because you are not limited to regular business hours	Parasuraman (2000) [ <b>Optimism</b> ]
You prefer to use the most advanced technology available	Parasuraman (2000) [ <b>Optimism</b> ]
You like computer programs that allow you to tailor things to fit your own needs	Parasuraman (2000) [ <b>Optimism</b> ]
Technology makes you more efficient in your occupation	Parasuraman (2000) [ <b>Optimism</b> ]
You find new technologies to be mentally stimulating	Parasuraman (2000) [ <b>Optimism</b> ]
Technology gives you more freedom of mobility	Parasuraman (2000) [ <b>Optimism</b> ]
Learning about technology can be as rewarding as the technology itself	Parasuraman (2000) [ <b>Optimism</b> ]

You feel confident that machines will follow through with what you instructed them to do	Parasuraman (2000) <b>[Optimism]</b>
<b>Technology Readiness Innovativeness</b>	
Other people come to you for advice on new technologies	Parasuraman (2000) <b>[Innovation]</b>
It seems your friends are learning more about the newest technologies than you are	Parasuraman (2000) <b>[Innovation]</b>
In general, you are among the first in your circle of friends to acquire new technology when it appears	Parasuraman (2000) <b>[Innovation]</b>
You can usually work out new high-tech products and services without help from others	Parasuraman (2000) <b>[Innovation]</b>
You keep up with the latest technological developments in your areas of interest	Parasuraman (2000) <b>[Innovation]</b>
You enjoy the challenge of working out high-tech gadgets	Parasuraman (2000) <b>[Innovation]</b>
You find you have fewer problems than other people in making technology work for you	Parasuraman (2000) <b>[Innovation]</b>
<b>Technology Readiness Discomfort</b>	
Technical support lines are not helpful because they don't explain things in terms you understand	Parasuraman (2000) <b>[Discomfort]</b>
Sometimes, you think that technology systems are not designed for use by ordinary people	Parasuraman (2000) <b>[Discomfort]</b>
There is no such thing as a manual for a high-tech product or service that is written in plain language	Parasuraman (2000) <b>[Discomfort]</b>
When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do	Parasuraman (2000) <b>[Discomfort]</b>
If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features	Parasuraman (2000) <b>[Discomfort]</b>

It is embarrassing when you have trouble with a high-tech gadget while people are watching	Parasuraman (2000) <b>[Discomfort]</b>
There should be caution in replacing important people-tasks with technology because new technology can break down or get disconnected	Parasuraman (2000) <b>[Discomfort]</b>
Many new technologies have health or safety risks that are not discovered until after people have used them	Parasuraman (2000) <b>[Discomfort]</b>
Technology always seems to fail at the worst possible time	Parasuraman (2000) <b>[Discomfort]</b>
<b>Technology Readiness Insecurity</b>	
You do not consider it safe giving out a credit card number over a computer	Parasuraman (2000) <b>[Insecurity]</b>
You do not consider it safe to do any kind of financial business online	Parasuraman (2000) <b>[Insecurity]</b>
You worry that information you send over the Internet will be seen by other people	Parasuraman (2000) <b>[Insecurity]</b>
You do not feel confident doing business with a place that can only be reached online	Parasuraman (2000) <b>[Insecurity]</b>
Any business transaction you do electronically should be confirmed later with something in writing	Parasuraman (2000) <b>[Insecurity]</b>
Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes	Parasuraman (2000) <b>[Insecurity]</b>
The human touch is very important when doing business with a company	Parasuraman (2000) <b>[Insecurity]</b>
When you call a business, you prefer to talk to a person rather than a machine	Parasuraman (2000) <b>[Insecurity]</b>
If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place	Parasuraman (2000) <b>[Insecurity]</b>

**(The Author)**

Table 6.16 shows the origins of the constructs that measure the variables of this study and how these constructs have been repeatedly validated in the literature.

They can be found in many acknowledged IS academic research streams. In order to incorporate these constructs into the current research, two kinds of procedures have been followed: the first procedure is to select the items (item selection) and the second procedure is to contextualise the constructs (construct contextualisation).

In terms of item selection, Table 6.16 provides different items that can represent the current research variables. From these, the items that were parts of the UTAUT framework are prioritised. For example, Table 6.16 shows seven items found in the previous literature to represent the construct effort expectancy. This research will adopt only the four items validated within the UTAUT study. The same process will be followed in selecting the constructs of social influence and facilitating conditions.

In terms of the items that represent the post-adoption variables, Bhattacharjee's (2001) constructs and items will be prioritised. The ECM-IS constructs' items will be particularly useful because this research intends to assess how extending the ECM-IS original framework with more relevant predictions can enhance its explanatory power. Bhattacharjee's (2001) measurement of the variables usefulness (performance expectancy), satisfaction, confirmation and continuance intention will be adopted here. In addition, one more external item will be added to Bhattacharjee's measurement of continuance intention. The added item derives from Thong et al (2006). It is deemed suitable for this research because it has an additional meaning, which can contribute to that particular measurement.

Table 6.16 also shows Dorfman and Howell's (1988) measurement of Hofstede's cultural dimensions of uncertainty avoidance and individualism-collectivism. Dorfman and Howell established their new scale of Hofstede's dimensions with the aim of facilitating measuring culture at a micro level of analysis. Hofstede's scale was, among other things, methodologically criticised for having problems at the ecological level of analysis. The new scale is more predictive and reliable than Hofstede's scales. It also enables different levels of analysis to be captured. Dorfman and Howell's (1988) scale is still used today to measure cultural

dimensions (e.g. Gomez & Sanchez, 2013). Although Hofstede's scale was built to measure national-level culture, it has been validated for assessing cultural traits through personality tests at the individual level of analysis. Previous literature findings show that there will be variation in cultural characteristics among people from one culture (Choi et al, 2010). For example, the Japanese generally show attributes of being high in collectivism, yet this attribute may entirely disappear in highly entrepreneurial Japanese (Srite & Karahanna, 2006). Therefore, cultural values can be treated as individual difference variables. Srite and Karahanna (2006) illustrated that the national culture dimension affects the cultural values of an individual, which in turn affects his/her technology acceptance. Although testing personal values and beliefs against relevant cultural criteria will result in salient differences (differentiate individuals from each other), the national culture is still measured by aggregating the same beliefs and values within a given country (differentiate nations). Therefore, Hofstede's items for cultural measurement, found in the literature, can measure individual tendencies, national tendencies and cross culturally. For instance, Srite and Karahanna (2006) and Choi et al (2010) used Dorfman and Howell's (1988) refined measurement of Hofstede's dimensions to investigate personal cultural traits, while Wu (2006) and Fernandez et al (1997) used it to investigate a country-level culture in a cross-national study.

In terms of the TR constructs, the Parasuraman (2000) scale will be used. This scale was established to measure people's general psychological tendencies toward technology. Many IS researches have validated this scale by accounting for its influence on various technology acceptance settings. Because of the fact that the scale was designed to measure general personal traits in relation to technology, the researcher has not found any research where modifications or customisation have been applied to the original scale. However, Yousafzai and Yani-de-Soriano (2011) customised the TR to be an Internet banking-specific measurement. This kind of customisation takes the measurement from its original role of assessing general beliefs about technology and was deemed unsuitable for this research. The current research proposes that the beliefs measured by the TR indices do not add value when modified and restricted to use as Internet banking indices. They measure wider and more important orientations toward technology generally. This research

posits that the original indices have more potency than the customised ones, even though the customisation processes engineered the indices specifically to focus them towards Internet banking. Therefore, this research will apply no modifications to Parasuraman's (2000) original measurement.

The second procedure is to contextualise the selected constructs for the Internet banking context. This research divides the selected constructs into two categories according to their nature: general psychological traits and system-specific cognitive reactions. The first category is for the general personal and environmental constructs. Included in these are Hofstede's cultural dimension of uncertainty avoidance and individualism collectivism as well as the TR constructs. Variables in this category need no modifications because they capture individual general mentalities regardless of their application contexts. This research aims to study how these constructs affect the specific cognitive perceptions in the context of Internet banking. The second category is for system-specific cognitive beliefs, which includes the UTAUT and ECM-IS constructs. These constructs need contextualisation to be applicable to the environment of Internet banking. They were originally built to explain a specific behaviour within a given context and have been subjected to contextualisations when the context changes. ECM-IS constructs will be customised by including phrases relevant to "Internet banking" phrases in them. Also, the UTAUT constructs will be customised by including Internet banking-related statements and by modifying them to reflect post-adoption perceptions as this research is investigating actual usage behaviour.

### **6.16.1 Demographics**

General questions regarding the UTAUT moderating variables as well other demographics are formulated to enable an adequate data collection process (i.e. age, experience, gender, income and level of education). However, the influence of demographic profiles will not be included in the research model. Demographics have been validated repeatedly as having an influence on technology adoption and acceptance. However, their influence on post-adoption behaviours is minimal. Previous studies that investigated IS post-adoption behaviour tend to exclude the

demographic influences (e.g. Thong et al, 2006; Bhattacharjee, 2001; Lee & Kwon, 2011; Venkatesh et al, 2011).

## **6.17 Statistical Tools Used to Analyse the Results**

The Structural Equation Modelling (SEM) technique is applied in the current study to examine the hypothesised relationships between the model constructs. According to Ullman (2007), SEM is deemed to be appropriate because it facilitates answering questions that engage multiple regression analysis of factors of one assessed dependent variable and a set of measured independent variables. SEM is for testing theoretical models. It typically involves two sorts of models. The first one is the measurement model in which the theory is represented, and where the measured variables are combined in order to represent latent factors. The second model is the structural one, which follows the theory to identify the connections between constructs in the model.

SEM can be defined as a group of methods aiming to test the representation of a causal relationship underpinned by a theoretical model, which contains primary hypotheses to predict cause-and-effect relationships between variables. When testing the model, data under observation can be represented with reduced parameters that are structural.

The use of SEM is preferred in behavioural research, particularly in modelling complex associations of multivariate data. This is because of its remarkable tools for analysing complex multilayered relationships. SEM has gained wide application in the information systems domain.

In the SEM process, the researcher constructs a theoretical model and tests it against collected data to demonstrate the extent to which data fit the model. A process of iterative refinements and modifications is conducted on its parameters according to statistical and conceptual principles.

In the SEM there are latent and observed variables and the associations between variables are identified according to previous theoretical findings. There are also measurement and structural models. The measurement model is the part that relates measured variables to latent variables. The measurement model is tested by conducting CFA equations. After acceptable outcomes from the measurement model tests, structural model tests can then be conducted, according to the theoretical hypotheses.

Before conducting SEM tests, there are certain analyses to be conducted on the data to improve their quality and refine them for SEM analysis. These tests include testing data validity and reliability, and assessing data in terms of outliers and normality. The final step in this regard is implementing exploratory factor analysis (EFA). This is important as it ensures the quality of the accuracy of the data set for the theory that underpins the research variable items. Many relevant studies did not include EFA tests because their construct had been already tested in previous studies. Although the constructs in this research had been established and validated in previous IS studies, this research will apply EFA tests to gain more data refinements. Details of the types of analysis this research applies will be discussed in the data analysis chapter.

## **6.18 Instrument Development**

This research uses previously validated scales. The focal constructs were taken from Bhattacharjee's (2001) ECM-IS since this research aims mainly to extend this theory. These constructs include confirmation, satisfaction, continuance intention and usefulness (PE). Other UTAUT constructs were modified in line with Bhattacharjee's usefulness construct to suit this research. These are EE, FC and SI. To account for psychological traits this research employs the 36-item scale established by Parasuraman (2000) to assess the four dimensions of TR: (1) optimism, (2) innovativeness, (3) discomfort, and (4) insecurity. For cultural constructs, this research follows Srite and Karahanna (2006).

## **6.19 Back Translation**

Back translation is a technique frequently used by researchers to ensure the quality and accuracy of survey translations in cross-cultural research (Brislin, 1986). The current research questionnaire was originally written in English, and was then translated into Arabic by two certified translators. Later, another independent certified translator took the Arabic version and checked it and then translated it back into English to ensure that no meaning had been lost during the translation process (Zikmund, 2003). The researcher and supervisor analysed the translations and resolved the differences between the versions until it was agreed that both versions were virtually identical. A final check was conducted by an IS specialist of Arab origin who conducts research in both languages; he confirmed that no further modifications were needed as the translation was adequate.

## **6.20 Ethical Considerations**

In the kind of research where the aim is to study human behaviour, it is crucial to consider ethical issues before, throughout and after the data collection phase (Zikmund, 2003). A lack of ethical consideration in such processes may lead to a lack of compliance and cooperation by respondents, which makes it difficult to collect the data (Sekaran & Bougie, 2010). Meeting ethical standards and gaining respondents' consent are the fundamental requirements for every study covering recognisable subjects unless an ethical committee believes that it is impossible to obtain such consent or if such consent is of no use. Ethical considerations have to be complied with to prevent human rights violations. This should also guarantee that it is intended to keep respondents' information totally confidential. In addition, personal information should not be required and the information collected must not be distorted or misused. The researcher should frankly explain the objective of the research. Also, he/she should never make the respondents feel uncomfortable or undermine his/her self-respect. Furthermore, respondents should not be forced to take part in the survey (Sekaran & Bougie, 2010).

In fact, this research follows the guidelines of Plymouth University's Ethical Principles for Research Involving Human Participants, which monitors data collection processes. According to the considerations presented by Plymouth University, the researcher is required to obtain consent at the outset, when the participants are informed that their participation is not mandatory and that they have the right to withdraw at any time with no consequence.

In this research, participants were informed at the outset of the data collection form and that they had the choice of not answering any question that they felt was inappropriate. Also, they were ensured of confidentiality and that the data would be protected and used exclusively for the purpose of the identified research. They were also informed that the data would not be given to or used by any third party. An approval to conduct the data collection process was issued by the researcher's supervisors and the university research ethical committee. The outset letter was attached with each instrument containing all of the above considerations.

## **6.21 Sampling Procedure**

When the research problem, method of investigation, research design and data collection instruments have been defined, a sampling procedure is required. It is important for the researcher to specify appropriate sampling procedures. Gathered information must be drawn that adequately represents the target population. Inferences to the wider population can only be made when satisfactory information collection procedures are used.

This procedure is particularly important when using a survey instrument. The adequacy of sampling allows the researcher to claim representative results. Sampling is essential because researching the whole population is prohibitively expensive, and impossible in some cases.

The need to sample correctly requires an understanding of the intended research population. This includes predicting aspects of the intended population and the contexts in which they live. These include education level, age, income, gender

and occupation, which affect behaviour in general and behaviour in relation to using technology in particular.

Bryman and Bell (2007) illustrated that picking a sample proportionate to the size of the target population is important. Additionally, researchers have to demonstrate an understanding of the features of their subjects and the characteristics of their respondents in order to claim generalisation. These qualities can be obtained by ensuring the adequacy of the conduct of sampling processes. Sampling processes include population, sample frame and size as well as sampling methods.

## **6.22 Population**

Identifying the population of interest is the initial stage in sampling. The concept of the “target population” specifies details of the respondents that the research wants to extrapolate from. When a researcher plans to target a certain population, specificity is required about who to exclude and who to include from the elements of the population. In order to draw conclusions from a representative sample, methodological scholars have identified a number of procedures to follow in order to outline the targeted population. The importance of these procedures comes from their role in ensuring accuracy in population assessment.

One of these important procedures is about determining the so-called “unit of analysis” by which the researcher clusters respondents into categories. In this research, the unit of analysis is customers of middle-sized banks in Saudi Arabia. The categories chosen by the researcher reflect the focus of the research, in this case banking customers.

In this research, the Saudi Arabian actual Internet banking users from both genders are the population. The city of Riyadh was chosen as the survey site for questionnaire distribution because 25% of the Saudi Arabian population live in Riyadh. It is a city to which domestic migrants from all over Saudi Arabia flock in comparatively high percentages. In Saudi Arabia, individuals must be 18 years of old or above to have a banking account.

## 6.23 Sampling Frame

Sampling frame denotes the process defining the units or respondents outlined to be the sample of the target population. In this research, one of the difficulties faced was that the banks had strong reservations about revealing the number of their actual Internet banking users. Bankers feel that such information, if revealed, would damage their reputation in some way or another or could accidentally release commercially confidential information that would benefit their competitors. Strenuous efforts to obtain relevant information were made, including approaching financial authorities, to no effect. No valid information about Internet banking customers was given out. Also, not a single bank was interested in conducting this study on their customers within their branches.

The decision, then, was to select actual Internet banking users from customers of a particular bank in Riyadh for several reasons. Firstly, the bank, unlike all others, had given oral permission for the researcher to collect data from outside its branches. Second, this bank represents the largest segment of Saudi Arabian middle-sized banks. These banks offer somewhat similar and standardised Internet banking services to their customers, because their service providers are almost the same. Also, studying and analysing their Internet banking websites showed that these banks provide their customers with similar functions and interfaces.

The selected bank has customers who include lower and upper middle classes of society. It has a service provision with sufficient variety of facilities to attract this range of social class in their customer base. The bank also has branches all over Saudi Arabia. However, the selection of Riyadh branches is because of the importance of the city, in which the political and economic powers of Saudi Arabia are centred. Sampling customers from outside the bank branches lowered the cost of data collection.

## 6.24 Sample Size

As mentioned earlier, defining sample size is a crucial step. The size of the sample is considered important and it must be determined properly to ensure the quality and truthfulness of the collected data. Decisions on determining the sample size are affected by a number of issues, such as the size of the population and whether it is known or unknown. Other research factors impinge upon the sample size decision. These include, but are not restricted to, time efficiency, financial resources and the degree of accuracy needed for the statistical analysis.

Having said that, this procedure is complex, and in most cases difficult because gathering more or less than the estimated sampling size can lead to negative consequences, such as a waste of time and resources on the one hand, and low accuracy and improper coverage of population on the other (Hair et al, 2010).

The size of the target population of this research is not known. One of the ways in which sample size can be determined in such a situation involves researcher judgments. The researcher applies skill and subject knowledge to the sampling situation. As familiarity grows with the subject matter, the researcher develops expertise in tangential issues. These include available resources: time, budget and similar research sampling size. This supports the researcher in decision making about sampling. A key decision is about the sufficiency of sample size in relation to the kind of analysis the researcher intends to apply.

Determining a specific number for sample size should be well justified and in accordance with academic standards and norms (Churchill, 1999). In this research case the sample size decision relies on the researcher's theoretically supported considerations.

In determining the size of the sample, several statistical equations can be used to estimate the ideal number. These are applicable if the size of the target population can be specified. However, this research is unable to implement these because the

number in the population is not known. However, other statistical rules for estimating sample size can be applied.

If a certain type of data analysis is to be employed on the survey data once gathered, there are minimum numbers specified for the survey output. Multivariate analyses are theoretically underpinned and require certain numbers in the sample size in order to be proficient. This research uses SEM and in order to get a consistent outcome from SEM multivariate analysis, viewing the literature revealed a number of suggestions. Statistical scholars suggest that the sample size should be at least 10 times larger than the total number of variables in the research. There are some other advisory criteria, such as ensuring that at least 30 respondents from each subsample are contained in the sample, both male/female. Roscoe (1975) and Stevens (1996) posit that 15 cases per construct are sufficient when a test of least square multiple regression analysis is needed.

AlMohaimmeed (2012) stated that in the previous literature on Internet banking, sample size was noted as being between 125 and 400. Alrasheed (2000) noted that defining sample size for research that involves consumer data in countries like Saudi Arabia is usually heavily reliant on researcher judgments.

One of the important factors that should be taken into consideration when defining the sample size is the “response rate” within studies that involve Internet banking in Saudi Arabia. AlMohaimmeed (2012) noted a response rate of 40% to 65% in previous studies. Taking into consideration this expected response rate range, this research assumes that 600 questionnaires will provide sufficient responses to meet the needs of the data analysis specification.

## **6.25 Sample Selection Method**

In sampling, the aim is to make inferences about a population. This is called “probability sampling”. One method of selecting respondents in probability sampling is to randomly select elements from a population. These elements are clustered by the specified units and are supposed to be identified as equally likely to be representative of all units in the population. Probability is an important issue when applying survey

instruments for data collection. It ensures that no unique patterns that might occur within a subsample will be generalised as applicable to the target population. The sample should be truly representative and predictable sources of error should be minimised. In probability sampling there are certain techniques, including random, stratified random, quota and systematic cluster.

In non-probability sampling, researchers use their judgment at some points during the sampling process. Therefore, in this kind of sampling there will be decisions to be made about how the sampling method is truly capable of finding respondents who represent the population. The data collected should contain information from all representative subgroups. The chances of elements within the population participating in the survey should not be minimised to zero.

Survey respondents in this research are restricted to those who can reflect on true experience with Internet banking. They must show that they actually tried Internet banking and built perceptions about its features from that experience. In this survey, gender was accounted for. Both women and men were sampled.

The instrument used in this research can only reflect general patterns related to Internet banking. There is no reason to suspect that the bank chosen for this research was in any way unusual. Banking transactions and facilities are routine from one middle-sized bank to another in Saudi Arabia. Special patterns are unlikely to appear from one bank to another.

Within technology acceptance studies, including those in the Internet banking context, many studies used customers from one bank only. Others used a segment of customers to generalise results to a national level. Li (2010) used a single travel agency in China and made inferences at the national level about online service provision with regard to continuance intentions. Srite and Karahanna (2006) collected data from a single university containing American and Chinese students and made inferences about the USA and China. He studied cultural influence on technology acceptance. Yee-Loong (2013) used a sample from university students to study mobile commerce continuance behaviour, and made inferences about China.

## 6.26 Pilot Study

In terms of the data collection processes, many scholars have emphasised the importance of pilot testing questionnaires (the instrument used in this research). The purpose behind such pilot testing is to refine the questionnaire and identify potential problems that respondents may have in answering the questions. Piloting also aims to prevent any problems in recording the data. It enables the researcher to obtain certain evaluations of the questions' validity as well as the reliability of the data. These assessments can ultimately enhance the process of collecting the final research data (Saunders et al, 2012). Thus, a pilot study should be conducted as pretesting of the questionnaire.

During the pilot study, 110 questionnaires were delivered to the bank's customers. Fifty were returned and used to test the reliability of the draft questionnaire. For all constructs, Cronbach's alpha was greater than 0.70 and three items were excluded, because they had item-total correlations below 0.30. This is consistent with the recommendations of Saunders et al (2012), who noted that the cut-off value must be greater than 0.70. The researcher concludes that the scale was reliable.

**Table 6.26 The Results of Reliability for Pilot Study**

	No. Items	Cronbach's Alpha	Deleted Items
<b>UTAUT</b>			
Performance Expectancy (PE)	4	0.70	PE4
Effort Expectancy (EE)	4	0.77	
Social Influence (SI)	5	0.75	
Facilitating Conditions (FC)	5	0.72	

<b>Culture</b>			
Uncertainty Avoidance (UA)	6	0.85	
Individualism (ID)	7	0.72	ID7
<b>Technology Readiness</b>			
Optimism (OPT)	10	0.85	
Innovation (INN)	7	0.74	
Discomfort (DIS)	9	0.70	Disc1
Insecurity (INS)	9	0.81	
Confirmation (CON)	3	0.73	
Satisfaction (SAT)	4	0.75	
Continuance Intention (CI)	4	0.82	

### **Appendix [H]**

## **6.27 Data collection**

The empirical data in this research were collected using a cross-sectional field survey of Internet banking users in Saudi Arabia. The Internet banking context was chosen because ECT originated in that context (Bhattacharjee, 2001). The research sample consists of respondents who are customers of the Internet banking section of a middle-sized Saudi bank. The bank offers its customers a range of personal banking products, including a deposit account, credit cards, bill payment, money transfers and stockbroking through the opening of a personal equity portfolio. The bank introduced its Internet services more than ten years ago and updates its system regularly. Customers' access to Internet accounts involves obtaining a user name and password.

When they are entered into the system, the customer receives a confirmation SMS via mobile phone with a special code that allows them entry to the main account page.

As stated earlier, first, the questionnaire was piloted. Then, 600 copies of the questionnaire were distributed randomly to customers in 11 branches of the bank in the same city. Of these, 261 valid responses were received; 41.3% were from women and 58.2% were from men.

A total of 52.5% of the respondents were aged between 25 and 34 years, 31% were aged between 35 and 44, 11% were aged between 45 and 54, and only 4.2% were aged between 18 and 24. One respondent was aged between 55 and 65.

In terms of income, 60.5% of the respondents had an income between 10,000 and 19,000 Saudi riyals, 26.8% had an income between 5,000 and 9,999 Saudi riyals, 5.7% had an income between 3,000 and 4,999 Saudi riyals, 5% had an income of more than 20,000 Saudi riyals, and 1.5% had an income of less than 2,999 Saudi riyals.

With regard to experience, 75.1% of the respondents had more than 10 years' experience with computers, while 24.9% had between 5 and 10 years of experience with computers.

In terms of education, 61.7% had a bachelor degree, 21.1% had postgraduate education, 16.1% had a diploma, and 1.1% had a high school or below level of education.

In relation to experience with the Internet, 57.5% described their experience with the Internet as good, 32.6% described it as very good, 7.7% described it as moderate, 1.9% described it as poor, and one respondent described it as very poor.

**Table 6.27 Collected Data Description**

<b>Demographic variable</b>	<b>Variable constructs</b>	<b>Frequency</b>	<b>Percentage %</b>
<b>Age</b>	18 – 24	11	4.2
	25 – 34	137	52.5

	35 – 44	81	31.0
	45 – 54	29	11.1
	55 – 65	1	.4
<b>Gender</b>	Male	152	58.2
	Female	107	41.0
<b>Income</b>	<b>less than</b> 2,999	4	1.5
	3,000 – 4,999	15	5.7
	5,000 – 9,999	70	26.8
	10,000 – 19,999	158	60.5
	<b>more than</b> 20,000	13	5.0
<b>Education</b>	High school or less	3	1.1
	Diploma	42	16.1
	Bachelor Degree	161	61.7
	Postgraduate	55	21.1
<b>Experience with Internet</b>	Very poor	1	.4
	Poor	5	1.9
	Moderate	20	7.7
	Good	150	57.5
	Very good	85	32.6
<b>Experience with computer</b>	5 – 10 years	65	24.9
	More than 10 years	196	75.1

## 6.28 Summary

In academic research, there are a number of techniques and patterns established to explain research approaches in relation to social sciences and information systems:

for instance, induction versus deduction, positivism versus interpretism and quantitative versus qualitative. These were presented in this chapter's review. The methodological position of this research was detailed.

This chapter also discussed various research methods and processes used in gathering and analysing empirical data. The TAMs were the bases upon which this research built its theoretical framework. TAMs used survey questionnaires as instruments for collecting data and this research will do so too.

The research constructs' operationalisation uses the UTAUT and ECT constructs to measure cognitive beliefs. It also uses TR and Hofstede's UA and ID to measure psychological traits and to specify the research strategy in this regard. This chapter described how these constructs were operationalised, and outlined the ethical issues whilst detailing the research design.

The data analysis technique was discussed in this chapter as well as the sampling procedure and the processes of collecting the data from the target population.

## ***Chapter Seven:*** **Data Analysis**

### **7.0 Introduction**

This chapter uses structural equation modelling (SEM) to examine the current research proposed framework. This includes testing the hypothesised relationships. The method for analysing the data in this research involves two stages: firstly, assessing the measurement model (fit and validity of the proposed model); secondly, examining the research hypotheses (structural model). This kind of process is theorised to enhance the quality of the measured constructs in the structural model.

### **7.1 Reliability and Validity**

Reliability is established to assess the correlation between a respondent's scores and an item of measurement. It measures the consistency of one variable's items (Hair et al, 2010). This research uses inter-item consistency reliability (Cronbach's  $\alpha$  coefficient) to measure reliability. This is in line with previous literature. Cronbach's  $\alpha$  has received wide appreciation by academic researchers. It also has more advantages over any other measures of reliability because of its accessibility and clarity. It has a minimum allowed scores limit coefficient of 70%. Reaching this limit ensures that no systematic errors exist within the data, which eventually enables generalisations to be made from the results.

**Table 7.1 Construct Reliability and their items (Item to Total Correlation)**

Variables and Items	Item to Total Correlation	Cronbach's $\alpha$
UTAUT		
Performance Expectancy (PE)		.730

Using Internet banking improves my performance in managing personal finances	.601	
Overall, Internet banking is useful in managing personal finances	.660	
Using Internet banking enhances my effectiveness in managing personal finances	.557	
<b>Effort Expectancy (EE)</b>		.852
My interaction with Internet banking in managing personal finances is clear and understandable	.641	
It is easy for me to become skilful at using Internet banking in managing personal finances	.739	
I find the Internet banking system easy to use	.702	
Learning to use Internet banking in managing personal finances is easy for me	.696	
<b>Social Influence (SI)</b>		.824
People who influence my behaviour think that I should use Internet banking in managing personal finances	.699	
People who are important to me think that I should use Internet banking in managing personal finances	.678	
The senior management at the bank has been very helpful in the use of Internet banking	.589	
In general, the bank has supported the use of Internet banking	.476	
People whose opinions I value would prefer me to use Internet banking in managing personal finances	.669	
<b>Facilitating Conditions (FC)</b>		.776
I have the resources necessary to use Internet banking services in managing personal finances	.553	
I have the knowledge necessary to use Internet banking services in managing personal finances	.530	
Internet banking is not compatible with other systems I use	.575	
I get help from the bank for the problems relating to the use of Internet banking services	.588	
A specific person (or group) is available for assistance with Internet banking services difficulties	.615	
<b>Culture</b>		
<b>Uncertainty Avoidance (UA)</b>		.909
Rules and regulations are important because they tell workers what the organisation expects of them	.690	
Order and structure are very important in a work environment	.661	
It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do	.783	
It is better to have a bad situation that you know about than to have an uncertain situation that might be better	.794	
Providing opportunities to be innovative is more important than requiring standardised work procedures	.768	
People should avoid making changes because things could get worse	.799	
<b>Individualism (ID)</b>		.675

Being accepted as a member of a group is more important than having autonomy and independence	.269	
Being accepted as a member of a group is more important than being independent	.319	
Group success is more important than individual success	.477	
Being loyal to a group is more important than individual gain	.493	
Individual rewards are not as important as group welfare	.546	
It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative	.365	
<b>Technology Readiness</b>		
<b>Optimism (OPT)</b>		.885
Technology gives people more control over their daily lives	.502	
Products and services that use the newest technologies are much more convenient to use	.578	
You like the idea of doing business via computers because you are not limited to regular business hours	.651	
You prefer to use the most advanced technology available	.627	
You like computer programs that allow you to tailor things to fit your own needs	.619	
Technology makes you more efficient in your occupation	.703	
You find new technologies to be mentally stimulating	.583	
Technology gives you more freedom of mobility	.726	
Learning about technology can be as rewarding as the technology itself	.637	
You feel confident that machines will follow through with what you instructed them to do	.618	
<b>Innovation (INN)</b>		.796
Other people come to you for advice on new technologies	.571	
It seems your friends are learning more about the newest technologies than you are	-.072	
In general, you are among the first in your circle of friends to acquire new technology when it appears	.697	
You can usually figure out new high-tech products and services without help from others	.696	
You keep up with the latest technological developments in your areas of interest	.680	
You enjoy the challenge of working out high-tech gadgets	.750	
You find you have fewer problems than other people in making technology work for you	.503	
<b>Discomfort (DIS)</b>		.807
Sometimes, you think that technology systems are not designed for use by ordinary people	.606	
There is no such thing as a manual for a high-tech product or service that is written in plain language	.547	

When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do	.585	
If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features	.524	
It is embarrassing when you have trouble with a high-tech gadget while people are watching	.556	
There should be caution in replacing important people-tasks with technology because new technology can break down or get disconnected	.538	
Many new technologies have health or safety risks that are not discovered until after people have used them	.393	
Technology always seems to fail at the worst possible time	.408	
<b>Insecurity (INS)</b>		.851
You do not consider it safe giving out a credit card number over a computer	.504	
You do not consider it safe to do any kind of financial business online	.606	
You worry that information you send over the Internet will be seen by other people	.554	
You do not feel confident doing business with a place that can only be reached online	.649	
Any business transaction you do electronically should be confirmed later with something in writing	.574	
Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes	.464	
The human touch is very important when doing business with a company	.635	
When you call a business, you prefer to talk to a person rather than a machine	.542	
If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place	.607	
<b>Confirmation (CON)</b>		0.807
My experience with using Internet banking services was better than what I expected	.659	
The service level provided by Internet banking services was better than what I expected	.735	
Overall, most of my expectations of using Internet services were confirmed	.589	
<b>Satisfaction (SAT)</b>		.809
Satisfied	.629	
Pleased	.730	
Contented	.640	
<b><u>Delighted</u></b>	<b><u>Deleted</u></b>	
<b>Continuance Intention (CI)</b>		.930
I intend to continue using Internet banking services rather than discontinue their use	.799	

My intentions are to continue using Internet banking services rather than use any alternative means (traditional banking)	.897	
If I could, I would like to discontinue my use of Internet banking services	.834	
I will keep using Internet banking services as regularly as I do now	.818	

Validity, on the other hand, has two types: content validity and construct validity. Content validity involves certain qualitative processes to evaluate research constructs along with their relevant items. This can be done by conducting pre-assessments of the constructs with various subpopulation sets, and by having the judgments of experts on them. Content validity is one of the earliest phases in building construct relationships. In this research, the constructs were selected through extensive analyses of previous research. Moreover, this research review of the literature allowed the researcher to compare the selected constructs to many other relevant constructs. The decision to adopt certain constructs and items was additionally judged by several experts around the university.

In terms of construct validity, this type of analysis aims to demonstrate the ability of designed variables to behave as they should, and to actually represent the theoretical latent constructs. It is also called the “construct external validity”, and it indicates how certain items measure what they meant to measure without including systematic errors.

There are three types of construct validity: nomological, discriminant and convergent. Nomological validity (also called “criterion validity”) is used in the structural phase. It demonstrates the level to which the correlation of scale and other different – but relevant – constructs behave in a theoretically predictable manner. This is tested by assessing how meaningful constructs’ correlations are in relation to the investigated theory.

Convergent validity, on the other hand, assesses whether the construct’s specific indicators have commonly high amounts of variances. It measures one construct item’s correlations. When the correlation results of item to total are above 0.50, higher convergent validity is deemed to exist.

Discriminant validity compares two theoretically different constructs in order to account for how they are actually different from each other (Hair et al, 2010). Discriminant validity has two levels: construct level and item level. For the construct level this research uses criterion (Fornell & Larcker, 1981), where in every construct the AVE square root should be higher than the other constructs' correlation with any other.

## **7.2 Evaluating the Quality of Data: Missing Data**

Missing data from a methodological point of view may result in two negative outcomes. Firstly, missing data undermines the statistics of any research. Secondly, it can result in biased estimates. There are many causes of missing or unusable data. One of them is the respondents' refusal to answer sensitive questions (Tsikriktsis, 2005). The researcher had to eliminate certain cases to attain the complete data file. Overall, the number of responses was sufficient to conduct exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and path analysis (PA). Very little missing data was reported; it was all in the respondents' demographic information, which is not significant because it is not part of the structural modelling of causal relationships.

## **7.3 Evaluating the Quality of Data: Assessing Outliers**

Outliers generally indicate the case of an observation that is numerically different from others (Rogelberg, 2004). Outliers, therefore, are scores that are distinct from the rest. Outliers can occur as a result of observation errors, data entry mistakes, layout, and instructions or general questionnaire problems. In addition, extreme self-reporting value data cause outliers.

A univariate outlier occurs within a single variable, while a multivariate outlier means having excessive scores on two or more variables (Kline, 2005). Univariate outliers in the data can be found by calculating the frequency distributions of z scores. If the z score is higher than 3.29 with  $p < .001$ , it indicates that the data have outliers (Tinsley & Brown, 2000). The current data analysis uses this measure,

and fortunately no outliers were found as the z scores for all cases and variables were less than 3.29. Moreover, the maximum standard deviation was 1.20 except for one item (Sat4=2.64). Low standard deviation indicated that the data were very close to the mean (more details can be found in Appendix C). On the other hand, the multivariate outliers were detected by Mahalanobis's d-squared. Programs that enable SEM analysis such as AMOS contain diagnostic aids that can be useful in calculating Mahalanobis's d-squared (Kline, 2005).

## 7.4 Evaluating the Quality of Data: Assessing Normality

Normality indicates the extent to which the distribution of sample data complies with normal distribution (Hair et al, 2010). Skewness and kurtosis were utilised to measure the normality of the observed single variables. For the measure of skewness, a value of zero indicates a perfectly symmetrical distribution, while negative (right-tailed) and positive (left-tailed) values indicate negative and positive skewness. The kurtosis statistic should be zero for normal distributions, while it will be negative for flat distributions and positive for peaked distributions. Usually, values for skewness and kurtosis of between -2 and +2 demonstrate a reasonably normal distribution (Bachman, 2004).

The researcher assessed the univariate kurtosis and skewness for all items as seen in Table 7.4. The values of skewness and kurtosis were within their respective predicted ranges (-1 and +1) except for one item called Delight Satisfaction. Thus, these data supported univariate normality very well. Multivariate normality will be examined later in SEM.

**Table 7.4 Assessment of Normality of Items**

Items	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Using Internet banking improves my performance in managing personal finances	261	-1.349	.151	.853	.300
Overall, Internet banking is useful in managing personal finances	261	-1.167	.151	-.642	.300
Using Internet banking enhances my effectiveness in managing personal finances	261	-.731	.151	-.370	.300

My interaction with Internet banking in managing personal finances is clear and understandable	261	-.497	.151	-.645	.300
It is easy for me to become skilful at using Internet banking in managing personal finances	261	-.755	.151	-.418	.300
I find the Internet banking system easy to use	261	-.568	.151	-.592	.300
Learning to use Internet banking in managing personal finances is easy for me	261	-.617	.151	-.673	.300
People who influence my behaviour think that I should use Internet banking in managing personal finances	261	-.219	.151	-.676	.300
People who are important to me think that I should use Internet banking in managing personal finances	261	-.239	.151	-.453	.300
The senior management at the bank has been very helpful in the use of Internet banking	261	-.460	.151	-.357	.300
In general, the bank has supported the use of Internet banking	261	-.606	.151	-.250	.300
People whose opinions I value would prefer me to use Internet banking in managing personal finances	261	-.307	.151	-.765	.300
I have the resources necessary to use Internet banking services in managing personal finances	261	-.616	.151	-.632	.300
I have the knowledge necessary to use Internet banking services in managing personal finances	261	-.582	.151	-.579	.300
Internet banking is not compatible with other systems I use	261	-.539	.151	-.783	.300
I get help from the bank for the problems relating to the use of Internet banking services	261	-.672	.151	-.135	.300
A specific person (or group) is available for assistance with Internet banking services difficulties	261	-.563	.151	.007	.300
Rules and regulations are important because they tell workers what the organisation expects of them	261	-1.210	.151	2.169	.300
Order and structure are very important in a work environment	261	-1.041	.151	1.625	.300
It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do	261	-1.099	.151	1.759	.300
It is better to have a bad situation that you know about than to have an uncertain situation that might be better	261	-1.340	.151	2.048	.300
Providing opportunities to be innovative is more important than requiring standardised work procedures	261	-1.135	.151	1.222	.300
People should avoid making changes because things could get worse	261	-1.290	.151	1.514	.300
Being accepted as a member of a group is more important than having autonomy and independence	261	-.476	.151	-.711	.300
Being accepted as a member of a group is more important than being independent	261	-1.075	.151	-.851	.300
Group success is more important than individual success	261	-.859	.151	.267	.300
Being loyal to a group is more important than individual gain	261	-.747	.151	-.168	.300

Individual rewards are not as important as group welfare	261	-.620	.151	.270	.300
It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative	261	.180	.151	-.472	.300
My experience with using Internet banking services was better than what I expected	261	-.711	.151	.545	.300
The service level provided by Internet banking services was better than what I expected	261	-.773	.151	.580	.300
Overall, most of my expectations of using Internet services were confirmed	261	-.501	.151	-.004	.300
I intend to continue using Internet banking services rather than discontinue their use	261	-1.007	.151	-.011	.300
My intentions are to continue using Internet banking services rather than use any alternative means (traditional banking)	261	-.660	.151	-.716	.300
If I could, I would like to discontinue my use of Internet banking services	261	-.747	.151	-.417	.300
I will keep using Internet banking services as regularly as I do now	261	-.967	.151	-.062	.300
Satisfied	261	-.170	.151	-.606	.300
Pleased	261	-.648	.151	.477	.300
Contented	261	-.734	.151	.498	.300
<b><u>Delighted</u></b>	<b><u>261</u></b>	<b><u>14.251</u></b>	<b><u>.151</u></b>	<b><u>220.963</u></b>	<b><u>.300</u></b>
Technology gives people more control over their daily lives	261	-.650	.151	-.520	.300
Products and services that use the newest technologies are much more convenient to use	261	-.801	.151	.333	.300
You like the idea of doing business via computers because you are not limited to regular business hours	261	-.750	.151	-.404	.300
You prefer to use the most advanced technology available	261	-1.182	.151	1.202	.300
You like computer programs that allow you to tailor things to fit your own needs	261	-.630	.151	-.335	.300
Technology makes you more efficient in your occupation	261	-.840	.151	-.277	.300
You find new technologies to be mentally stimulating	261	-.579	.151	-.261	.300
Technology gives you more freedom of mobility	261	-.642	.151	-.546	.300
Learning about technology can be as rewarding as the technology itself	261	-1.156	.151	1.305	.300
You feel confident that machines will follow through with what you instructed them to do	261	-.871	.151	.789	.300
Other people come to you for advice on new technologies	261	-.443	.151	-.335	.300
It seems your friends are learning more about the newest technologies than you are	261	.265	.151	-.583	.300
In general, you are among the first in your circle of friends to acquire new technology when it appears	261	-.438	.151	-.444	.300

You can usually figure out new high-tech products and services without help from others	261	-.432	.151	-.641	.300
You keep up with the latest technological developments in your areas of interest	261	-.753	.151	.069	.300
You enjoy the challenge of working out high-tech gadgets	261	-.378	.151	-.681	.300
You find you have fewer problems than other people in making technology work for you	261	-.582	.151	.188	.300
Sometimes, you think that technology systems are not designed for use by ordinary people	261	.060	.151	-.723	.300
There is no such thing as a manual for a high-tech product or service that is written in plain language	261	.210	.151	-.653	.300
When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do	261	-.014	.151	-.636	.300
If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features	261	.122	.151	-.976	.300
It is embarrassing when you have trouble with a high-tech gadget while people are watching	261	.056	.151	-.967	.300
There should be caution in replacing important people-tasks with technology because new technology can break down or get disconnected	261	.458	.151	-.142	.300
Many new technologies have health or safety risks that are not discovered until after people have used them	261	.610	.151	.379	.300
Technology always seems to fail at the worst possible time	261	-.128	.151	-.311	.300
You do not consider it safe giving out a credit card number over a computer	261	.324	.151	-1.079	.300
You do not consider it safe to do any kind of financial business online	261	-.280	.151	-.881	.300
You worry that information you send over the Internet will be seen by other people	261	.280	.151	-.918	.300
You do not feel confident doing business with a place that can only be reached online	261	.113	.151	-.871	.300
Any business transaction you do electronically should be confirmed later with something in writing	261	.526	.151	-.814	.300
Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes	261	.335	.151	-.788	.300
The human touch is very important when doing business with a company	261	.586	.151	-.382	.300
When you call a business, you prefer to talk to a person rather than a machine	261	.299	.151	-.842	.300
If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place	261	-.015	.151	-.906	.300
Valid N (listwise)	261				

## 7.5 Factor Analysis

There are two types of factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is always used in the early stages of research to examine the interrelationships among a set of variables. CFA, on the other hand, is a more sophisticated set of techniques utilised to confirm particular hypotheses in relation to the structure underlying a set of variables (Hair et al, 2010).

To explain further, the two terms exploratory and confirmatory factor analysis denote different kinds of analysis (Hair et al, 2010). EFA relies on statistical outcomes to extract factors and permits no role for previous theories. Prior knowledge has no role in determining the number of factors nor which items relate to particular constructs. In other words, EFA gather items that fit a particular construct ensuring that the selected scale in this study case is supported by the collected data. EFA presents evidence on what factors can best speak for the data (Hair et al, 2010).

On the other hand, CFA is reliant upon previous knowledge and theories. Thus, the number of factors related to certain variables, and which items belong to which constructs (high loading of items on factors), is determined prior to computing the outcome. In other words, CFA validates the measurement factors that occur within a number of variables that are bounded by a theoretical framework.

Conducting CFA is useful in the sense that previous theories can be further confirmed by conducting a fit assessment on them. CFA tests for unidimensionality and can identify problems occurring within a dimension. It is not able to assess dimension indications. EFA can assess unidimensionality as well as multidimensional issues. Ahire and Devaraj (2001) suggested using both techniques and starting with EFA.

### 7.5.1 Exploratory Factor Analysis (EFA)

EFA is utilised to assess the reliability of the constructs, including their dimensionality (Hair et al, 2010). This research's results with regard to the univariate analysis showed that kurtosis and skewness values were supported. After that, the principal components method was used for factor extraction with varimax rotation; this was conducted using the SPSS 20 software package. The researcher used the option blank (.40) in order to allow the SPSS program to print only the items that had correlations of .40 and above. Table 7.5.1 shows the reliability analysis for every construct. The factor loadings of all items exceeded 0.6 and the Cronbach  $\alpha$  values were above 0.7 except for the Cronbach's  $\alpha$  of ID, which was 0.543. To get an additional assessment of the quality of the measures, a CFA was also carried out, as explained in the next section.

**Table 7.5.1 Factor Analysis and Reliability Analysis**

Variables and items	Factor loading	Cronbach's $\alpha$
<b>UTAUT</b>		
Performance Expectancy ( PE)		0.73
PE1	0.720	
PE2	0.770	
PE3	0.600	
Effort Expectancy (EE)		0.835
EE2	0.749	
EE3	0.819	
EE4	0.803	
Social Influence (SI)		0.784
SI1	0.871	
SI2	0.871	
SI5	0.758	
Facilitating Conditions (FC)		0.861
FC4	0.813	
FC5	0.862	

<b>Culture</b>		
Uncertainty Avoidance (UA)		0.959
UA1	0.789	
UA2	0.741	
UA3	0.845	
UA4	0.857	
UA5	0.835	
UA6	0.844	
Individualism (ID)		0.543*
ID4	0.804	
ID6	0.757	
<b>Technology Readiness</b>		
Optimism (OPT)		0.825
OPT1	0.698	
OPT2	0.702	
OPT3	0.688	
OPT6	0.742	
OPT8	0.750	
Innovation (INN)		0.875
INN1	0.658	
INN3	0.813	
INN4	0.800	
INN5	0.773	
INN6	0.826	
Discomfort (DIS)		0.744
DIS3	0.655	
DIS4	0.752	
DIS5	0.750	
DIS6	0.742	
Insecurity (INS)		0.762
INS5	0.771	
INS6	0.651	

INS7	0.800	
INS8	0.723	
<b>ECM-IS</b>		
Confirmation (CON)		0.807
CON1	0.712	
CON2	0.829	
CON3	0.619	
Satisfaction (SAT)		0.778
SAT2	0.740	
SAT3	0.663	
Continuance Intention (CI)		0.921
CI2	0.767	
CI3	0.781	
CI4	0.821	

### **7.5.2 Confirmatory Factor Analysis (CFA)**

Structural equation modelling (SEM) is generally used in econometrics, sociology and psychology. The confirmatory procedure is utilised as an alternative to exploratory analysis for causal implications (Bollen, 1989). SEM contains a measurement model reflecting the relationships among the observed measurements, the underlying latent variables and a structural model. It explains causal relationships among latent variables.

CFA was conducted on every dimension using AMOS 20. This procedure examines the measurement model to make sure that each item only loads on its predicted latent variable (Thompson, 2004). In this study, the analysis of CFA consists of two parts as follows.

## **7.6 First Order Model**

Certain indicators should be tested a priori of the researcher reaching the fit model. Therefore, several processes were conducted in order to achieve the aim of the measurement model as follows:

### **7.6.1 Specification**

Model specification involves using all of the relevant available theories, research and information to develop a theoretical model. Thus, before any data collection or analysis takes place, the researcher has to find a specific model that can be confirmed via variance-covariance data. This means that available information is used to decide which variables to include in the theoretical model (which obviously also involves which variables to eliminate) and how these variables are related (Schumacher & Lomax, 2004). This means that the specification for the research model should be built based on the findings and results of previous empirical studies. In this study, for explaining IS post-adoption behaviour, the adopted latent variables were validated as relevant by previous IS studies. They represent the main components of IS users' post-adoption behaviours. This research theorises that the measurement of the model has strong theoretical support in terms of its latent variable relationships and interactions. The variables were derived from Venatakash et al (2003), who identified PE, EE, IS and FC, and Bhattacharjee (2001), who identified confirmation, satisfaction and continuance intention. The cultural variables of uncertainty avoidance and individualism-collectivism were identified by Srite and Karahanna (2006). Finally, TR optimism, innovation, discomfort and insecurity variables were identified by Lin et al (2007) and Parasuraman (2000).

### **7.6.2 Identification**

A statistical model is identified when each parameter has a unique estimate. The available data can estimate one best value for each parameter that has an unknown

value in the model. To get identification of the model, the number of values in the sample matrix (distinct sample moments) must be equal to or more than the number of values in free parameters ( $df \geq 0$ ) (Kline, 2005). Sample moments are accounted by the following equation:

$$= \frac{K(K + 1)}{2}$$

K is the number of observations

In the first order, the model consists of 35 observed variables and error terms, and 12 latent variables. Furthermore, it has 66 covariances among the latent variables. The number of distinct sample moments is 630 or  $[35(35+1)/2]$ . This is more than the free parameters (136), which are the sum of three values: 23 weights, 66 covariances and 47 variances. Therefore, this model is overidentified. This means that it can be estimated.

### **7.6.3 Model Estimation**

The assumptions of multivariate normality and outliers were evaluated. The multivariate normality was evaluated through the use of Mardia's (1970) coefficient. The multivariate of kurtosis is 125.532, which means that data are within the normal distribution range. Moreover, the z-statistic (critical ratio) of 19.925 is highly suggestive of the normality of distribution in the sample (see Appendix D1). However, multivariate outliers were assessed using Mahalanobis distance, which revealed some possible outliers. The researcher attempted to discount these cases so that the multivariate of kurtosis could be decreased, but new cases appeared as other outliers. Therefore, the researcher had to preserve these cases as the fit model was still acceptable.

### **7.6.4 Model Evaluation**

All constructs in the model were evaluated in terms of unidimensionality, convergent validity, average variance extracted and discriminant validity. As

shown in Table 7.6.4, the standardized loading estimates ( $\lambda$ ) of the items are 0.64 and above, which is accepted. Hair et al (2010) recommended that it should exceed 0.5. All the error variances are positive, therefore there are no identification problems relating to negative variances. The critical ratios associated with the factor loadings and their standard errors all exceeded 1.96, which was used as a standard to apply for a 5% significance level in samples using critical values. In addition, Table 7.6.4 below also shows that composite reliability (CR) is higher than the approved limit of 0.7 for all constructs except for the CR of DIS, which is 0.68. Moreover, the average variance extracted (AVE) is actually over the tolerance threshold of 0.5 except for the construct of DIS, which was 0.41 (Hair et al, 2010). Based on these results, the composite reliability and convergent validity were confirmed.

**Table 7.6.4 Loading, Error Variance, Reliability and Validity for First Order**

Items and Constructs	Standardised Loading		Error Variance			CR	AVE
	Loading	Critical Ratio	Error	ES	Critical Ratio		
<b>UTAUT: Performance Expectancy (PE)</b>						0.791	.559
PE1	.786		e45	.10	7.5		
PE2	.782	11.67	e46	.07	7.6		
PE3	.670	10.15	e90	.37	9.5		
<b>UTAUT: Effort Expectancy (EE)</b>						0.838	0.632
EE3	.791		e40	.13	7.9		
EE2	.777	12.32	e41	.15	8.3		
EE4	.817	12.82	e43	.10	7.29		
<b>UTAUT: Social Influence (SI)</b>						0.883	0.719
SI1	.902		e48	.16	5.7		
SI2	.941	20.12	e36	.09	3.52		
SI5	.676	12.84	e39	.40	10.6		
<b>UTAUT: Facilitating Condition (FC)</b>						0.870	0.771
FC4	.960		e91	.091	1.17		
FC5	.788	11.42	e92	.39	6.80		

<b>Culture: Uncertainty Avoidance (UA)</b>						0.875	0.639
UA6	.878		e78	.19	6.5		
UA3	.786	14.8	e81	.27	9.1		
UA5	.834	16.1	e79	.25	8.02		
UA1	.687	12.3	e83	.30	10.14		
<b>Technology Readiness: Optimism (OPT)</b>						0.771	0.530
OPT2	.640		e2	.33	9.47		
OPT6	.785	9.2	e6	.13	6.89		
OPT8	.752	9.12	e8	.15	7.7		
<b>Technology Readiness: Innovativeness (INN)</b>						0.870	0.627
INN3	.775		e31	.43	8.99		
INN4	.751	12.2	e32	.46	9.37		
INN5	.790	13	e33	.35	8.7		
INN6	.849	13.8	e34	.08	3.5		
<b>Technology Readiness: Discomfort (DIS)</b>						<b>0.676</b>	<b>0.413*</b>
DIS6	0.643		e95	.74	8.2		
DIS4	0.715	7	e94	.49	6.4		
DIS3	0.561	6	e93	.74	9.36		
<b>Technology Readiness: Insecurity (INS)</b>						0.772	.542
INS8	0.741		e21	.547	7.40		
INS7	0.900	9.7	e22	.20	2.6		
INS5	0.513	7.7	e24	1.15	10.6		
<b>ECM-IS: Confirmation (CON)</b>						0.744	0.593
CON3	0.713		e54	.30	8.9		
CON2	0.825	11.12	e55	.26	6.18		
SAT						0.779	0.638
SAT3	0.746		e58	.211	8.08		
SAT2	0.864	12.14	e59	.169	6.40		
<b>ECM-IS: Continuance Intention (CI)</b>						0.922	0.798
CI4	0.862		e61	.08	8.91		
CI3	0.867	18.7	e62	.08	8.8		
CI2	0.949	21.4	e63	.03	4.41		

$\lambda$  – standardised loading, ES – estimate, CR – composite reliability, AVE –Average variance extracted

The square roots of AVE were used to assess the discriminant validity (Fornell & Larcker, 1981). These values should be greater than the correlations between this dimension and others in the measurement model. These values are shown in Table 7.6.4 (B) below. All constructs have acceptable discriminant validity, except for CON and SAT. They are the only constructs that have no discriminant validity; however, the researcher decided to keep them because they did not affect the fit of the measurement model. This is consistent with the study of Wu et al (2010).

**Table 7.6.4 (B) Factor Correlation Matrix with Square Roots of AVE**

	FC	OPT	INN	SI	EE	PE	CON	SAT	CI	INSEC	UA	DISC
FC	0.878											
OPT	0.076	0.728										
INN	-0.037	0.519	0.792									
SI	0.282	0.308	0.298	0.848								
EE	0.289	0.239	0.269	0.411	0.795							
PE	0.253	0.384	0.224	0.431	0.597	0.747						
CON	0.573	0.385	0.221	0.356	0.393	0.357	0.770					
SAT	0.530	0.362	0.164	0.345	0.395	0.506	0.816	0.799				
CI	0.282	0.443	0.228	0.358	0.520	0.623	0.489	0.505	0.893			
INSE	0.024	-0.119	-0.012	0.069	0.171	0.153	0.015	0.145	0.141	0.736		
UA	0.089	0.006	-0.157	-0.006	0.111	0.214	0.210	0.218	0.270	0.209	0.799	
DISC	0.121	-0.186	-0.187	-0.111	0.117	0.022	-0.133	0.173	0.025	0.417	0.057	0.643

Finally, the final measurement model was fit. Its indices are within a suitable range:  $\chi^2 = 581.216$ , degrees of freedom (DF) = 494, ( $\chi^2 / DF$ ) = 1.177, goodness-of-fit index (GFI) 0.892, adjusted goodness-of-fit index (AGFI) 0.862, Tucker Lewis index (TLI) = 0.976, comparative fit index (CFI) = 0.980, root mean square error of approximation (RMSEA) = 0.026. See Table 7.6.4 (C) below.

**Table 7.6.4 (C) The Fitting Model**

<b>Fit measure</b>	<b>Accepted fit</b>
$\chi^2$	P < .05
$\chi^2 / df$	Lower limit: 1 Upper limit: 2 or up to 5
GFI	>.90
AGFI	>.80
RMSEA	$\geq .05$ indicates good fit .05 – .08 indicates mediate fit .08 – .10 indicates reasonable fit >.10 indicates poor fit
RMR	$\geq .05$
NFI	>.90
TLI	>.90
CFI	>.90

Adapted from: (Hair et al, 2010)

## **7.7 The Second Order of Measurement Model**

The second-order CFA was performed to confirm that these subdimensions are correlated with the overall dimensions (Hair et al, 2010). The researcher followed the same processes as above to reach the fit measurement model for the second order (see Appendix E1). The measurement model has a suitable fit with the following indices:  $\chi^2 = 339.650$ ,  $DF = 279$ ,  $\chi^2 / DF = 1.217$ ,  $GFI = 0.91$ ,  $AGFI = 0.89$ ,  $TLI = 0.98$ ,  $CFI = 0.983$ ,  $RMSEA = 0.029$  (Appendix E3).

## 7.8 Structural Model

Structural modelling tests were conducted to examine the research hypotheses.

The relationships within the model were empirically examined as follows:

### 7.8.1 Before Testing the Hypotheses: Model Specification and Identification

The model's characteristics are examined in terms of specification, identification, estimation and evaluation before testing the relationships. The model consists of 21 observed variables and 40 unobserved variables, which include 21 error terms, 8 residuals and 11 latent variables. According to the previous literature, these variables are related to IS satisfaction and continuance intention. They are commonly consistent in previous literature and have been validated to form the theoretical bases that explain the IS post-adoption phenomenon. Venkatesh et al (2011) illustrated that users' extent of confirmation has a positive association with the UTAUT's PE, EE, SI and FC perceptions, and these perceptions correlate positively with the TR construct of optimism, innovation, insecurity and discomfort (Claffey & Brady, 2009). In turn, both TR and the UTAUT are related to satisfaction and continuance intention (Claffey & Brady, 2009; Lin et al, 2007; Liljandera et al, 2006). Culture is associated with UTAUT perceptions and with continuance intention as it was theorised to influence IS usage as well as IS perceptions in general (de Man & Van den Toorn, 2002; Srite & Karahanna, 2006).

In terms of the model identification, the number of distinct sample moments is 231 or  $[21(21+1)/2]$ , which was greater than the free parameters (56). It includes 23 weights and 32 variances. Thus, this model is overidentified. Therefore, it can be estimated.

## 7.8.2 Model Estimation

The model was estimated using the ML estimation technique. Multivariate normality and outliers were assessed using Mardia's (1970) coefficient and Mahalanobis, respectively. The multivariate of kurtosis is 88.756 and the z-statistic (critical ratio) is 23.068 (see Appendix F1). Moreover, this model has multivariate outliers. Both issues will affect the Chi-square, which is high. Thus, Chi-square is not a very good fit index in practice under these limitations. Therefore, the researcher used goodness-of-fit (GOF) indices, which take a more practical approach towards the evaluation process.

## 7.8.3 Model Evaluation

The structural model had acceptable fit as the indices are within the thresholds. These indices were  $\chi^2 = 290.856$ ,  $DF = 175$ ,  $\chi^2 / DF = 1.66$ ,  $GFI = 0.91$ ,  $AGFI = .88$ ,  $TLI = .95$ ,  $CFI = 0.96$ ,  $RMSEA = 0.05$  (see Appendix F2). Moreover, the researcher investigated the path coefficients, variances and  $R^2$  of the model as shown in Table 7.8.3. The standardised loading estimates ( $\lambda$ ) for all items exceed 0.5 and are significant. All the error variances are positive, so there is no identification problem related to negative variances (see Appendix F2).

**Table 7.8.3 Path Coefficients, Variances and Squared Multiple Correlations**

Paths		Regression weight		Variance		Squared multiple correlations	
Endogenous Variables	←	Exogenous Variables	$\beta$	P	Error	Es	$R^2$
<b>1. UNIF: UTAUT (UT)</b>							
<b>1.1 Effort expectancy (EE)</b>							
EE		UT	.74	***	res1	.11	.55
EE4		EE	.76		e43	.13	.58
EE2		EE	.75	***	e41	.14	.63

<b>1.2 Performance expectancy (PE)</b>							
PE		UT	.78	***	res2	.07	.61
PE2		PE	.75	***	e46	.08	.56
PE1		PE	.83		e45	.08	.70
<b>1.3 Social influence (SI)</b>							
SI		UT	.52		res3	.51	.27
SI2		SI	.95	***	e36	.08	.90
SI1		SI	.89		e48	.17	.80
<b>2. Technology Readiness (TR)</b>							
<b>2.1 Innovation (INN)</b>							
INN		TR	.49	***	res4	.51	.24
INN6		INN	.84	***	e34	.32	.71
INN5		INN	.79	***	e33	.36	.62
INN4		INN	.76	***	e32	.45	.57
INN3		INN	.78		e31	.43	.61
<b>2.2 Optimism (OPT)</b>							
OPT		TR	.57		res5	.14	.32
OPT8		OPT	.78	***	e8	.13	.62
OPT6		OPT	.77		e6	.14	.60
<b>3. Confirmation (Con)</b>							
Con2		Con	.86	***	e55	.22	.73
Con3		Con	.69		e54	.32	.47
<b>4. Culture: Uncertainty avoidance (UA)</b>							
UA6		UA	.93		e78	.12	.86
UA5		UA	.80	***	e79	.30	.64
<b>5 . Satisfaction (SAT)</b>							
SAT					res7	.07	.75
SAT3		SAT	.75		e58	.22	.56
SAT2		SAT	.82	***	e59	.17	.67
<b>6 . Continuance intention (CI)</b>							
CI					res8	.09	.61
CI4		CI	.86		e61	.08	.74

CI3		CI	.86		e62	.08	.74
CI2		CI	.94	***	e63	.03	.89
β – Standardised regression weight, Es – Estimation							

### 7.8.4 Hypotheses Testing

Table 7.8.4 displays the path coefficients of the research model. The hypothesis results can be divided into two groups, as follows:

**Table 7.8.4 Direct and Indirect Effects**

Paths	Standardised effects		Result
	Standardised estimate	P (Value)	
<b>Direct effects</b>			
H <sub>1</sub> SAT → CI	0.348	0.003	Supported
H <sub>2</sub> CON → SAT	0.624	0.017	Supported
H <sub>3</sub> CON → UT	0.318	0.005	Supported
H <sub>4</sub> UT → SAT	0.537	0.012	Supported
H <sub>6</sub> TR → SAT	-0.279	0.142	Rejected
H <sub>7</sub> TR → CI	0.605	0.002	Supported
H <sub>8</sub> TR → UT	0.730	0.000	Supported
H <sub>10</sub> UA → CI	0.251	0.000	Supported
H <sub>11</sub> UA → UT	0.153	0.077	Rejected
<b>Indirect effects</b>			
H <sub>5</sub> UT → SAT → CI	0.187	0.019	Supported
H <sub>9</sub> TR → UT → SAT	0.392	0.000	Supported
Significant p<0.05			

The path coefficient between SAT and CI is significant at .348 (p<0.003). This was for hypothesis number “one”, which stated (H1): The extent of satisfaction with Internet banking use is positively associated with Internet banking continuance intention.

In addition, the path coefficient between CON and SAT is significant, at .624 ( $p < 0.017$ ). This is related to hypothesis two, which stated (H2): The extent of user's confirmation is positively associated with their satisfaction with Internet banking use.

CON has a significant positive effect on UT ( $\beta = .318, p < 0.005$ ). This is related to hypothesis number three, which stated (H3): The extent of users' confirmation has a positive influence on the UTAUT perceptions of Internet banking use.

UT has a positive effect on SAT ( $\beta = .537, p = 0.012$ ). This reflects the result of hypothesis number four, which stated (H4): Positive UTAUT perceptions have a positive influence on satisfaction with Internet banking use.

There is an insignificant effect of TR on SAT ( $\beta = -.279, p = 0.142$ ). This is related to hypothesis number six, which stated (H6): TR has a positive effect on satisfaction with Internet banking use.

The path from TR to CI is significantly supported ( $\beta = .605, p < 0.002$ ). This is related to hypothesis number seven, which stated (H7): TR has a positive effect on continuance intention to use Internet banking.

Furthermore, TR is positively associated with UT ( $\beta = .730, p < 0.000$ ). This concerns hypothesis number eight, which stated (H8): TR has a positive effect on the UTAUT perceptions of using Internet banking.

UA has a significant impact on CI ( $\beta = .251, p = 0.000$ ). This outcome is related to hypothesis number ten, which stated (H10): Culture has an influence on Internet banking users' continuance intentions. It is worth mentioning here that individualism-collectivism was not retained at the structural model phase and this result concerns the uncertainty avoidance construct only.

UT is insignificantly associated with UA ( $\beta = .153, p = 0.077$ ). This concerns hypothesis number 11, which stated (H11): Culture has an influence on the

UTAUT perceptions of Internet banking use. Again, only the uncertainty avoidance construct survived to the structural phase and represented culture.

The coefficient of determination ( $R^2$ ) for UT (endogenous variable) is 0.66, which means that 66% of the variance in UT is explained by CON and TR and 34% is related to other variables. UT, TR and CON explain 75% of the variance in SAT ( $R^2=0.75$ ).

Hypotheses 1, 2, 3, 4, 7, 8 and 10 are accepted, while Hypotheses 6 and 11 are rejected.

In terms of the indirect effect, due to the insignificant direct effect of TR on SAT, the researcher proposes that UT mediates the relationship between them. The results show that UT plays an important role in supporting the impact of TR on SAT ( $\beta=.392$ ,  $p<0.000$ ). This related to hypothesis number nine, which stated (H9): TR has an indirect positive effect on satisfaction with Internet banking use through its influence on UTAUT perceptions.

Additionally, UT has an indirect effect on CI via SAT ( $\beta=.187$ ,  $p<0.019$ ). This is for hypothesis five, which stated (H5): Positive UTAUT perceptions have an indirect positive influence on continuance intentions regarding Internet banking use, through their influence on satisfaction.

Of the variance in CI, 61% is explained by CON, TR, UT and SAT. As a result, the researcher concluded that hypotheses 5 and 9 can be accepted.

Finally, it is worth mentioning that the indirect relationships within the model can be justified by findings from previous IS studies (i.e. Lin et al, 2007).

## **7.9 Summary**

In this chapter, SEM tests were conducted to examine the proposed research model hypotheses. Various variables representing different IS influences were assessed.

The results showed that four out of 13 tested variables were entirely insignificant, therefore they were removed. The removed variables included the cultural variable of ID, the UTAUT variable of FC and the TR variables of discomfort and insecurity.

In the final model, significant variables included the UTAUT constructs of PE, EE and SI, the cultural variable of UA, the TR variables of optimism and innovativeness and the ECM-IS variables of confirmation, satisfaction and continuance intention. All the relationships between the variables were tested in accordance with the proposed frameworks. All of the hypothesised associations were significant except for two. The implications of these results will be discussed in the next chapter.

## ***Chapter Eight:*** **Discussion of the Results**

### **8.0 Introduction**

This research started with certain objectives. The main objective was to explore customers' usage of Internet banking within Saudi Arabia. Within this, there were specific objectives: to identify models for assessing Internet banking continuance usage behaviour, to develop and test a suitable framework from these models, and to conduct an empirical assessment and evaluations. Further objectives included discussing the implications of the findings for future research and implementation decisions. In connection with these research objectives, three research questions were posed, namely:

- *What are the main factors determining the continued usage behaviour of Internet banking customers within the Saudi Arabian context?*
- *Do users' cultural and psychological traits have any effect on the formation of perceptions and continuance intentions in relation to Internet banking products and services within the Saudi Arabian context?*
- *Are there perceptible trends in Internet banking usage patterns within the Saudi Arabian context and do they affect users' behaviours.*

This chapter, therefore, will discuss the results of data analysis in line with the research objectives and research hypotheses as well as the research questions. The findings will be compared to the previous literature.

### **8.1 Findings in Relation to the Research Objectives and Hypotheses**

This research has generally achieved its overall objectives. In terms of Internet banking usage, the result indicates that Internet banking is still playing an important

role for its users by providing added value and offering a wide range of banking services that allow customers to manage their banking affairs effectively. Customer satisfaction and continued usage intention indicate positive feelings toward Internet banking, including customers' perceptions of performance, ease of use and social compliance (Al-Somali et al, 2009).

The results indicate, within the study context, that individuals are becoming more confident at dealing with SSTs, which makes Internet banking a kind of conventional technology to them. It can be said that this research supports the idea that IS researchers should shift their efforts from investigating how new technology users respond to an e-service, towards investigations of post-adoption behaviour. This shift is the appropriate response to the continued development in the established but changing IS market (Venkatesh et al, 2011).

In academia, this shift has its reflection. The early IS studies tend to build simple models to explain the adoption phenomenon. These models were imported mainly from psychology. They therefore suffer from serious shortcomings in explaining IS post-adoption behaviour, which differs from the initial adoption. It is necessary now to build more sophisticated models by merging TAMs with other disciplines' theories to provide a more comprehensive picture of IS post- adoption behaviour.

This research integration of the UTAUT, TR, ECM-IS and Culture has been successfully validated. This provides the IS literature with a broader picture of the factors that influence customers' post-adoption behaviour and how these factors interact together in one structural model. The statistical analysis reveals that both cognitive processes and psychological traits are influential within the aforementioned models and affect Internet banking continuance intentions. As far as the researcher is concerned, this is the first research to empirically combine these models in the IS post-adoption context. Again, this rectifies these models' reported shortcomings in explaining IS phenomenon when applied individually.

The statistical analysis validates the proposed research model by supporting the vast majority of its hypothesised relationships. The overall explanatory power of

the research model has an R-square of 61% for the intention to continue the use of Internet banking. This is an important improvement in the explanatory power in comparison to other relevant studies. For example, it is much higher than the explanatory power of Bhattacharjee's (2001) ECM-IS – R-square 41% – which this research aimed to extend. The result is also a substantial improvement on the recent study of Sun et al (2011), which showed an R-square of 50%. Although Venkatesh et al (2011) had a slightly higher R-square of 63%, this study accounts for a wider range of antecedents of continuance intention; it also provides evidence backing up their claim that intention to continue may not be fully predicted by the ECT framework. This research found that the direct association between the UTAUT and continuance intention was insignificant. In addition to that, this study uses cross-sectional data, whereas their study was longitudinal.

Overall, in addition to extending ECM-IS's cognitive constructs with UTAUT constructs, merging psychological traits with the extended model for the IS marketing-customer context is strongly supported by this research result. This integration – by adding TR and culture constructs – formulates a new, empirically validated, theoretical perspective for IS post-adoption research.

The structural model shows that individual psychology (TR) has greater importance than collective psychology (culture) in influencing people's cognitive beliefs and affects in relation to Internet banking use. This finding is important because IS scholars have, for a long time, focused on group and national differences as the main subjective factors influencing users' behaviour in relation to IS systems, obviously at the expense of neglecting individual differences.

In terms of the hypotheses and the model relationships, in accordance with previous literature, the SEM analysis shows support for (H1), which states that continuance intention is determined by satisfaction (Limayem & Cheung, 2008; DeLone & McLean, 1992; Brown et al, 2008; Chiu et al, 2007). In ECT, customer repurchases of a product or service are mainly determined by their satisfaction with previous uses of that product or service (Oliver, 1980, 1993; Hsu & Chiu, 2004; Spreng et al, 1996; Patterson et al, 1997). Satisfaction is a variable recommended for use in

technology acceptance studies in order to determine technology users' actual behaviour (Wixom & Todd, 2005; Hermans et al, 2009; Chan et al, 2010). It is important to maintain and enhance satisfaction in order to keep up IS usage and success (Limayem & Cheung, 2008; DeLone & McLean, 1992; Chen, 2010; Chen et al, 2012). The SEM result also supports the opinion that satisfaction and continuance intention, rather than behavioural intention, should be considered in the post-adoption IS context, and possibly some other usage settings (Brown et al, 2008). As far as the researcher is concerned, these results provide unprecedented evidence of how the construct satisfaction influences individuals' intentions in relation to Internet banking use within the Saudi Arabian context. Previous research has applied the traditional TAMs, and they do not measure the satisfaction construct (i.e. Al-Somali et al, 2009). Moreover, H1 significant results show that continuance intention is a reliable construct to be set as a dependent variable in assessing post-adoption beliefs of technology usage. Many recent researches that investigated user responses to technology tended to use that particular construct instead of behavioural intention (Bhattacharjee, 2001; Lee & Kwon, 2011; Venkatesh et al, 2011; Thong et al, 2006).

The relationship between confirmation and satisfaction (H2) was also found to be significant and in line with Oliver's (1980) ECT and Bhattacharjee's ECM-IS (2001). The SEM result shows that confirmation has a strong direct impact on satisfaction with Internet banking use. ECM-IS starts from the presumption that confirmation is an antecedent of satisfaction. Confirmation and satisfaction are positively associated in the context of IS research because confirmation means the realisation of expected benefits from IS use. The positive association between the two is supported by both empirical IS research and industry studies (Venkatesh et al, 2011; Dabholkar et al, 2000; Oliver, 1980; Thong et al, 2006; Bhattacharjee, 2001). Expectation is considered to be the reference level against which confirmation is measured, and high confirmation leads to high satisfaction because it represents the realisation of the user's expected benefits from usage. The significant association between confirmation and satisfaction means that the actual users of Internet banking services within Saudi Arabia get more than they expect from the use of Internet banking services. The items that measure this construct

involve asking respondents whether the service level provided by the Internet banking services is better than they expected, and results show that this is actually the case. Internet banking technologies and platforms are Western in origin, and their use in a different context implies many difficulties. Both banks and their customers may find dealing with Internet banking technologies difficult. In terms of the bank, providing their services using Western-based technology might be a more difficult and risky process than for their Western counterparts. Difficulties for bankers may also include the distance in location of their service providers. This research, however, noted that customers did not suffer from implementation problems. Customers' usage of systems that were designed in different cultures might cause apprehension and confusion because such systems may not take into consideration their cultural and psychological needs. However, the H2 significance provides evidence that these negative factors' effects were minimal.

(H3) proposed that confirmation is positively associated with the UTAUT constructs. Confirmation represents the amount of post-use realised expectations, while post-usage expectations represent ex post perceptions or beliefs regarding PE, EE and SI (Bhattacharjee, 2001; Chen, 2010; Chen et al, 2012). The UTAUT cognitive constructs are some of the most salient beliefs determining acceptance behaviours across a wide range of end-user IS technologies. In the ECM-IS, confirmation of the UTAUT constructs works as the evaluation standard; customers use them to assess performance and to build a confirmation or disconfirmation judgment. The result of the SEM provides additional empirical evidence of the role of confirmation in the cognitive processes behind IS evaluations. Confirmation is a key significant construct influencing the development of post-adoption beliefs. The H3 significant results illustrate how the Saudi banking customers' positive expectations in relation to Internet banking use were enhanced by actual practical experience. Actual experience matters when it comes to evaluating personal perceptions of Internet banking services. People may have positive expectations and the experience proves them unrealistic. The confirmation variable is considered to be the cornerstone of ECT theory. H3 results further confirm the strength of the ECT framework, which can capture people's responses to and perceptions of products and services in actual use in various

settings and different cultures. Bankers can have deeper insights into what actual usage perceptions their systems generate in the users so they can enhance the service level provided.

The relationship between the UTAUT constructs and satisfaction (H4) is positive and significant. Satisfaction is not a part of the original UTAUT. However, measuring satisfaction with UTAUT constructs is part of the ECT customisation to the IS context. In this regard, positive post-adoption perceptions determine the level of satisfaction (Venkatesh et al, 2011). Satisfaction and continuance intentions are both influenced by post-adoption cognitive beliefs (Limayem & Cheung, 2008; DeLone & McLean, 1992; Venkatesh et al, 2011). Previous literature shows the UTAUT cognitive constructs to have a direct influence on continuance intention (Lee, 2010; Venkatesh et al, 2011). Bhattacharjee (2001) posits usefulness as an antecedent of satisfaction and continuance intention. Effort expectancy (EE) and social influence (SI) also affect satisfaction and continuance intentions (Meuter, et al, 2000; Meuter et al, 2005). The Saudi Internet banking users – as shown by H4 – demonstrate clear tendencies of having positive attitudes of satisfaction toward Internet banking usage. As far as this research is concerned, there has not been any work in the previous literature that accounts for the satisfaction construct in such a context. The main objective of this was to investigate the status of users and their use of Internet banking within the Saudi Arabian context. Taking H4 results into consideration, one can conclude that Internet banking customers within this study context are satisfied with what Internet banking services offer them. Such traits suggest that people adapt to technologies provided for them, foreign or not, and make good use of them. However, the result also presents a striking outcome. It reveals that the construct facilitating conditions was not significant. When Venkatesh et al (2003) established the UTAUT, facilitating conditions were validated to influence behavioural use and not behavioural intention. However, the influence facilitating conditions on satisfaction within the ECT applications in the IS context has been established by several studies within the IS (e.g. Venkatesh et al, 2011). Such an outcome requires attention for two reasons: firstly, the other UTAUT constructs have shown significant influence on satisfaction; secondly, facilitating conditions

have been validated to influence IS post-adoption behaviour. One explanation could be that customers get enough help from bankers in their use of the service or the help provided is minimal to the extent that they do not feel that they need it. This interpretation gains more credibility because customers perceive the system to perform as it should, and they perceived it to be easy to use; also the social surroundings are supportive and work in favour of the use.

The result shows that the UTAUT constructs' influence on continuance intentions is fully mediated by the satisfaction construct, so that (H5) is supported. However, this full mediation is in contrast with the ECT and ECM-IS paradigms, which state that post-adoption beliefs have a direct influence on continuance intentions. This provides evidence in favour of Venkatesh et al.'s (2011) notion that post-adoption beliefs' effect on usage continuance intentions could be either fully or partially mediated by the post-usage attitude (e.g. satisfaction), and may vary across contexts and is thus not fully predicted by the ECT framework. Saudis' cognitive perceptions of performance expectancy, effort expectancy and social influence contribute positively to their intentions to maintain the use of Internet banking. However, satisfaction governs this contribution. Satisfaction in the ECT framework replaces attitudes in TRA and TPB. In this research, satisfaction's full mediation between the UTAUT constructs and intentions stresses the importance of satisfaction in explaining how perceptions determine usage decisions. This indicates that the decision-making processes, in relation to Internet banking use, may be comparatively more complicated to Saudis. They could hold beliefs that Internet banking is useful and easy to use, however their perceptions have to change their attitudinal satisfaction first, which in turn influences intentions. In the Saudi context, Al-Gahtani (2003) found "complexity" to be an unimportant factor in explaining users' acceptance of a new technology. However, this research's results validate the role of ease of use in influencing satisfaction and continuance intention. This indicates that there is a change in perceptions among Saudi technology users, which might have been caused by the long-term use of the technology where customers get used to it to the extent that it makes them perceive it as easy to use. Al-Somali et al's study (2009) also found that both usefulness and ease of use influenced intentions.

Turing to (H6), the direct relationship between TR and satisfaction was found to be not significant. This result is inconsistent with some earlier research, such as that of Lin and Hsieh (2006). However, TR has a significant and positive influence on satisfaction via the UTAUT constructs. Therefore, (H9) is supported, and the relationship between TR and satisfaction is significant, but it is fully mediated by the UTAUT constructs. This result has support in the previous literature: Oliver (1997) illustrated that customers' assessments and emotional reactions generate their satisfaction with service. The full mediation by the UTAUT of the relationship between TR and satisfaction represents a combination of cognitive processes (assessment) and psychological traits (emotional reaction). In addition, the lack of a direct impact of TR on satisfaction may be due to the fact that TR concerns general beliefs, whereas satisfaction is a system-specific perception. Thus for TR to influence satisfaction, a customer needs to go through the system-specific learning process and only then can he/she compare his/her actual usage perceptions to their general beliefs. Saudis' personal traits of optimism and innovativeness play a positive role in determining their satisfaction with Internet banking services. Their cognitive processes evidently govern the relationships between the two. This shows that Saudis may have more complicated processes in order to be satisfied with the Internet banking service. Their general positive tendencies toward technology cannot automatically make them satisfied with Internet banking unless they experience positive cognitive processes where they evaluate the service to be useful and easy to use and its use is encouraged by subjective norms. It is worth mentioning that two of the TR constructs (i.e. insecurity and discomfort) were not significant within the research model.

(H7) was supported; TR has a positive direct influence on continuance intention. This is in line with previous IS post-adoption research (Lin & Hsieh, 2006, 2007; Yen, 2005; Liljandera et al, 2006). People with high TR scores have less difficulty in dealing with technology; this answers Liao et al's (2007) suggestion of investigating how certain facilitating mechanisms promote customer retention and continuance intentions. Users with higher TR scores deal with IT more positively (Chen & Li 2010). Optimism and innovativeness are evidently influential attributes on Saudi intention-making processes. The two influence intentions to continue using Internet banking. The two attributes generate a mechanism in which a person

ignores the negative side of technology and concentrates on its benefits. If the person is committed to the use of technology in his general life and at work, this kind of general commitment will influence SST use including Internet banking. In brief, actual users in this research exhibited a “technology readiness” and had positive intentions toward the future use of the service.

For (H8), the SEM tests reveal that TR’s influence on the post-adoption cognitive beliefs of the UTAUT constructs is the strongest influence among the structural model’s significant relationships. This provides solid evidence that an individual’s cognitive processes are influenced by personal desires and computer knowledge (Lin et al, 2007). Therefore, an individual’s mental and psychological processes for valuing technology should be taken into consideration in the voluntary marketing-customer environment. This provides fresh empirical evidence in relation to Claffey and Brady’s (2009) theoretical framework integrating TR into the UTAUT. It also provides additional empirical evidence backing Lin et al’s (2007) study that integrates TR into TAM for marketing-customer studies. ECT customisation in IS post-adoption research means adopting conventional shopping theory to explain technology-based service phenomena, and therefore integrating TR into ECT should equip ECT with the tools needed to account for the new context, that is, additional influences and personal psychological traits that may not have existed in the context where ECT originated. Optimism and innovativeness lead customers to have fewer worries about the negative side of Internet banking. People with these TR tendencies take advantage of their abilities and knowledge in order to gain satisfaction (Liljandera et al, 2006; Walczuch et al, 2007; Matthing et al, 2006; Midgley & Dowling, 1978; Citrin et al, 2000; Lüthje, 2004). Saudis’ perceptions of Internet banking usage are strongly influenced by their general beliefs about technology. Technology readiness sets a psychological reference, which customers recall and employ during their actual use of Internet banking. Saudi customers seem to employ the positive experiences very effectively to judge the Internet banking system. Previous knowledge and experiences with technology increase the Saudi customers’ perceptions of PE, EE and SI.

For (H10 and H11), the relationship between the cultural dimension of UA and the UTAUT constructs was rejected, whereas UA's relationship with continuance intention was found to be positive and significant. UA is supposed to undermine the use of technology. However, this research has shown it to have a positive influence. Spector and Cooper (2002) censured Hofstede's scales for their weak internal consistency and reliability. They argued that the scale should be used with caution because it does not measure one consistent dimension. Some researchers are opposed to representing national culture using certain kinds of scores on specific constructs (Walsham, 2002; Hoft, 1996; Korpela, 1996). Nevertheless, although a culture of UA is found to have a positive influence on continuance intention, this reveals the dynamic nature of both culture and technology perception (Hofstede et al, 2010). UA has an influence and it would be more meaningful if this research were to conduct similar tests in a different cultural context and compare the results to these results. In addition, these results can be interpreted from the angle of considering UA as representing individual personality differences (Srite & Karahanna, 2006). In this case, a customer's continuance intention to use Internet banking is influenced by each individual UA tendency. In all cases, this research's relatively small sample size may have lowered the analytical reliability and interrupted the significant influence of cultural dimensions because Hofstede's dimensions originated in national-level comparison settings. Moreover, these research results regarding culture can be interpreted by the possibility that culture influence on technology post-adoption behaviour differs from its influence on technology acceptance behaviour. Previous literature has shown culture to include affects whereby Arabic people's likeliness to use technology is negatively influenced by UA. However, Saudis may have devolved a mechanism in which they ignore their uncertainty feelings and employ them to explore the Internet banking system more. This kind of mechanism could have been developed as a result of long-time use of Internet banking where they learnt that using the unknown new services of Internet banking has always been rewarding to them.

## 8.2 Findings in Relation to the Research Questions

### 8.2.1 First Question

In terms of the research questions, the first question in this research was: “what are the main factors determining the continued usage behaviour within the Saudi Arabian Internet banking customers’ context?” Taking the results presented above into account, this research reveals that the main factors that determine Saudi customers’ continued usage of Internet banking services are a combination of cognitive processes and psychological traits. Customers’ beliefs that Internet banking can help them improve their management of personal finances, enhance productivity and effectiveness and is generally useful are important drivers for maintaining the use of Internet banking.

Expectations about performance, within Internet banking studies, have been emphasised to be one of the most critical factors in predicting customers’ intentions. Performance expectancy corresponds to usefulness in the TAM and it has been part of technology acceptance models for a long time.

ECM-IS implies that perceived usefulness is a result of evaluating information systems features and this evaluation leads to satisfaction, which in turn affects continuance intention (Bhattacharjee, 2001). Within the online banking context, Bhattacharjee (2001) placed the usefulness construct within a broader structure of post-adoption beliefs. It was set within that structure as a replacement for performance in the original ECT.

In the Saudi Arabian Internet banking context, Al-Sajjan and Dennis (2010) represented the findings of Davis et al (1989). They jointly noted that an intention to improve performance will overcome and dominate negative feelings about the task itself. In contrast, these research findings emphasise the important role of positive feelings represented by satisfaction. It is possible that during the learning to use Internet banking process early success produces feelings of satisfaction that influence feelings about the task itself, which affect intention to continue usage. Al-Sajjan and Dennis (2010) did not account for satisfaction in their study, and therefore their findings are not confirmed within the Saudi Arabian context.

Positive feelings are evidently important to Saudi Arabian Internet banking customers to the extent that they fully mediated the influence of performance expectancy on continuance intention (as part of the UTAUT perceptions).

On the other hand, being useful in managing finances is not the only reason for continued usage intentions. The Saudi Arabian banking customers, within this study context, put substantial emphasis on effort calculations; they use the service because it is understandable, clear and easy to use. The above drivers of use are system-specific self-reporting factors perceived by the users as a result of their interaction with the Internet banking systems. Banks can improve customers' perceptions in relation to the above factors because they are system-specific and relate directly to the service level provided.

Perceived ease of use was reported to associate strongly with satisfaction (Thong et al, 2006). Its role in measuring the extent to which customers feel at ease and comfortable when learning to use IS systems and Internet banking in particular has been emphasised as one of the important issues within technology acceptance studies. In the Saudi Arabian Internet banking context, Al-Sajjan and Dennis (2010) stated that usefulness and ease-of-use perceptions are influenced by external motivations, such as Web quality, experience and the richness of information. The importance of effort expectancy relates to the experience of usability. Skill improvement at using the facilities can enhance feelings of being at ease when using Internet banking systems. Within the Internet banking context in Egypt, El-Kasheir et al (2009) found ease of use to be a strong predictor of continuance intentions. Although their study was conducted to measure the antecedents to continuance intentions (a post-adoption context), a satisfaction construct was not included in their study either.

One of the main aims of this study has been achieved. A comprehensive theoretically backed framework, which did not ignore such an important construct as satisfaction, has been validated. Satisfaction is evidently very important as a factor in determining usage behaviour, and it fully mediated the effort expectancy influence on continuance intentions in the present study.

One important perception that drives Saudi customers to maintain Internet banking use that banks cannot fully influence is social pressure. Saudis are evidently affected by what other important people think of them if they use Internet banking systems in managing personal finances. Relatives, friends and work colleagues may contribute to increased Internet banking use. Such people may be beyond the bank's control because it is difficult to communicate with such people in regard to marketing the services to customers. However, social influences include people in the bank, such as managers and employees. This research shows that if these people appear to be supportive and in favour of Internet banking use, this will affect customers' likelihood of using the systems.

Ghalandari (2012) also validated the role of social influence in determining intentions within the Iranian e-banking context. This research concerns usage intentions within a similar culture but in a different context (post-adoption). Social role validation within the Internet banking post-adoption context is important. Most previous researchers have tested its role in the acceptance domain. The importance of validating the role of performance expectancy, effort expectancy and social influence within this study context also derives from the fact that these factors were established within a Western context.

Internet banking systems in Saudi Arabia are based on foreign technology and despite this reality the application of the service in Saudi Arabia has been remarkably successful. Implementing a technology outside the country of its origin might have caused more difficulties to bankers and customers. The implementation problems for the bankers can include the distant locations of their providers, and technical, linguistic, logistic and cost problems. Problems for the users include unfamiliarity with the design, and language and cultural barriers. However, Saudis are contented with the service and its use. They overcome these obstacles, and they do feel that banks provide them with a worthy and good level of Internet banking services. Banks should make the maximum use of such a positive outcome by enhancing their positive feelings and satisfaction. If the banks believe that they are providing adequate and satisfying Internet banking services to the users, these beliefs are reflected by positive usefulness, ease and social influence, which are the perceptions found to be held by customers in this research. Satisfying customers is

important in the changing competitive market. Banks should keep customers updated with the new resources provided to them by the system. They should also intensify publicity and marketing campaigns because they undoubtedly need to communicate more about their Internet banking services to customers.

### **8.2.2 Second Question**

The second question this research posed was: “do users’ cultural and psychological traits have any effect on the formation of perceptions and continuance intentions in relation to Internet banking products and services within the Saudi Arabian context?”

This research found that customers’ Internet banking cognitive processes are influenced by psychological tendencies toward technology. Psychological traits also influence customers’ actual use intentions and satisfaction.

In terms of TR tendencies, this research found that users’ optimism and innovativeness characteristics have very strong effects on customers’ cognitive and perception processes in relation to Internet banking use. The research model shows that the influence of TRI on the UTAUT has the strongest effect among the research variables. Optimists believe in the use of technology and think that technology can make their lives more efficient and rewarding, which makes their perceptions of Internet banking very positive.

In addition, customers within this study context, whose mental positions tend to be generally innovative in relation to the use of technology, also have strong positive perceptions of the performance and ease of Internet banking, and they feel that the social context supports their use of Internet banking. Being innovative from an IS perspective describes people who like to be pioneers in technology use, and like to be referred to as leaders in adopting and knowing how to deal with new technology. This provides them with enhanced standing in their social group.

A look back at the literature reveals that personal psychological tendencies within the Internet banking context are validated to influence perceptions. Yousafzai and Yani-de-Soriano (2011) integrated technology readiness to moderate the associations between cognitive perceptions and intentions. They found that people with higher optimism and innovativeness inclinations have stronger usefulness perceptions and higher intentional behaviour. This research validated the role of TR in a post-adoption context within the Saudi Arabian banking business-to-customer domain. As far as this research is concerned, it is unprecedented to account for these factors within that context.

Accounting for the effect of technology readiness on post-adoption behaviour has useful implications. Academics and practitioners alike can now make inferences on the important role of psychology in behaviour within the Saudi Arabian Internet banking context. This area of research shows promising outcomes. It validates the importance of such factors and opens the door for further investigations.

In terms of culture, at national collective level and at the level of personal traits, uncertainty avoidance has unexpectedly influenced actual use intentions positively. Previous literature shows uncertainty avoidance to have a negative role in technology adoption and acceptance. This current result indicates that, while culture is an important player in people's adoption and acceptance of technology, its role in influencing the actual users' decisions and perceptions may differ. This may also indicate the changing nature of culture where people could shift their values and beliefs as a result of the effect of modernisation and the communication revolution. Actual users may feel enthusiastic about their gained experience from using Internet banking. They achieve this when they overcome their fears by pushing themselves to use the system and explore its features more and more to reduce uncertainty. Knowing the main features of the system, they could force themselves to use it more widely and more frequently because they have gained a feeling of reward from using it as well as social acceptance. The points outlined above support Uncertainty Reduction Theory. People have uncertainties attached to how they perceive unfamiliar situations, of which technological change is a frequent source, but this can be overcome as this research has shown.

These research results propose that UA influences UTAUT perceptions and continuance intention positively. The Internet banking system is a kind of captive IS for people who have already adopted it, and people with high UA (such as in Saudi Arabia) were found to be proactive in handling unavoidable changes and to be adaptive when facing inevitable risks (Baker & Carson, 2011). And while uncertainty might have undermined the Internet banking adoption process, it may benefit the post adopters who are expected to attach themselves to the service. Schneider and DeMeyer (1991) illustrated that while uncertainty avoidance scores remain the same, cultural preferences to respond to uncertainty are different. Individuals may reduce feelings of uncertainty by adapting to their environment, which implies having achievement orientation. Such people realise opportunities for meaningful change (Bateman & Crant, 1993).

### **8.2.3 Third Question**

The third question of this research, which was “are there perceptible trends in Internet banking usage patterns in Saudi Arabia and do they affect users’ behaviours?”, has been answered by the nature and direction of the relationship between the constructs. The research affirms that there seem to be perceptible patterns distinct to the Saudi customer’s use of Internet banking. Saudis’ cognitive process (i.e. PE, EE and SI) influence on Internet banking usage intentions is fully mediated by satisfaction. Such mediation indicates that the Saudis’ intention-making processes are relatively more sophisticated because the ECT framework suggests a direct relationship between cognitive processes and intentions. The full mediation of satisfaction in this regard illustrates the important role it plays on the customers’ behaviours within the Internet banking context in Saudi Arabia.

In addition, Saudi customers’ psychological trait (i.e. innovativeness and optimism) influence on satisfaction is also fully mediated by their cognitive beliefs (i.e. UTAUT constructs). This illustrates the important role the UTAUT constructs play in guiding customers’ general tendency influence on satisfaction. The UTAUT constructs therefore have additional importance in all the processes of

Internet banking behaviour within the Saudi context. Previous research found technology readiness to have a direct influence on satisfaction.

A more perceptible pattern was found for Saudi Internet banking users. Their personal psychological traits have a very strong influence on their cognitive processes. This pattern can be found in previous literature. However, it has more importance in this research because of the fact that the TR influence on the UTAUT constructs was the strongest among the factors tested in the research model. One can conclude that the Saudi cognitive perception formation processes in relation to Internet banking is greatly influenced by their general tendencies toward technology.

### **8.3 Summary**

This chapter discussed the results of this research in line with the research objectives, hypotheses and questions. In terms of the research objectives, this research has achieved all of them. The first objective was to explore the status of actual Internet banking customers in Saudi Arabia; the research reveals satisfied customers with positive perceptions and intentions. Objectives include identifying models for assessing Internet banking and developing a suitable framework for these models; these two objectives were achieved with the successful combination of four of the well-established IS theories (i.e. UTAUT, TR, ECT and Culture) in testing Internet banking use in Saudi Arabia. The final objective was to conduct empirical assessments and evaluations of a suitable research model; this objective was achieved by conducting successful statistical evaluations of the model proposed in the current study. Again, this theoretically backed integrated model combined four of the well-established IS theories in one structural model.

In terms of the hypothesised relationships within the research model, this research built a new framework by combining cognitive perception variables with psychological tendency variables to determine satisfaction and continuance intention of Internet banking in Saudi Arabia. The vast majority of hypothesised relationships were significant and the new framework was statistically valid.

This research has successfully answered the questions that were set to be investigated. The first question was about the factors that determine the continued usage of Internet banking services by customers in Saudi Arabia. As discussed earlier, these factors are a combination of cognitive perceptions (i.e. UTAUT constructs) and psychological traits (i.e. TR constructs). The second question was about the effect of cultural and psychological traits and their role in the formation of perceptions and continuance intentions. The answer was that psychological traits have a comparatively very strong influence on the formation of perceptions in relation to Internet banking use in Saudi Arabia. They also have a direct effect on continuance intentions. The last question was whether there were perceptible trends in Internet banking usage patterns in Saudi Arabia and whether they affected users' behaviours. The answer was yes. The Saudi banking customers' psychological trait influence on satisfaction was fully mediated by their system-specific cognitive beliefs. In addition, uncertainty avoidance positively influenced continuance intentions. Finally, Saudis' perceptions of Internet banking are strongly influenced by their psychological tendencies.

## ***Chapter Nine:*** **Conclusions**

### **9.0 Introduction**

This chapter draws together the research conclusions. Having presented the research results and discussed its findings, some unique patterns and outcomes emerged. These patterns can be beneficial for academic researchers and industry practitioners. This chapter will discuss the implications of this research and then present some recommendations for further work. Stakeholders and interested parties include the research community, government policymakers, bankers and Internet banking customers.

### **9.1 Theoretical Contributions to the Knowledge**

This research forms an important contribution to knowledge by integrating well-established theories: ECM-IS, TR, UTAUT and 'Culture'. These were applied and tested as explanatory and predictive devices for explaining IS post-adoption behaviour. Theoretically, despite their importance, the theories integrated into the current research models have not been previously integrated for use in predicting IS post-adoption behaviour. Venkatesh et al (2003) noted that research in understanding user acceptance of new technology has resulted in several theoretical models with roots in information systems, psychology and sociology.

This research has successfully accounted for a wide range of influences, including cognitive processes, psychological tendencies and environmental factors. These have been accounted for in the context of IS post-adoption behaviour. This research managed to contextualise these factors, modelling cause-and-effect relationships that were validated as useful for predicting Internet banking post-adoption behaviour.

Merging these factors in one structural model provided very useful insights into their interactions in the process of predicting behaviour. It additionally categorised these factors in terms of their importance and magnitude. These insights may stimulate work in other fields of mass communication technology use.

Although strong theoretical justifications were presented for the integration of the theories that underpinned the structural model, the present study also contributes to knowledge by achieving high explanatory power for the satisfaction and continuance intention variables within the Saudi Arabian Internet banking context.

The achievement of high explanatory power for the phenomena under study is important in several ways. First, it provides additional emphasis on the validity and value of this research model. Secondly, it validates the integration of theories that were incorporated within the model. Thirdly, high explanatory power is important to this research because previous Internet banking studies produced findings showing lower effects outside Western contexts. Al-Qeisi (2009) implemented an extended version of the UTAUT in Jordan and the UK and found the explanatory power of the extended UTAUT to be higher in the UK than in Jordan. Im et al (2011) compared American and South Korean Internet banking users' perceptions using the UTAUT, and found that there was a greater influence of effort expectancy on behavioural intentions in the USA. They also found the influence of behavioural intentions on behavioural use to be higher among American customers.

In addition, relating the outcome of this research to its objectives made it clear that the research has contributed to knowledge by achieving all the preset objectives within the Saudi Arabian context. For the first and second objectives, the framework developed and then validated in this study consists, as stated earlier, of well-established theories whose applicability in the Saudi context was confirmed. The SEM tests conducted evaluated the proposed research model positively. The implications of the findings are thoroughly covered in the discussion and conclusions chapters.

Although the validity of the theoretical contribution of this research was tested in the Saudi Arabian Internet banking context, it is applicable far beyond this

geographical and contextual domain. It can be implemented in different countries for use in studying any self-service mass communication technology.

This study makes a noteworthy contribution to the IS field in several ways. The main valuable contribution of this study is in modifying ECT to account for individuals' psychological traits regarding the use of technology-based services in an IS post-adoption context. This creates a new theoretical perspective on that context by validating the integration of TR with ECT. In addition, this study contributes to the knowledge by combining three of the well-established IS models, namely the ECM-IS of Bhattacharjee (2001), the UTAUT of Venkatesh et al (2003) and the TR of Parasuraman (2000), in order to determine the continuance intentions of actual Internet banking customers.

Previous literature is also extended through the incorporation of more cognitive predictors, from the UTAUT constructs to ECT beliefs, in order to broaden the understanding of the learning process that leads to IS system usage (Venkatesh et al, 2011). This research offers a strong theoretical contribution by giving deeper insights into how different factors and perspectives on cognitive behaviour, psychology, computer knowledge, attitudes and affects interact in one structural model to explain the IS post-adoption phenomenon. This research adds to the IS continuance context of business-to-customer internet banking. Familiarity and personal tendencies toward technology were found to be key determinants in the specific context of Internet banking post-adoption behaviour.

In addition, the structural model shows how the collective psychology of culture represented by Hofstede's cultural dimension UA interacts with the other factors in the model. A wider range of factors that influence IS behaviour are incorporated, and their integration and interaction are validated. Thus, together, they form a theoretical perspective that can be used and developed by IS researchers in future. The results of this research have rectified the imbalance resulting from introducing ECT from the shopping literature into IS studies without considering its limitations in the new context. Although ECT provides good insights into IS continuance, post-adoption behaviour may be additionally explained beyond the ECT

framework (Venkatesh et al, 2011). The IS study domain has its own characteristics, and introducing models of other disciplines should not be simplified to the extent seen in Bhattacharjee's (2001) ECM-IS. In the same manner, the UTAUT originated in a specific context – the IS organisational context – and using its cognitive constructs to expand ECT's post-adoption beliefs requires their limitations to be addressed. The main contribution of this research is succeeding in re-evaluating ECT's customisations in the context of technology-based services. It also addresses the limitations of these customisations by incorporating TR constructs.

The UTAUT, TR and ECT are well-established models in the IS literature. Their predictive abilities have been further confirmed by this research. Individually, these models have reported shortcomings in explaining IS customer marketing phenomena (Lin et al, 2007; Pu Li & Kishore, 2006; Reunis et al, 2006). This research has addressed these here by theoretically and statistically validating their integration into one model.

One important theoretical contribution is that this research has results that show that individual differences are of great importance. IS researchers have, for too long, focused on group differences and culture in IS system design, especially in the systems of e-commerce and mass services. It is time to consider individual differences in such systems. Such perspectives should be given more consideration in future research. In this research, it is noticeable that the TR index shows conflicting indications regarding users' insecurity feelings. The TR constructs of insecurity and feeling uncomfortable were not significant. Feelings of security and trust have often been associated with long-term use and familiarity in the sociology, psychology and IS arenas (Carter & Ghorbani, 2003). People's security concerns will be reduced over time by actual use experience (Koufaris & Hampton-Sosa, 2002; Wang & Emurian, 2005). The conflicting responses with regard to insecurity reveal that, while some users' feelings of security increase over time, others may retain their security concerns but develop a psychological mechanism for ignoring their fears and do not take them into account when judging their actual use perceptions.

## **9.2 Practical Implications**

### **9.2.1 Practical Implications for Bankers**

This research has several implementations for practice. It reveals a number of influences that could have a role in determining IS post-adoption behaviour. In this regard, psychological traits are key in influencing the processes of cognitive perceptions that influence the intention to continue using Internet banking technology. One important practical implication is that bankers and service providers could give more consideration to individual-level psychological differences.

Cultural differences have long been under the spotlight of IS researchers as a means of explaining variations in people's responses to IT systems (Leidner & Kayworth, 2006; Kummer et al, 2012). The influence of culture on IS acceptance has been studied intensively. However, based on the outcome of this research, it is time to pay more attention to the influence of individual-level differences along with group- or national-level ones. Little attention has been paid by IS researchers in the past to investigating how to respond to the fact that every Internet banking user has different psychological needs and that the cognitive process of each individual is to an extent determined by his or her psychological tendencies.

One important managerial implication of the above is that bankers could customise their services, web design, web pages' content and website functions to suit different individual requirements. Different customers have different cognitive capabilities and bank managers should address that by customising their systems to accommodate different individual wants and orientations. For example, depending on customers' desires, bankers could give their customers the choice to add or cancel some of the Internet services from the websites.

Moreover, bankers could make it easier for users to access their accounts online and require less information from them as some customers have psychological barriers that make them perceive technology usage as difficult and not worth trying. Such feelings can negatively influence users' continuance intentions. (Parasuraman, 2000).

In addition, bankers' efforts could be directed towards building optional-based website contents. In such websites, users could have a choice of colours and control over the content displayed so that they could adjust their Internet banking to suit their purpose. They could also be provided with the option of limiting the facilities to exclude third-party transactions such as setting up direct debts or paying bills, which not all users want. Special facilities for certain transactions with specific service providers acknowledged and agreed upon in advance could be provided.

Banks should not request sensitive information for access, such as name or date of birth, because revealing such information frequently makes users uncomfortable (Parasuraman, 2000).

Internet banking providers could pay more attention to reassuring customers, by applying more information protection and support policies to strengthen users' positive feelings. Effort could be directed towards making customers feel supported by a human presence (Suki, 2010). Customers could also be targeted by training and information on how to enhance their experience with the services and how to enjoy using different options provided (Nasri, 2011).

Customers' negative perceptions toward using Internet banking are sometimes based on imaginary and unrealistic obstacles or a bad prior or current experience. Therefore, banks could direct their efforts to inform customers of new system promotions, new services and the benefits of using the systems in the long term.

Pikkarainen et al (2004) stressed that it is important for banks to direct their efforts towards marketing informative issues relating to their Internet banking.

Bank managers can make use of the findings from this research in terms of the validated influence of social pressure. This research found that social influence is one of the determining factors of continuance behaviours. Al-Sajjan and Dennis (2010) posit that behaviour within the Internet banking context can be indirectly influenced by people who might not be users such as important others, and bankers should include those as targets in their marketing efforts.

Promoting the service with more features, functions and choices can enhance performance expectancy amongst customers. Banks should initiate marketing campaigns to increase awareness that widen the base of existing and expected customers (Eze et al, 2011). Targeting customers by education minimises complaints. Helping them to understand the features of the system will increase their confidence. Providing simple clear ways of handling potential problems is a very good policy because it prevents dissatisfaction from setting in. A one-to-one support system within the bank branches can increase the confidence of the customers. This also increases bank-customer connectivity by expanding personal relationships. This can be done via email, telephone or by having practice machines in the branches with face-to-face support.

All of the above suggestions will improve performance expectancy, effort expectancy and social influence, which are important predictors of satisfaction and continuance intentions.

This study reveals that customers usually want the benefits of Internet banking. However, their previous experience and personal tendencies toward technology are likely to encourage or discourage their acceptance, which in turn influences their satisfaction. Therefore, IS continuance intentions based on real experience could be gained through actual use, and training may decrease individuals' undesirable propensities and generate positive perceptions (Venkatesh, 1999).

### **9.2.2 Practical Implications for Policymakers**

One important practical implication is the one that concerns policymakers. For those, there are general and contextual implications for practice. The general implications emerge from the influences that represent the core variables of TAMs. These variables provide explanations for the reasons why customers have positive or negative perceptions of an information system. These factors are universal, to an extent, because they have been validated repeatedly by research conducted in various places. This research has replicated their explanatory abilities in Saudi Arabia. Thus, it is the task of policymakers within the Saudi Arabian financial sector to make sure that they make full use of these research outcomes. This can be done strategically. Making appropriate plans to enhance customers' experience with Internet banking will involve improving support for customers to generate positive usage habits.

Policymakers could concentrate their efforts on enriching customers' experience with Internet banking use by providing the necessary legal frameworks. This step will stimulate system providers to improve technical infrastructures and platforms.

Developing a system of incentives and penalties for banks with regard to their Internet banking policies and practices will help to facilitate development in this field. Integration between banks and the commercial logistics sectors to ensure the efficiency of Internet banking product delivery will benefit Internet banking customers. For example, secure and fast delivery of chequebooks and credit cards is very important to customers.

Policymakers could encourage banks and customers to jointly participate in the advancement of Internet banking practices. They could also provide fiscal and legal advantages to financial institutions who are prepared to invest in the rapidly developing technological financial innovations and to update their systems with state-of-the-art technologies.

This research has illustrated in the first chapter that Saudi Arabian government policy towards Internet usage in the private sector has progressed. Firstly, having had reservations about it, they moved cautiously by applying and building filtering infrastructures. With growing confidence, they showed a very relaxed policy and now they are positively supportive and are clearly in favour of Internet use in the private sector. These developments will bring benefits in improving the business environment and helping economic growth.

In terms of the particular patterns that appeared in this research, the respondents showed psychological traits (TR) that strongly influenced their cognitive processes (UTAUT perceptions) in relation to Internet banking use. Thus, it is evident that that their learning processes in relation to Internet banking use and perceptions generated during the process can be attributed largely to their psychological tendencies.

Policymakers could implement certain useful practices to address these findings. They could pay more attention to these tendencies by adopting policies that encourage banks to consider individual differences when designing their services and by offering unstandardised services. Optional interface facilities to suit different individual traits could be advantageous. For example, simpler functions might suit individuals with less innovativeness and less optimism. Functional independence between facilities may simplify the interface and reduce the likelihood of users being overwhelmed.

Certain functions could be offered in different layouts and colours to accommodate different needs. Policymakers should encourage and facilitate such development within the banks. The complexity of offering banking facilities online can include sophisticated complex interfaces with many related options or simpler, easier, restricted domains, subsystems for people who prefer minimal use of the system.

Moreover, this study indicates that respondents' personal psychological tendencies toward technology do not affect their satisfaction with Internet banking services directly. In fact, the cognitive processes fully mediate the association between the

two. It is particularly important to know that strong positive tendencies in customers towards technology in general cannot solely generate feelings of fulfilment. As stated earlier, Oliver (1981) noted that psychology and cognitive process work jointly to predict satisfaction. Therefore, decision makers within the financial sector can be mindful of this when considering strategies for developing a healthy Internet banking sector.

System-specific experiences would intervene strongly between personalities and satisfaction feelings. Thus, in order to appeal to individuals' positive feelings, specific functions and patterns within the Internet systems should be adjusted, promoted and developed. Customers' positive feelings can be enhanced via better interfaces for Internet banking services.

Further research profiling types of customers might inform the design of better interfaces. Segmenting Internet banking customers dependent upon their usage may assist in cross selling and financial advisory services being developed as optional extras attached to Internet banking systems.

This research showed the disparate income segments among Internet banking customers. This income disparity shows that research into the possibility of market segmentation for Internet banking services might be productive and profitable. This can lower investment risk by focusing research, design and piloting on segments that have more money and more interest in a wider range of facilities. Simpler, less innovative, less costly systems can perfectly adequately cater for mass banking needs.

As Internet banking use can be an emotive matter, customers' loyalty in the mass market area can be significantly enhanced by providing well-supported and carefully implemented Internet banking facilities. This is an important issue per se, because it might add value to customers' lives and enhance their self-assurance with banking.

As a large segment of the Saudi Arabian Internet banking customers are government employees, they can be targeted by marketing campaigns at their workplaces to encourage them to use more facilities (e.g. Eze et al, 2011).

One important practical implication of the results of this research is that managers and IS providers should balance their customisation of Internet banking between the need to address individual differences and the need to retain highly secured data transfer.

Additionally, individuals within cultures that instil high uncertainty patterns prefer more support information, and in iconic format rather than textual. Uncertainty avoidance was a valid influence within this research model. Minimising complexity reduces uncertainty. Human support and word of mouth as well as peer-to-peer marketing will all help to address feelings of uncertainty within the customer base.

### **9.3 Limitations and Future Research**

One weakness of this research is that the sample size is relatively small; it might have been useful to increase the number of respondents as cultural variables are sensitive to sample size and their reliability increases with an increasing number of respondents. Hofstede's cultural dimensions were built upon large-scale multinational samples. Therefore, applying them to one small segment of respondents may reduce their reliability.

The second limitation is that this research uses a relatively old instrument. The aim was to explore how integrating TR into the ECM-IS – the basis for the subsequent use of ECM in IS – would improve its productive ability. This research has achieved a significant improvement. However, developing newer instruments may improve things still further.

The third limitation is that this research has a methodological limitation in terms of using a cross-sectional method when post-adoption behaviour is dynamic. Both cognitive processes and attitudes change over time and such changes cannot be

reported using the cross-sectional research method. Longitudinal research could assess individuals' usage behaviours at different times as their experience with the system increases. Although there are some studies that have used longitudinal methods to measure changes in users' cognitive beliefs, attitude and psychological traits over extended periods of time, it might be interesting to explore this issue further in future research.

ECT originated in a shopping literature context. Although adapting ECT to the IS context did not involve a fundamental change to the original theory, further explanations of IS post-adoption phenomena can be gained from outside the ECT framework (Venkatesh et al, 2011). Taking what has been achieved in this research into consideration, future studies may investigate how to account for two different processes, evaluating the means of service delivery, that is technology, and evaluating the real products or services, which is a separate process that starts, goes on and ends before and after ECT evaluation processes take place. Applying ECT in an IS context therefore requires further investigation so as to catch all of the influences that might not have been salient in IS research so far.

This research omitted four of the UTAUT moderators – age, gender, experience and voluntariness. Although this omission is justified and is in line with the previous literature, it would be interesting to fit these moderators into the ECT framework.

TAMs measure actual usage, and future work on ECT in the IS context should measure actual usage so as to explore how continuance intentions are associated with actual usage. In addition, some of the TAMs' constructs (e.g. the UTAUT's facilitating conditions and TPB's perceived control) are not theorised to influence intentions but actual usage, in the IS context. Therefore, it is important to include actual use in the ECT framework in the IS context in order to fully consider the TAM framework that has been validated so extensively in the literature, and come up with a balanced integration between the TAM and ECT frameworks. While many studies have compared TAMs across cultures, ECT has not yet been examined to measure how it is influenced by environmental factors such as culture. In addition, the influence on ECT perceptions of education, income or demographics in general could be a good area for future research to explore.

One limitation of this research is its context of application. In Saudi Arabia, online banking services are not mature enough to be compared to the West. As far as this research is concerned, if banking customers are to access their Internet banking accounts using mobile phones, they will deal with the same interfaces and layers, which were originally designed for laptops and personal computers. In other words, the mobile Internet services are not widely offered by Saudi banks. Mobile banking systems are well established and widely used in the developed countries. Therefore, this research measurement might produce different outcomes if applied in different countries. For example, users' evaluations of Internet banking in England would take mobile banking into the evaluation equation. They may think mobile banking is more useful and easier to use, which may undermine their perceptions of Internet banking compared to the Saudi customers.

#### **9.4 Recommendations**

Several parties can benefit from the findings of this research. These include bankers, government policymakers, consumer protection associations and Internet banking users themselves.

In terms of the bankers, although this research indicates that customers are satisfied, bankers could capitalise upon the factors that have made their Internet banking services successful. They should not take the current successful indications for granted. The customers' feelings of usefulness, personal controllability and efficiency in managing finances using Internet banking could be continually enhanced by providing them with more tools and facilities. Examples might include information-extracting facilities and extra services offered online.

The banking sector is very competitive, thus service improvements can stem customer attrition rates. On the other hand, customers' dependency on online services is largely growing, and switching to other providers is a cheap option for them: it involves minimal cost and minimal risk (if any). Banks therefore should not underestimate the importance of seemingly small issues in Internet banking

service provision. Even minor adjustments, if guided by sound research, may maintain and even improve customer satisfaction and retention.

Internet banking managers should pursue policies that enhance their website. The quality of informative content on websites matters because many customers might be reluctant users of new facilities. Such care will enhance usefulness and ease of use. The potential of Internet banking should not be undermined. The resources allocated to development departments should be targeted to improve Internet banking facilities.

Making the systems more easily accessible and speeding up the responses to online requests contribute to customers' feelings of ease of use. They also support customers by creating a psychological mechanism in which they feel they are skilful and their use of the system is stress-free. Such psychological states, if established, can lead to positive intentions in relation to the use of services.

The banks could make more effort to enhance the positive aspects of their services by intensifying bank employee involvement. This support helps customers to continue to adapt to changes and the improvements in the Internet banking service. As stated earlier, finding alternatives for the online service is easy, and people need to perceive the bank as communicative and supportive in relation to their financial productivity. This is particularly important because retaining existing customers is five times less expensive than gaining new ones (Parthasarathy & Bhattacharjee, 1998).

Meuter and Bitner (1998) and El-Kasheir et al (2009) posited that ease of use is important in Internet banking, thus banks should make sure that they have high levels of service delivery. They added that bankers should emphasise the interactions between technology and customer rather than focusing only on interactions between employees and customers.

Websites with user-friendly interfaces that are straightforward and designed for non-expert users are a major issue for banks to work on. Internet banking websites should be self-explanatory and customers should feel they could use them

independently with no need for external support. Therefore, instructions within websites should be simple, informative and unambiguous.

Banks should develop and implement measures aimed towards understanding their customers' drives and motives. This applies to conventional banking behaviours and makes use of such understanding to fulfil their needs and desires online (Durkin, 2004; El-Kasheir et al, 2009). Implementing such analyses of behavioural patterns within the customer base can support customer service-improving projects to enhance customers' specific perceptions such as those related to performance expectancy and ease of use.

Banks should set up feedback-gathering initiatives to garner customer reactions to Internet banking modifications. This would divert investment towards modifications that improve service provision in ways that predictably appeal to customers' positive feelings. This is important because of the lack of human contact with bank employees when Internet banking because the norm will result in bankers losing contact with the customer base. This gap in interaction contains risks of not monitoring customers' trends.

Bankers should give due consideration to customer online behaviour by analysing it. Attention should be directed towards improving complaint-handling record keeping and procedures. Adequate responses to complaints matter significantly and this is particularly so with Internet banking because it involves computing skills. If this is conducted in the right manner, it can improve customer perceptions and satisfaction levels.

Being computerised, Internet banking provides opportunities for building databases containing audit trails about online behaviour. These can be used to improve not only online service offerings but also conventional banking services (Hughes, 2003). Banking service channels are interconnected. Any improvement upon usefulness and ease of use in one channel can positively improve the feelings of usefulness and ease of use in another.

Banks should acknowledge the factors that drive customers to use particular services in particular ways. Decisions to use conventional banking or Internet banking or to switch between the two are often made based on specific reasons. These reasons should be known to bankers to support service improvements.

Previous literature shows that poor Internet banking service level provision can be the cause of customer attrition. Banks should conduct exit surveys to establish the reasons for leaving.

Banks can utilise this research and the variables it highlighted to focus their efforts. Pikkarainen et al (2004) posited that banks should pay more attention to advertising informative issues instead of only creating and advertising brands. Their insights emerged from a study of Internet banking. It is very important for bankers to market their services in detailed ways. This may attract new users to particular services. Importantly, the market research needed in order to position yourself as a better service provider in a particular facility will be a source of important information that will support customer retention.

Banks can make use of the expanding knowledge of how different psychologies differentiate customers. This is important because these factors are increasingly known to affect individuals' adoption and acceptance of online banking (Floh & Treiblmaier, 2006) as well as the adoption of other banking services (Lockett & Littler, 1997). This research contributes to the understanding of the role these factors play by measuring their effects on actual users of technology. Again, this context is very important. Bankers could use this knowledge in two ways. They could intensify their focus to maintain existing users and diversify their marketing to attain new ones.

Customers with high TR scores will be influenced more easily when the usefulness of the systems is emphasised. Customers with low TR scores are more likely to be influenced by ease of use (Yousafzai & Yani-de-Soriano, 2011). Such factors are important for both the adoption and the post-adoption usage processes.

This research reveals positive indications of the strong adaptive ability of the respondents in relation to accepting various sophisticated services offered online. This can be inferred from the fact that Saudi Arabian society is considered to be high in uncertainty avoidance. Much previous IS research has validated the negative roles that uncertainty plays in technology acceptance. This research shows that uncertainty can have a positive influence on actual Internet banking customers' intention to use services. Such an unexpected outcome may be interpreted as follows. It is possible that Saudi Arabian customers have overcome many psychological obstacles (e.g. uncertainty) in the process of becoming actual users of Internet banking services. While uncertainty might have undermined the customers' initial acceptance and slowed their process of adoption, long-term use might have proved to them that their fears had been unfounded.

Experience over time produces feelings of rewards and improved status. Users therefore may have developed a mechanism in which they reduce uncertainty by exploring Internet banking's additional features and use the service more frequently in order to gain certainty. Bankers could enhance their users experience by offering more tools and facilities within the Internet banking services. Banks should not be hesitant about users' adoption of the new services within the Internet banking system.

Psychological tendencies influence users' perceptions of actual Internet banking use. These tendencies can be addressed by providing customers with optional services. All the services offered online could be at the discretion of the customer in the first place. In other words, less adventurous customers could be provided with only what they require at the outset, a subset of the whole system. Others who are innovative and who find complexity exiting may want more facilities at the outset. These personality traits may persist during the post-adoption phase. The service providers could build their systems with adjustment capabilities. For example, the layout could be flexible. It could be modified on the basis of requests from customers. Various options and choices could be added or removed. Options to select access to different modes of use could be available.

The list of options is long. In addition to the above, banks can offer Financial Analysis Tools (FATs) within Internet banking accounts. These FATs facilities could vary to suit customer needs.

Optimists believe that technologies can make their life more efficient. They are more adaptive in relation to technological change. Therefore, they are more likely to benefit from a variety of banking services designed to support and enhance their financial affairs. People with high innovativeness inclinations are prepared to explore even very sophisticated options regardless of expected benefits (Parasuraman, 2000).

Personalisation brings many advantages to the banks; these include customer loyalty, cross-selling opportunities, tailored services and heightened trust. In addition, allowing customers opportunities to customise the service to fit personal preferences increases user enjoyment. The bank will benefit from that by having more cross-selling and investment opportunities. The higher frequency with which users enter the system, the longer they are exposed to bank marketing campaigns. Customisation is a choice that can be enabled.

Bank personalisation can be derived from the customers' demographics or usage patterns. For example, retired customers can be offered pension support. Analysing customer behaviour can reveal certain patterns, which the bank can use to identify opportunities for enhanced online services.

This research reveals that customers' personal tendencies influence satisfaction. This information offers the banking sector opportunities in relation to marketing strategies. Understanding psychological preferences enables one to provide a better service. For example, the systems' usage instructions could make use of audio, video or text. Banks can make use of social influence by using social communications media to communicate with their existing and potential customer base.

The Internet banking services should be interactive where an immediate response to a help request could be provided. More human presence and word of mouth should be emphasised. Bankers should stress these patterns within their Internet

banking systems as well as in the bank building itself when the customers visit the branches.

Factors that influence customers' continuance intention are pertinent. They overlap with factors that cause adoption in the first place such as usefulness and ease of use. Customers who adopt online banking have a lower propensity to leave the bank (Xue et al, 2011). Banks could learn lessons from the online shopping sectors in terms of usefulness and ease of use of their interfaces. Better interfaces could be very beneficial in terms of creating feelings of satisfaction and positive intention towards the bank as a whole. This means that developing Internet banking interfaces can be as important as innovating and providing new services online as customers who use Internet banking more extensively have more connections to conventional branch services (Fisher, 2007).

In terms of the recommendations for policymakers, the research shows that they could stimulate banks to accommodate individual differences in the customer base. Banks could be required to implement wider choices in their portfolio of services. Banks could also be required to have more transparent cookies policies, and to seek consent for third-party involvement in Internet banking operations.

Setting legal frameworks could protect customer rights and the security of their personal data. Policy instructions to the bank could emphasise a requirement to provide more services online, however these services have to be optional for customers. In addition, any service that can be set up online must be allowed to be cancelled online. Internet banking services should not be standardised to the extent seen now. More customisation means more positive perceptions and more frequent use of technology, which the Saudi Arabian government could further encourage.

These policies, if conducted, will increase positive perceptions of Internet banking. If the government throws its weight behind the use of Internet banking, people will perceive the services as legally and politically protected. It will also increase customers' awareness of the benefits of the use of SSTs and will always result in better use and perceptions.

In terms of banking customers, this research result suggests that when users explore the actual features provided by Internet banking they perceive a benefit. Frequency of use could extend these benefits and satisfactions. While their journey to becoming actual users of Internet banking has been driven by personal tendencies of optimism and innovativeness, positive perceptions and satisfaction can grow more over time by gaining more experience and familiarity. Positive personal traits toward technology can be improved by experience. Cognitive perceptions can also be based on more realistic and specific judgments when all the system features are known. Internet banking services are improving and developing and when actual customers put more effort in they can gain more.

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# Appendices

# Appendix A

## Survey Questionnaire



University of Plymouth

**School of computing communications and electronic**

*Research survey*

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*Dear sir/madam*

I am a research student at of Plymouth investigating internet banking acceptance.

This is my questionnaire, which is designed to measure some aspects of *culture, customers' perceptions* of internet banking use, and some internet banking *post-adoptions beliefs*.

Please note that:

- taking part in my survey is **voluntary**
- Your Response will be completely **anonymous**;
- Your **name is not required** anywhere on the survey.
- All of **the information will be treated as completely confidential**
- **No one can identify the information you provide.**
- **And your answers will be used solely for this research.**
- **You can withdraw and stop filling this survey at any time, without any negative consequences and without having to provide any reasons**

Filling this questionnaire will take you 10-20 minutes. Your Cooperation is highly appreciated and will help in the success of this research. If you

need any further information please contact me on my email:  
[ahmed.alghamdi@plymouth.ac.uk](mailto:ahmed.alghamdi@plymouth.ac.uk) or you can contact my director of study at  
Plymouth University: [M.Ahmed@plymouth.ac.uk](mailto:M.Ahmed@plymouth.ac.uk)

Thank you

Please ignore this questionnaire if you are not an internet user.

# Culture and internet banking in Saudi Arabia

## Customer Survey Questionnaire

**Your job** .....

**Your country** .....

### Section A: Demographic profile of the Respondents

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A1: Please indicate your age group

18 -25 years

25- 34 years

35 -44 years

45-54 years

55-65years

56 years and above

A2: Please indicate your gender

Male

Female

A3: Please indicate your level of Education

Diploma

High School

Bachelor's Degree

Postgraduate Degree

Other, please specify\_\_\_\_\_

A4: Please indicate your Monthly Income (approximate)

Less than **SR 2999**

Between **SR 3000-4999**

Between **SR 5000-9999**

Between **SR 10.000-19.999**

More than **SR 20.000**

A5: How long have you been using the computer?

Less than 1 year

1 – 2 years

3 - 5 years

6 – 10 years

More than 10 years

A6: how would you describe your experience with the internet?

Very poor

Poor

Moderate

Good

Very good

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**Section B: UTAUT Variables**

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To what extent do you agree with any of the following statements? (1 = strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). Please tick only 1 column.

Question	Statement	1	2	3	4	5
PE1	Using Internet banking improves my performance in managing personal finances.					
PE2	Overall, Internet banking is useful in managing personal finances					

PE3	Using Internet banking enhances my effectiveness in managing personal finances.					
PE4	Using Internet banking increases my productivity in managing personal finances.					
EE1	My interaction with Internet banking in managing personal finances is clear and understandable					
EE2	It is easy for me to become skilful at using Internet banking in managing personal finances					
EE3	I find the Internet banking system easy to use					
EE4	Learning to use Internet banking in managing personal finances is easy for me					
SI1	People who influence my behaviour think that I should use Internet banking in managing personal finances					
SI2	People who are important to me think that I should use Internet banking in managing personal finances					
SI3	The senior management at the bank has been very helpful in the use of Internet banking					
SI4	In general, the bank has supported the use of Internet banking					
SI5	People whose opinions I value would prefer me to use Internet banking in managing personal finances					
FC1	I have the resources necessary to use Internet banking services in managing personal finances					
FC2	I have the knowledge necessary to use Internet banking services in managing personal finances					
FC3	Internet banking is not compatible with other systems I use					
FC4	I get help from the bank for the problems relating to the use of Internet banking services					
FC5	A specific person (or group) is (are) available for assistance with Internet banking services difficulties					

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**Section C: Cultural Issues with the Use of Internet Banking Services**

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To what extent do you agree with any of the following statements? (1 = strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). Please tick only 1 column.

Question	Statement	1	2	3	4	5
UA1	Rules and regulations are important because they inform workers what the organisation expects of them					
UA2	Order and structure are very important in a work environment					
UA3	It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do					
UA4	it is better to have a bad situation that you know about, than to have an uncertain situation which might be better					
UA5	providing opportunities to be innovative is more important than requiring standardized work procedures					
UA6	People should avoid making changes because things could get worse					
ID1	Being accepted as a member of a group is more important than having autonomy and independence					
ID2	Being accepted as a member of a group is more important than being independent					
ID3	Group success is more important than individual success					
ID4	Being loyal to a group is more important than individual gain					

ID5	Individual rewards are not as important as group welfare					
ID6	It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative					
ID7	I do not have sufficient time left for your personal or family life <i>(added by the authors)</i>					

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**Section D: SATISFACTION Issues with the Use of Internet Banking Services**

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How do you feel about your overall experience with Internet banking usage?

SATISFACTION: (SAT)									
		1		2		3			5
<b>SAT1</b>	Very dissatisfied		Dissatisfied		Neutral		Satisfied		Very satisfied
<b>SAT2</b>	Very displeased		displeased		Neutral		Pleased		Very pleased
<b>SAT3</b>	Very frustrated		Frustrated		Neutral		contented		Very contented
<b>SAT4</b>	Absolutely terrible		Terrible		Neutral		delighted		Absolutely delighted

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**Section E: Continuance intention Variables**

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To what extent do you agree with any of the following statements? (1 = strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). Please tick only 1 column.

<b>Question</b>	<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
CONTI.INT1	I intend to continue using internet-banking services rather than discontinue their use.					
CONTI.INT2	My intentions are to continue using internet banking services rather than use any alternative means (traditional banking)					
CONTI.INT3	If I could, I would like to discontinue my use of internet banking services (reverse coded).					
CONTI.INT4	I will keep using Internet banking services as regularly as I do now					

#### **Section F: Confirmation Variables**

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To what extent do you agree with any of the following statements? (1 = strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). Please tick only 1 column.

<b>Question</b>	<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Confirm1	My experience with using Internet banking services was better than what I expected.					
Confirm 2	The service level provided by Internet banking services was better than what I expected.					
Confirm3	Overall, most of my expectations from using Internet services were confirmed.					

#### **Section G: Technology Readiness Variables**

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To what extent do you agree with any of the following statements? (1 = strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). Please tick only 1 column.

## Optimism

Question	Statement	1	2	3	4	5
OPT1	Technology gives people more control over their daily lives					
OPT2	Products and services that use the newest technologies are much more convenient to use					
OPT3	You like the idea of doing business via computers because you are not limited to regular business hours					
OPT4	You prefer to use the most advance technology available					
OPT5	You like computer programs that allow you to tailor things to fit your own needs					
OPT6	Technology makes you more efficient in your occupation					
OPT7	You find new technologies to be mentally stimulating					
OPT8	Technology gives you more freedom of mobility					
OPT9	Learning about technology can be as rewarding as the technology itself					
OPT10	You feel confident that machines will follow through with what you instructed them to do					

## Innovation

Question	Statement	1	2	3	4	5
INNO1	Other people come to you for advice on new technologies					
INNO2	It seems your friends are learning more about the newest technologies than you are.					
INNO3	In general, you are among the first in your circle of friends to acquire new technology when it appears					
INNO4	You can usually figure out new high-tech products and services without help from others					

INNO5	You keep up with the latest technological developments in your areas of interest					
INNO6	You enjoy the challenge of figuring out high-tech gadgets					
INNO7	You find you have fewer problems than other people in making technology work for you					

## Discomfort

Question	Statement	1	2	3	4	5
DISC1	Technical support lines are not helpful because they don't explain things in terms you understand					
DISC2	Sometimes, you think that technology systems are not designed for use by ordinary people					
DISC3	There is no such thing as a manual for a high-tech product or service that written in plain language					
DISC4	When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do					
DISC5	If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features					
DISC6	It is embarrassing when you have trouble with a high-tech gadget while people are watching					
DISC7	There should be caution in replacing important people-takes with technology because new technology can breakdown or get disconnected					
DISC8	Many new technologies have health or safety risks that are not discovered until after people have used them					
DISC9	Technology always seems to fail at the worst possible time					

DIS 10	New technology makes it too easy for governments and companies to spy on people ( <i>Not used. To assure the respondents</i> )					
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## Insecurity

Question	Statement	1	2	3	4	5
INSEC1	You do not consider it safe giving out a credit card number over a computer					
INSEC2	You do not consider it safe to do any kind of financial business online					
INSEC3	You worry that information you send over the Internet will be seen by other people					
INSEC4	You do not feel confident doing business with a place that can only be reached online					
INSEC5	Any business transaction you do electronically should be confirmed later with something in writing					
INSEC6	Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes					
INSEC7	The human touch is very important when doing business with a company					
INSEC8	When you call a business, you prefer to talk to a person rather than a machine					
INSEC9	If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place					

## Appendix B

### Arabic Survey Questionnaire

الثقافة وأستعمل الإنترنت

جامعة بليموث, كلية الاتصالات والحوسبة الإلكترونية

بحث مسحي

سيدي العزيز، سيدتي العزيزة

أنا طالب في جامعة بليموث بالمملكة المتحدة, أدرس قبول الخدمات البنكية عبر الإنترنت

هذا استبيان الذي تم تصميمه لقياس بعض الجوانب الثقافية، وتصورات العملاء فيما يتعلق باستخدام الخدمات البنكية عبر الإنترنت

يرجى ملاحظة ما يلي:

- المشاركة في هذا الاستبيان طوعية
- إجاباتكم ستكون مخفاة عن غير الباحث
- ليس مطلوباً اسمك في أي مكان في هذا المسح.
- سيتم التعامل مع كافة المعلومات على أنها سرية تماماً
- لا أحد يستطيع تحديد المعلومات التي تقدمها.
- سيتم استخدام إجاباتك لهذا البحث حصراً.
- يمكنك وقف العمل على هذا المسح في أي وقت، من دون أي عواقب سلبية ودون الحاجة لتقديم أسباب

سوف يستغرق ملء هذا الاستبيان من 10-20 دقيقة. تعاونك محل تقدير كبير وسوف يساعد في نجاح هذا البحث. إذا كنت بحاجة إلى مزيد من المعلومات يرجى الاتصال بي على:

الإيميل [ahmed.alghamdi@plymouth.ac.uk](mailto:ahmed.alghamdi@plymouth.ac.uk)

كما يمكنك الاتصال على مشرفي الدراسي في جامعة بليموث :

**M.Ahmed @ plymouth.ac.uk**

شكراً

الرجاء تجاهل هذا الاستبيان إذا كنت لم تستخدم الإنترنت البنكي من قبل.

الوظيفة.....

الدولة.....

أ: معلومات شخصية

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أ-1 رجاء اختيار مجموعة السن التي تنتمي إليها:

25 18

34 25

44 35

54 45

من 55 فأكثر

أ-2 رجاء اختيار الجنس:

ذكر

أنثى

أ-3 رجاء اختيار مستواك التعليمي (أعلى شهادة حصلت عليها)

شهادة ثانوية أو أقل

دبلوم

بكالوريوس

دراسات عليا

أ-4 رجاء اختيار مستوى دخلك الشهري التقريبي:

اقل من 2999 ريال سعودي

بين 3000 إلى 4999 ريال سعودي

بين 5000 إلى 9999 ريال سعودي

بين 10000 ريال سعودي إلى 19999 ريال سعودي

20 ألف ريال فأكثر

أ-5 كم تبلغ طول مدة استعمالك للكمبيوتر بالسنين؟

أقل من سنة

من سنة إلى سنتين

من سنتين إلى خمس سنين

من خمس إلى عشر سنين

أكثر من عشر سنين

أ-6 كيف تصف خبرتك مع الإنترنت؟

جيدة جدا

جيدة

متوسطة

ضعيفة

ضعيفة جدا

القسم (ب) النظرية الموحدة لاستعمال وقبول التقنية

إلى أي درجة توافق على العبارات التالية: (1-لا أوافق بشدة 2-لا أوافق 3-محايد 4-أوافق 5-أوافق بشدة)

اختر اجابة واحدة لكل سؤال فقط.

5	4	3	2	1	السؤال	رمز
					استخدام الإنترنت البنكي يحسن أدائي في إدارة شؤوني المالية الشخصية	PE1
					بصفة عامة، الإنترنت البنكي مفيد في إدارة شؤوني المالية الشخصية	PE2
					استخدام الإنترنت البنكي يعزز فعاليتي في إدارة شؤوني المالية الشخصية	PE3
					استخدام الإنترنت البنكي يزيد إنتاجيتي في إدارة شؤوني المالية الشخصية	PE4
					تفاعلي مع الإنترنت البنكي في إدارة شؤوني المالية الشخصية واضح ومفهوم	EE1
					من السهل بالنسبة لي أن أصبح ماهرا في استخدام الإنترنت البنكي في إدارة شؤوني المالية الشخصية	EE2
					أجد أن نظام الإنترنت البنكي سهل الاستخدام	EE3
					تعلم كيفية استخدام الإنترنت البنكي في إدارة شؤوني المالية الشخصية سهل بالنسبة لي	EE4
					الأشخاص الذين لهم تأثير على تصرفاتي يعتقدون أنه ينبغي علي استعمال الإنترنت البنكي في إدارة شؤوني المالية الشخصية	SI1

					الأشخاص المهمون بالنسبة لي يعتقدون أنه ينبغي على استعمال الإنترنت البنكي في إدارة شؤوني المالية الشخصية	SI2
					الإدارة العليا في البنك كانت مفيدة جدا في تسهيل استخدام الإنترنت البنكي	SI3
					بصفة عامة ، البنك دعم استخدام الإنترنت البنكي	SI4
					الأشخاص الذين أقدر آراءهم سيفضلون لي أن استعمل الإنترنت البنكي في إدارة شؤوني المالية الشخصية	SI5
					لدي الموارد اللازمة لاستخدام الإنترنت البنكي في إدارة شؤوني المالية الشخصية	FC1
					لدي المعرفة اللازمة لاستخدام الإنترنت البنكي في إدارة شؤوني المالية الشخصية	FC2
					الإنترنت البنكي غير متوافق مع الأنظمة الأخرى التي استخدمها	FC3
					أحصل على المساعدة من البنك للمشاكل المتعلقة باستخدام الإنترنت البنكي	FC4
					هناك شخص أو مجموعة موجودة للمساعدة في صعوبات استعمال خدمات الإنترنت البنكي	FC5

القسم ( ت ) الثقافية : ( تجنب عدم اليقين )

إلى أي درجة توافق على العبارات التالية: ( 1- لا أوافق بشدة 2- لا أوافق 3- محايد 4- أوافق 5- أوافق بشدة )

اختر اجابة واحدة لكل سؤال فقط.

5	4	3	2	1	السؤال	رمز
					القواعد واللوائح مهمة لأنها تخبر العمال بما تتوقعه المنظمة منهم	UA1
					الهيكلية والتنظيم مهمة جدا في بيئة العمل	UA2
					من المهم أن توجد متطلبات وظيفية وتعليمات منصوص عليها بالتفصيل حتى يعرف الناس دائما ما يتوقع منهم القيام به	UA3
					من الأفضل أن يكون أن يكون هناك, وضعا سينا نعرف عنه، من أن يكون الوضع مجهولا وقد يتحسن	UA4
					توفير الفرص للابتكار أكثر أهمية من طلب إجراءات عمل موحدة	UA5
					ينبغي على الناس تجنب إجراء تغييرات لأن الأمور يمكن أن تصبح أسوأ	UA6

القسم (ت) الثقافية : (الفردية والجمعية)

( إلى أي درجة توافق على العبارات التالية : ( 1- لا أوافق بشدة 2- لا أوافق 3- محايد 4- أوافق 5- أوافق بشدة  
اختر اجابة واحدة لكل سؤال فقط..

رمز	السؤال	1	2	3	4	5
ID1	أن أكون مقبولاً كعضو في المجموعة أكثر أهمية من وجود التفرد الذاتي والاستقلال					
ID2	أن أكون مقبولاً كعضو في المجموعة أكثر أهمية من أن أكون مستقلاً					
ID3	نجاح المجموعة أكثر أهمية من النجاح الفردي					
ID4	الولاء للمجموعة أكثر أهمية من الربح الفردي					
ID5	التحصيل الفردي ليس مهما بقدر رفاه المجموعة					
ID6	من المهم بالنسبة للمدير تشجيع الولاء و الشعور بالواجب في المرؤوسين أكثر من تشجيع المبادرات الفردية					
ID7	لا يبقى لديك وقت كاف لحياتي الشخصية والأسرية					

القسم (ث) الرضا : من خلال خبرتك في استعمال الإنترنت البنكي :

الرجاء وصف شعورك تجاه استعمال الإنترنت البنكي من الخيارات التالية:

اختر اجابة واحدة فقط من كل سطر

الرضا: (SAT)		الأول		الثاني		الخيار الثالث		الرابع		الخامس	
SAT1	راضي جدا	راضي	محايد	غير راضي	غير راضي أبدا						

SAT2	مسرور جدا	مسرور	محايد	غير مسرور	غير مسرور أبدا
SAT3	مقتنع جدا	مقتنع	محايد	غير مقتنع	غير مقتنع أبدا
SAT4	سعيد تماما	سعيد	محايد	مستاء	مستاء جدا

القسم ( ج ) التأكيد : من خلال خبرتك في استعمال الإنترنت البنكي :

إلى أي درجة توافق على العبارات التالية : ( 1- لا أوافق بشدة 2- لا أوافق 3- محايد 4- أوافق 5- أوافق بشدة )

اختر اجابة واحدة لكل سؤال فقط.

رمز	السؤال	1	2	3	4	5
Confim1	تجربتي مع خدمات الإنترنت البنكي أفضل مما توقعت					
Confirm2	مستوى الخدمة المقدمة بالإنترنت البنكي أفضل مما توقعت					
Confirm3	بالعموم , أكثر توقعاتي عن استخدام خدمات الإنترنت البنكي تأكدت صحتها					

القسم ( ح ) نية الاستمرار : من خلال خبرتك في استعمال الإنترنت البنكي :

إلى أي درجة توافق على العبارات التالية: (1- لا أوافق بشدة 2- لا أوافق 3- محايد 4- أوافق 5- أوافق بشدة )

اختر اجابة واحدة لكل سؤال فقط.

رمز	السؤال	1	2	3	4	5
CONTL.INT1	أنوي الاستمرار في استعمال خدمات الإنترنت البنكي وليس التوقف عن استخدامها					
CONTL.INT2	نواياي هي الاستمرار في استعمال خدمات الإنترنت البنكي أكثر من استخدام الخدمات البديلية (البنوك التقليدية)					
CONTL.INT3	لو أستطعت , أود أن أتوقف عن استخدام خدمات الإنترنت البنكي					

					سأبقى على استخدامي لخدمات الإنترنت البنكي بشكل منتظم كما أفعل الان	CONTI.INT4
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القسم ( خ ) الجاهزية التقنية : من خلال خبرتك في استعمال الإنترنت البنكي :

إلى أي درجة توافق على العبارات التالية: (1-لا أوافق بشدة 2-لا أوافق 3-محايد 4-أوافق 5-أوافق بشدة)

اختر اجابة واحدة لكل سؤال فقط.

5	4	3	2	1	السؤال	رمز
					التقنية تعطي الناس تحكم أكثر في حياتهم اليومية	OPT1
					المنتجات والخدمات التي تستعمل التقنيات الحديثة هي الأنسب للإستعمال	OPT2
					أحب فكرة القيام بالأعمال بواسطة الكمبيوتر كونه لا يحدني بأوقات العمل الرسمية	OPT3
					أفضل استخدام أفضل التقنيات الموجودة	OPT4
					أحب برامج الكمبيوتر التي تسمح لي بتصميم الأشياء حسب احتياجي الشخصي	OPT5
					التكنولوجيا تجعلني أكثر كفاءة في عملي	OPT6
					أجد التكنولوجيا المتقدمة بحجم توقعاتي	OPT7
					التكنولوجيا تعطيني المزيد من حرية التنقل	OPT8
					تعلم التكنولوجيا جذاب ومفيد كالتكنولوجيا نفسها	OPT9
					أشعر بالثقة أن الآلة .. الكمبيوتر .. تنفذ بدقة ما أريده	OPT10

5	4	3	2	1	السؤال	رمز
					الآخرين يأتون لي للمشورة بشأن التكنولوجيا الجديدة	INNO1
					يبدو أن أصدقائي يتعلمون أكثر مني عن التقنيات الجديدة	INNO2

					بالعموم أنا ضمن الأوائل من أصدقائي في الحصول على التكنولوجيا الجديدة عند ظهورها	INNO3
					يمكنني عادة أن أعرف عن التكنولوجيا الجديدة في المنتجات والخدمات من دون مساعدة الآخرين	INNO4
					فيما يهمني .. أواكب أحدث التطورات في التكنولوجيا	INNO5
					استمتع بالتحدي في إكتشاف الأدوات عالية التقنية	INNO6
					لدي مشاكل أقل من غيري في العمل مع التكنولوجيا	INNO7

5	4	3	2	1	السؤال	رمز
					خطوط الدعم التقني ما بعد البيع ليست مفيدة لأنها لا تفسر الأمور بطريقة أفهمها	DISC1
					أحياناً، أفكر بأن نظم التكنولوجيا ليست مصممة للاستخدام من قبل الناس العاديين	DISC2
					لا يوجد شيء مثل دليل يدوي للمنتجات والخدمات عالية التقنية مكتوبة بلغة واضحة	DISC3
					عند الحصول على الدعم التقني من مزود لمنتجات التكنولوجيا الحديثة أشعر أحياناً كما لو كنت أستغل من شخص يعرف أكثر مما أعرفه	DISC4
					إذا كنت تشتري منتجات التكنولوجيا الفائقة أو الخدمة، تفضل أن تشتري النموذج البسيط أكثر من النماذج التي فيها ميزات إضافية	DISC5
					انه امر محرج عندما يكون لديك مشكلة مع التكنولوجيا الفائقة الأداء بينما كان الناس يشاهدون	DISC6
					من المهم الحذر في تبديل الأشياء التي يأخذها الناس من التقنيات لأنها يمكن أن تخرب أو تنفصل	DISC7
					العديد من التقنيات الجديدة لها مخاطر على الصحة والسلامة لا تعرف إلا بعد استعمالها	DISC8
					التقنيات دائماً تفشل في أسوأ وقت ممكن	DISC9

5	4	3	2	1	السؤال	رمز
					لا أعتبر أنه من الامن إعطاء رقم بطاقة الإئتمان على الكمبيوتر	INSEC1
					لا أعتبر أنه ما الامن القيام بأي نوع من الأعمال المالية على الإنترنت	INSEC2
					لدي تخوف من أن المعلومات التي ارسلها عبر الإنترنت يمكن رؤيتها من قبل آخرين	INSEC3

					لا أشعر بالثقة في ممارسة أنشطة الأعمال مع مكان لا يمكن أن يتم التوصل له إلا عن طريق الإنترنت	INSEC4
					أي معاملة تجارية تقوم بها إلكترونيا ينبغي تأكيدها لاحقا بشيء مكتوب	INSEC5
					أي شيء ينفذ بشكل الي احتاج إلى تشييكه بعناية للتأكد من أن الكمبيوتر أو الآلة لا تعمل أخطاء	INSEC6
					الوجود البشري مهم جدا في أي تعامل تجاري أقوم به مع شركة	INSEC7
					عند القيام بعمل تجاري ، أفضل التحدث إلى شخص بدلا من جهاز	INSEC8
					إذا قدمت المعلومة لجهاز أو عبر الإنترنت لايمكن أن أكون أبدا متأكدا أنها ستصل فعلا إلى المكان الصحيح	INSEC9

## Appendix C

<b>Descriptive Statistics</b>					
	N	Minimum	Maximum	Mean	Std. Deviation
Overall, Internet banking is useful in managing personal finances	261	4.00	5.00	4.7510	.43329
Being accepted as a member of a group is more important than being independent	261	4.00	5.00	4.7356	.44184
Using Internet banking improves my performance in managing personal finances.	261	3.00	5.00	4.6820	.52111
I intend to continue using internet-banking services rather than discontinue their use.	261	3.00	5.00	4.6092	.54821
I will keep using Internet banking services as regularly as I do now	261	3.00	5.00	4.5824	.56663
My intentions are to continue using internet banking services rather than use any alternative means (traditional banking)	261	3.00	5.00	4.5556	.54223
Technology makes you more efficient in your occupation	261	3.00	5.00	4.5364	.58476
Learning to use Internet banking in managing personal finances is easy for me	261	3.00	5.00	4.5211	.55862
If I could, I would like to discontinue my use of internet banking services	261	3.00	5.00	4.5134	.58574
You like the idea of doing business via computers because you are not limited to regular business hours	261	3.00	5.00	4.4981	.59887
Technology gives you more freedom of mobility	261	3.00	5.00	4.4866	.58574
It is easy for me to become skilful at using Internet banking in managing personal finances	261	3.00	5.00	4.4713	.62337
Technology gives people more control over their daily lives	261	3.00	5.00	4.4559	.60999

I find the Internet banking system easy to use	261	3.00	5.00	4.4406	.60233
I have the knowledge necessary to use Internet banking services in managing personal finances	261	3.00	5.00	4.4368	.60830
You prefer to use the most advance technology available	261	2.00	5.00	4.3946	.73994
I have the resources necessary to use Internet banking services in managing personal finances	261	3.00	5.00	4.3908	.65673
My interaction with Internet banking in managing personal finances is clear and understandable	261	3.00	5.00	4.3755	.63003
Learning about technology can be as rewarding as the technology itself	261	2.00	5.00	4.3448	.75183
Internet banking is not compatible with other systems I use	261	3.00	5.00	4.3333	.68500
Rules and regulations are important because they inform workers what the organisation expects of them	261	1.00	5.00	4.3257	.75783
Order and structure are very important in a work environment	261	1.00	5.00	4.3180	.74577
Satisfied	261	3.00	5.00	4.3103	.58132
You like computer programs that allow you to tailor things to fit your own needs	261	2.00	5.00	4.2605	.73976
People should avoid making changes because things could get worse	261	1.00	5.00	4.2567	.92778
Products and services that use the newest technologies are much more convenient to use	261	2.00	5.00	4.2375	.75771
Group success is more important than individual success	261	2.00	5.00	4.2337	.79601
Using Internet banking enhances my effectiveness in managing personal finances.	261	2.00	5.00	4.2261	.82663
it is better to have a bad situation that you know about, than to have an uncertain situation which might be better	261	1.00	5.00	4.2261	.89370
Contented	261	2.00	5.00	4.2222	.72087
You feel confident that machines will follow through with what you instructed them to do	261	2.00	5.00	4.2146	.74932

Delighted	261	1.00	45.00	4.2107	<b><u>2.64096</u></b>
providing opportunities to be innovative is more important than requiring standardized work procedures	261	1.00	5.00	4.1762	.90701
Individual rewards are not as important as group welfare	261	2.00	5.00	4.1609	.72653
You find new technologies to be mentally stimulating	261	2.00	5.00	4.1571	.77598
It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do	261	1.00	5.00	4.1456	.84231
Pleased	261	2.00	5.00	4.1111	.73322
In general, the bank has supported the use of Internet banking	261	2.00	5.00	4.0996	.82137
My experience with using Internet banking services was better than what I expected.	261	2.00	5.00	4.0996	.75297
Overall, most of my expectations from using Internet services were confirmed.	261	2.00	5.00	3.9770	.77921
Being loyal to a group is more important than individual gain	261	1.00	5.00	3.9540	.99894
People whose opinions I value would prefer me to use Internet banking in managing personal finances	261	2.00	5.00	3.9349	.86356
You find you have fewer problems than other people in making technology work for you	261	2.00	5.00	3.9272	.78842
You keep up with the latest technological developments in your areas of interest	261	1.00	5.00	3.9157	.97694
The service level provided by Internet banking services was better than what I expected.	261	1.00	5.00	3.8927	.90085
People who are important to me think that I should use Internet banking in managing personal finances	261	1.00	5.00	3.8199	.88695
I do not have sufficient time left for your personal or family life	261	1.00	5.00	3.8199	.94571
People who influence my behaviour think that I should use Internet banking in managing personal finances	261	1.00	5.00	3.7816	.94167

Other people come to you for advice on new technologies	261	1.00	5.00	3.7318	.97513
You enjoy the challenge of figuring out high-tech gadgets	261	1.00	5.00	3.6820	1.05722
I get help from the bank for the problems relating to the use of Internet banking services	261	1.00	5.00	3.6667	1.08486
You can usually figure out new high-tech products and services without help from others	261	1.00	5.00	3.6590	1.03525
In general, you are among the first in your circle of friends to acquire new technology when it appears	261	1.00	5.00	3.6475	1.04435
The senior management at the bank has been very helpful in the use of Internet banking	261	1.00	5.00	3.6437	1.05950
It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative	261	2.00	5.00	3.6245	.74731
A specific person (or group) is (are) available for assistance with Internet banking services difficulties	261	1.00	5.00	3.5862	1.02152
You do not consider it safe to do any kind of financial business online	261	1.00	5.00	3.0958	<b><u>1.20033</u></b>
Technology always seems to fail at the worst possible time	261	1.00	5.00	3.0230	.94840
If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place	261	1.00	5.00	3.0000	1.15359
Sometimes, you think that technology systems are not designed for use by ordinary people	261	1.00	5.00	2.8429	1.08230
It is embarrassing when you have trouble with a high-tech gadget while people are watching	261	1.00	5.00	2.8391	1.11845
If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features	261	1.00	5.00	2.8199	1.13770
When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do	261	1.00	5.00	2.7701	1.01566

You do not feel confident doing business with a place that can only be reached online	261	1.00	5.00	2.7318	1.13549
There is no such thing as a manual for a high-tech product or service that written in plain language	261	1.00	5.00	2.6054	1.04210
You worry that information you send over the Internet will be seen by other people	261	1.00	5.00	2.5211	1.10790
It seems your friends are learning more about the newest technologies than you are	261	1.00	5.00	2.5096	1.05105
When you call a business, you prefer to talk to a person rather than a machine	261	1.00	5.00	2.4751	1.10085
You do not consider it safe giving out a credit card number over a computer	261	1.00	5.00	2.4751	1.24203
Any business transaction you do electronically should be confirmed later with something in writing	261	1.00	5.00	2.4444	1.25030
Many new technologies have health or safety risks that are not discovered until after people have used them	261	1.00	5.00	2.3487	.94314
There should be caution in replacing important people-takes with technology because new technology can breakdown or get disconnected	261	1.00	5.00	2.3027	.93867
The human touch is very important when doing business with a company	261	1.00	5.00	2.2835	1.04701
Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes	261	1.00	5.00	2.2797	1.01258
Valid N (listwise)	261				

# **Appendix D1**

**[FIRST ORDER]**

## **Assessment of normality (Group number 1)**

Variable	min	max	Skew	c.r.	kurtosis	c.r.
Disc3	1.000	5.000	.209	1.377	-.664	-2.189
Disc4	1.000	5.000	-.014	-.094	-.646	-2.132
Disc6	1.000	5.000	.055	.365	-.971	-3.203
FC4	1.000	5.000	-.668	-4.406	-.155	-.511
FC5	1.000	5.000	-.559	-3.689	-.016	-.053
PE3	2.000	5.000	-.727	-4.792	-.386	-1.272
UA1	1.000	5.000	-1.203	-7.936	2.105	6.941
UA3	1.000	5.000	-1.092	-7.203	1.702	5.614
UA5	1.000	5.000	-1.129	-7.443	1.176	3.877
UA6	1.000	5.000	-1.282	-8.458	1.462	4.821
INSEC5	1.000	5.000	.523	3.448	-.822	-2.710
INSEC7	1.000	5.000	.583	3.845	-.398	-1.312
INSEC8	1.000	5.000	.297	1.961	-.849	-2.798
CONTI.INT2	3.000	5.000	-.657	-4.330	-.725	-2.392
CONTI.INT3	3.000	5.000	-.742	-4.896	-.432	-1.424
CONTI.INT4	3.000	5.000	-.962	-6.343	-.084	-.277
SAT2	2.000	5.000	-.645	-4.252	.445	1.469
SAT3	2.000	5.000	-.730	-4.813	.466	1.535
CONFIRM2	1.000	5.000	-.768	-5.068	.546	1.800

CONFIRM3	2.000	5.000	-.498	-3.283	-.027	-.088
SI1	1.000	5.000	-.218	-1.438	-.686	-2.264
PE2	4.000	5.000	-1.161	-7.655	-.653	-2.153
PE1	3.000	5.000	-1.341	-8.845	.814	2.684
EE4	3.000	5.000	-.614	-4.047	-.683	-2.253
EE2	3.000	5.000	-.750	-4.948	-.433	-1.428
EE3	3.000	5.000	-.565	-3.723	-.603	-1.990
SI5	2.000	5.000	-.305	-2.014	-.773	-2.549
SI2	1.000	5.000	-.237	-1.566	-.467	-1.541
INNO6	1.000	5.000	-.376	-2.481	-.691	-2.277
INNO5	1.000	5.000	-.748	-4.936	.045	.148
INNO4	1.000	5.000	-.429	-2.831	-.652	-2.151
INNO3	1.000	5.000	-.435	-2.872	-.458	-1.511
OPT8	3.000	5.000	-.638	-4.210	-.559	-1.842
OPT6	3.000	5.000	-.835	-5.510	-.295	-.973
OPT2	2.000	5.000	-.796	-5.251	.304	1.001
Multivariate					125.532	19.925

## **Appendix D2**

### **[FIRST ORDER]**

**Observations farthest from the centroid (Mahalanobis distance) (Group number 1)**

Observation number	Mahalanobis d-squared	p1	p2
87	78.293	.000	.010
163	71.329	.000	.002
259	70.909	.000	.000
22	70.037	.000	.000
26	69.820	.000	.000
106	66.923	.001	.000
202	66.469	.001	.000
159	65.965	.001	.000
165	65.594	.001	.000
97	64.935	.002	.000
182	64.540	.002	.000
120	63.649	.002	.000
101	63.103	.002	.000
81	61.939	.003	.000
82	61.444	.004	.000
254	59.224	.006	.000
185	58.973	.007	.000
4	58.709	.007	.000
251	58.618	.007	.000
103	58.563	.008	.000

114	58.458	.008	.000
13	58.084	.008	.000
96	56.005	.014	.000
20	55.580	.015	.000
88	55.460	.015	.000
34	54.633	.018	.000
99	54.327	.020	.000
28	54.119	.021	.000
91	53.811	.022	.000
153	53.449	.024	.000
176	53.175	.025	.000
138	51.926	.033	.000
139	51.438	.036	.000
111	50.726	.042	.000
141	50.634	.042	.000
93	50.391	.045	.000
181	50.297	.045	.000
18	50.253	.046	.000
221	49.879	.049	.000
155	49.433	.054	.000
71	49.191	.056	.000
74	48.240	.067	.000
30	48.173	.068	.000
219	47.889	.072	.000
260	47.657	.075	.000

108	47.418	.078	.000
193	47.242	.081	.000
227	47.163	.082	.000
92	46.944	.085	.000
149	46.819	.087	.000
21	46.405	.094	.000
94	45.816	.104	.000
125	45.697	.106	.000
183	45.597	.108	.000
206	44.977	.120	.000
19	44.890	.122	.000
49	44.505	.130	.000
233	44.055	.140	.000
180	43.499	.153	.001
231	43.457	.154	.001
179	43.426	.155	.001
80	43.104	.163	.001
107	42.862	.170	.002
86	42.724	.173	.002
140	42.304	.185	.006
40	42.296	.185	.004
16	42.142	.189	.005
110	41.859	.198	.008
98	41.501	.208	.018
146	41.496	.208	.012

147	41.313	.214	.016
78	41.287	.215	.012
184	41.095	.221	.015
84	40.774	.231	.029
9	40.405	.244	.060
135	40.312	.247	.058
79	40.207	.251	.058
5	39.778	.266	.127
31	39.557	.274	.163
39	39.506	.276	.147
207	39.395	.280	.150
258	39.127	.290	.210
186	39.102	.291	.182
126	38.858	.300	.240
24	38.734	.305	.252
73	38.642	.308	.250
230	38.602	.310	.227
100	38.598	.310	.190
143	38.412	.318	.227
116	38.331	.321	.222
220	38.307	.322	.194
72	38.298	.322	.163
158	38.289	.323	.136
261	38.161	.328	.147
228	38.132	.329	.127

171	37.843	.341	.195
61	37.806	.342	.175
178	37.744	.345	.165
205	37.724	.346	.142
242	37.377	.360	.241

# **Appendix E1**

## **[SECOND ORDER]**

### **Assessment of normality (Group number 1)**

Variable	min	max	skew	c.r.	kurtosis	c.r.
UA1	1.000	5.000	-1.203	-7.936	2.105	6.941
UA3	1.000	5.000	-1.092	-7.203	1.702	5.614
UA5	1.000	5.000	-1.129	-7.443	1.176	3.877
UA6	1.000	5.000	-1.282	-8.458	1.462	4.821
CONTI.INT2	3.000	5.000	-.657	-4.330	-.725	-2.392
CONTI.INT3	3.000	5.000	-.742	-4.896	-.432	-1.424
CONTI.INT4	3.000	5.000	-.962	-6.343	-.084	-.277
SAT2	2.000	5.000	-.645	-4.252	.445	1.469
SAT3	2.000	5.000	-.730	-4.813	.466	1.535
CONFIRM2	1.000	5.000	-.768	-5.068	.546	1.800
CONFIRM3	2.000	5.000	-.498	-3.283	-.027	-.088
SI1	1.000	5.000	-.218	-1.438	-.686	-2.264
PE2	4.000	5.000	-1.161	-7.655	-.653	-2.153
PE1	3.000	5.000	-1.341	-8.845	.814	2.684
EE4	3.000	5.000	-.614	-4.047	-.683	-2.253
EE2	3.000	5.000	-.750	-4.948	-.433	-1.428
EE3	3.000	5.000	-.565	-3.723	-.603	-1.990
SI5	2.000	5.000	-.305	-2.014	-.773	-2.549
SI2	1.000	5.000	-.237	-1.566	-.467	-1.541
INNO6	1.000	5.000	-.376	-2.481	-.691	-2.277

INNO5	1.000	5.000	-.748	-4.936	.045	.148
INNO4	1.000	5.000	-.429	-2.831	-.652	-2.151
INNO3	1.000	5.000	-.435	-2.872	-.458	-1.511
OPT8	3.000	5.000	-.638	-4.210	-.559	-1.842
OPT6	3.000	5.000	-.835	-5.510	-.295	-.973
OPT2	2.000	5.000	-.796	-5.251	.304	1.001
Multivariate					112.399	23.794

**[SECOND ORDER]**

**Observations farthest from the centroid (Mahalanobis distance) (Group number 1 )**

Observation number	Mahalanobis d-squared	p1	p2
87	67.829	.000	.004
26	60.627	.000	.001
182	59.041	.000	.000
106	58.149	.000	.000
120	56.044	.001	.000
165	54.908	.001	.000
97	54.516	.001	.000
101	53.138	.001	.000
159	52.628	.002	.000
202	52.108	.002	.000
22	51.527	.002	.000

4	51.495	.002	.000
254	51.028	.002	.000
99	50.956	.002	.000
13	50.914	.002	.000
81	50.148	.003	.000
96	49.911	.003	.000
185	49.305	.004	.000
20	47.304	.006	.000
111	47.037	.007	.000
221	47.020	.007	.000
18	46.864	.007	.000
181	46.798	.007	.000
176	45.824	.010	.000
251	45.501	.010	.000
30	45.025	.012	.000
163	44.773	.012	.000
34	44.546	.013	.000
82	44.293	.014	.000
93	44.086	.015	.000
28	43.569	.017	.000
92	43.510	.017	.000
219	42.977	.019	.000
260	42.850	.020	.000
138	42.481	.022	.000
103	42.302	.023	.000

153	42.284	.023	.000
155	41.905	.025	.000
183	41.543	.027	.000
19	40.459	.035	.000
108	40.264	.037	.000
21	39.556	.043	.000
139	39.491	.044	.000
179	39.317	.045	.000
114	39.050	.048	.000
259	38.775	.051	.000
86	38.396	.056	.000
141	38.354	.056	.000
71	38.063	.060	.000
231	37.136	.073	.000
100	36.303	.086	.000
88	35.785	.096	.000
84	35.777	.096	.000
79	35.574	.100	.000
180	35.370	.104	.000
94	35.363	.104	.000
227	34.823	.116	.000
186	34.785	.116	.000
91	34.662	.119	.000
83	34.624	.120	.000
184	34.458	.124	.000

147	34.321	.127	.000
158	34.215	.130	.000
9	33.748	.141	.000
72	33.319	.153	.000
39	33.282	.154	.000
107	32.976	.163	.000
49	32.941	.164	.000
258	32.877	.166	.000
74	32.687	.171	.000
187	32.464	.178	.000
14	32.252	.185	.000
136	32.089	.190	.000
110	31.862	.198	.001
5	31.726	.202	.001
207	31.611	.206	.001
116	31.561	.208	.001
24	31.160	.222	.002
135	30.824	.235	.007
98	30.676	.241	.009
129	30.675	.241	.006
78	30.649	.242	.005
146	30.340	.254	.012
244	30.142	.262	.018
220	29.765	.277	.049
3	29.576	.286	.068

178	29.415	.293	.085
126	29.355	.295	.079
25	29.100	.307	.128
12	28.620	.329	.310
214	28.480	.335	.345
140	28.470	.336	.304
230	28.366	.341	.318
152	28.114	.353	.426
104	28.110	.353	.378
31	27.809	.368	.525
173	27.529	.382	.657
149	27.448	.386	.660
2	27.038	.407	.838
54	26.939	.413	.848

## Appendix E2

### [SECOND ORDER]

#### Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
EffortExpectance	<---	UNIF	.343	.037	9.353	***	par_18
PerformanceExpectancy	<---	UNIF	.354	.033	10.662	***	par_19
Innovation	<---	TechReadiness	.487	.070	6.996	***	par_20
Optimism	<---	TechReadiness	.418	.057	7.297	***	par_21
Social influence	<---	UNIF	.443	.060	7.409	***	par_22
OPT2	<---	Optimism	1.000				
OPT6	<---	Optimism	.933	.103	9.051	***	par_1
INNO3	<---	Innovation	1.000				
INNO4	<---	Innovation	.962	.078	12.300	***	par_2
INNO5	<---	Innovation	.947	.073	12.891	***	par_3
INNO6	<---	Innovation	1.098	.080	13.790	***	par_4
EE2	<---	EffortExpectance	1.005	.082	12.231	***	par_5
EE4	<---	EffortExpectance	.954	.075	12.782	***	par_6
CONFIRM3	<---	CONFIRMATION	1.000				
CONFIRM2	<---	CONFIRMATION	1.307	.128	10.210	***	par_7
SAT3	<---	SATISFACTION	1.000				
SAT2	<---	SATISFACTION	1.121	.098	11.421	***	par_8

CONTI.INT4	<---	INTENTIONCONTINU E	1.000				
CONTI.INT3	<---	INTENTIONCONTINU E	1.038	.055	18.705	***	par_9
CONTI.INT2	<---	INTENTIONCONTINU E	1.052	.049	21.464	***	par_10
OPT8	<---	Optimism	.931	.103	9.042	***	par_11
PE1	<---	PerformanceExpectancy	1.000				
PE2	<---	PerformanceExpectancy	.730	.073	10.057	***	par_12
SI1	<---	Socialfluence	1.000				
SI2	<---	Socialfluence	.980	.050	19.578	***	par_13
SI5	<---	Socialfluence	.685	.054	12.787	***	par_14
EE3	<---	EffortExpectance	1.000				
UA5	<---	UncertAvoidance	.927	.058	15.993	***	par_15
UA3	<---	UncertAvoidance	.814	.055	14.849	***	par_16
UA6	<---	UncertAvoidance	1.000				
UA1	<---	UncertAvoidance	.639	.052	12.278	***	par_17

## [SECOND ORDER]

### Standardized Regression Weights: (Group number 1 - Default model )

			Estimate
EffortExpectance	<---	UNIF	.717
PerformanceExpectancy	<---	UNIF	.799
Innovation	<---	TechReadiness	.600

Optimism	<---	TechReadiness	.866
Socialfluence	<---	UNIF	.522
OPT2	<---	Optimism	.638
OPT6	<---	Optimism	.771
INNO3	<---	Innovation	.779
INNO4	<---	Innovation	.755
INNO5	<---	Innovation	.788
INNO6	<---	Innovation	.844
EE2	<---	EffortExpectance	.772
EE4	<---	EffortExpectance	.818
CONFIRM3	<---	CONFIRMATION	.721
CONFIRM2	<---	CONFIRMATION	.816
SAT3	<---	SATISFACTION	.760
SAT2	<---	SATISFACTION	.838
CONTL.INT4	<---	INTENTIONCONTINUE	.863
CONTL.INT3	<---	INTENTIONCONTINUE	.867
CONTL.INT2	<---	INTENTIONCONTINUE	.949
OPT8	<---	Optimism	.768
PE1	<---	PerformanceExpectancy	.851
PE2	<---	PerformanceExpectancy	.747
SI1	<---	Socialfluence	.903
SI2	<---	Socialfluence	.940
SI5	<---	Socialfluence	.675
EE3	<---	EffortExpectance	.795
UA5	<---	UncertAvoidance	.833
UA3	<---	UncertAvoidance	.787

UA6	<---	UncertAvidance	.878
UA1	<---	UncertAvidance	.687

**[SECOND ORDER]**

**Variances: (Group number 1 - Default model)**

	Estimate	S.E.	C.R.	P	Label
UNIF	1.000				
TechReadiness	1.000				
CONFIRMATION	.315	.052	6.001	***	par_38
SATISFACTION	.299	.046	6.547	***	par_39
INTENTIONCONTINUE	.238	.028	8.588	***	par_40
UncertAvidance	.661	.077	8.541	***	par_41
res1	.111	.021	5.398	***	par_42
res2	.071	.019	3.783	***	par_43
res4	.421	.074	5.671	***	par_44
res5	.058	.034	1.715	.086	par_45
res3	.525	.064	8.164	***	par_46
e2	.339	.036	9.429	***	par_47
e6	.138	.020	7.013	***	par_48
e8	.140	.020	7.082	***	par_49
e31	.428	.048	8.889	***	par_50
e32	.459	.050	9.246	***	par_51
e33	.360	.041	8.715	***	par_52
e34	.320	.044	7.336	***	par_53

e36	.091	.027	3.398	***	par_54
e39	.404	.038	10.621	***	par_55
e40	.133	.017	7.784	***	par_56
e41	.156	.019	8.327	***	par_57
e43	.103	.014	7.157	***	par_58
e45	.075	.017	4.350	***	par_59
e46	.083	.011	7.428	***	par_60
e48	.162	.030	5.385	***	par_61
e54	.290	.035	8.269	***	par_62
e55	.271	.048	5.685	***	par_63
e58	.218	.028	7.905	***	par_64
e59	.160	.029	5.573	***	par_65
e61	.082	.009	8.868	***	par_66
e62	.085	.010	8.764	***	par_67
e63	.029	.007	4.460	***	par_68
e78	.196	.030	6.440	***	par_69
e79	.252	.031	7.995	***	par_70
e81	.269	.030	9.013	***	par_71
e83	.302	.030	10.131	***	par_72

## **Appendix E3**

### **[SECOND ORDER]**

#### **Model Fit Summary**

##### **CMIN**

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	72	339.650	279	.008	1.217
Saturated model	351	.000	0		
Independence model	26	3899.669	325	.000	11.999

##### **RMR, GFI**

Model	RMR	GFI	AGFI	PGFI
Default model	.036	.910	.887	.723
Saturated model	.000	1.000		
Independence model	.170	.323	.269	.299

##### **Baseline Comparisons**

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.913	.899	.983	.980	.983
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

**Parsimony-Adjusted Measures**

Model	PRATIO	PNFI	PCFI
Default model	.858	.784	.844
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

**NCP**

Model	NCP	LO 90	HI 90
Default model	60.650	18.174	111.325
Saturated model	.000	.000	.000
Independence model	3574.669	3377.149	3779.512

**FMIN**

Model	FMIN	F0	LO 90	HI 90
Default model	1.306	.233	.070	.428
Saturated model	.000	.000	.000	.000
Independence model	14.999	13.749	12.989	14.537

**RMSEA**

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.029	.016	.039	1.000
Independence model	.206	.200	.211	.000

### AIC

Model	AIC	BCC	BIC	CAIC
Default model	483.650	500.337	740.296	812.296
Saturated model	702.000	783.348	1953.147	2304.147
Independence model	3951.669	3957.695	4044.347	4070.347

### ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.860	1.697	2.055	1.924
Saturated model	2.700	2.700	2.700	3.013
Independence model	15.199	14.439	15.987	15.222

### HOELTER

Model	HOELTER .05	HOELTER .01
Default model	245	258
Independence model	25	26

# **Appendix F1**

## **[STRUCTURAL MODEL]**

### **Assessment of normality (Group number 1)**

Variable	min	max	skew	c.r.	kurtosis	c.r.
SAT2	2.000	5.000	-.645	-4.252	.445	1.469
UA5	1.000	5.000	-1.129	-7.443	1.176	3.877
UA6	1.000	5.000	-1.282	-8.458	1.462	4.821
CONTL.INT2	3.000	5.000	-.657	-4.330	-.725	-2.392
CONTL.INT3	3.000	5.000	-.742	-4.896	-.432	-1.424
CONTL.INT4	3.000	5.000	-.962	-6.343	-.084	-.277
SAT3	2.000	5.000	-.730	-4.813	.466	1.535
CONFIRM2	1.000	5.000	-.768	-5.068	.546	1.800
CONFIRM3	2.000	5.000	-.498	-3.283	-.027	-.088
SI1	1.000	5.000	-.218	-1.438	-.686	-2.264
PE2	4.000	5.000	-1.161	-7.655	-.653	-2.153
PE1	3.000	5.000	-1.341	-8.845	.814	2.684
EE4	3.000	5.000	-.614	-4.047	-.683	-2.253
EE2	3.000	5.000	-.750	-4.948	-.433	-1.428
SI2	1.000	5.000	-.237	-1.566	-.467	-1.541
INNO6	1.000	5.000	-.376	-2.481	-.691	-2.277
INNO5	1.000	5.000	-.748	-4.936	.045	.148

INNO4	1.000	5.000	-.429	-2.831	-.652	-2.151
INNO3	1.000	5.000	-.435	-2.872	-.458	-1.511
OPT8	3.000	5.000	-.638	-4.210	-.559	-1.842
OPT6	3.000	5.000	-.835	-5.510	-.295	-.973
Multivariate					88.756	23.068

### [STRUCTURAL MODEL]

#### Observations farthest from the centroid (Mahalanobis distance) (Group number 1)

Observation number	Mahalanobis d-squared	p1	p2
87	61.795	.000	.002
120	54.665	.000	.000
182	53.803	.000	.000
26	53.449	.000	.000
106	50.442	.000	.000
22	50.162	.000	.000
101	47.171	.001	.000
181	45.788	.001	.000
254	45.380	.002	.000
18	44.758	.002	.000
81	44.519	.002	.000
111	44.284	.002	.000
221	43.881	.002	.000

185	43.109	.003	.000
34	42.875	.003	.000
165	42.389	.004	.000
4	41.549	.005	.000
202	41.036	.006	.000
159	40.573	.006	.000
163	40.442	.007	.000
99	39.494	.009	.000
20	39.356	.009	.000
19	38.960	.010	.000
28	38.554	.011	.000
93	37.959	.013	.000
138	37.387	.015	.000
153	36.742	.018	.000
103	36.655	.018	.000
183	36.634	.019	.000
82	36.402	.020	.000
251	36.223	.021	.000
114	36.032	.022	.000
139	35.484	.025	.000
219	35.317	.026	.000
260	35.112	.027	.000
97	34.590	.031	.000
84	34.191	.035	.000
108	33.903	.037	.000

71	33.308	.043	.000
30	33.202	.044	.000
186	32.636	.050	.000
21	32.624	.051	.000
13	32.410	.053	.000
141	32.071	.058	.000
176	31.953	.059	.000
92	31.791	.061	.000
155	31.619	.064	.000
39	31.335	.068	.000
179	30.870	.076	.000
259	30.230	.087	.000
107	30.180	.088	.000
5	30.180	.088	.000
49	30.056	.091	.000
94	29.496	.103	.000
187	29.374	.105	.000
180	29.361	.106	.000
86	28.869	.117	.000
91	28.735	.121	.000
83	28.638	.123	.000
79	28.242	.133	.000
231	28.228	.134	.000
258	28.182	.135	.000
158	28.057	.139	.000

100	27.838	.145	.000
227	27.729	.148	.000
220	27.531	.154	.000
74	27.020	.170	.000
135	26.907	.174	.000
146	26.613	.184	.001
207	26.436	.190	.001
24	26.257	.197	.002
147	26.219	.198	.002
25	26.154	.201	.001
3	26.079	.203	.001
12	25.977	.207	.001
31	25.892	.211	.001
247	25.765	.216	.002
2	25.585	.223	.003
104	25.070	.244	.018
178	25.005	.247	.017
9	24.803	.256	.027
75	24.716	.260	.028
116	24.559	.267	.037
184	24.064	.290	.143
98	23.973	.294	.149
149	23.572	.314	.319
244	23.197	.334	.526
85	22.694	.361	.802

14	22.672	.362	.776
40	22.661	.362	.742
88	22.649	.363	.706
23	22.597	.366	.694
173	22.505	.371	.709
102	22.492	.372	.671
177	22.275	.384	.764
193	22.222	.387	.755
72	22.088	.394	.793
152	21.998	.400	.805
16	21.918	.404	.811
110	21.894	.406	.789

## **Appendix F2**

### **[STRUCTURAL MODEL]**

#### **Model Fit Summary**

##### **CMIN**

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	56	290.856	175	.000	1.662
Saturated model	231	.000	0		
Independence model	21	3043.138	210	.000	14.491

##### **RMR, GFI**

Model	RMR	GFI	AGFI	PGFI
Default model	.055	.906	.876	.687
Saturated model	.000	1.000		
Independence model	.178	.349	.283	.317

##### **Baseline Comparisons**

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.904	.885	.960	.951	.959
Saturated model	1.000		1.000		1.000

Independence model	.000	.000	.000	.000	.000
--------------------	------	------	------	------	------

### Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.833	.754	.799
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

### NCP

Model	NCP	LO 90	HI 90
Default model	115.856	72.848	166.760
Saturated model	.000	.000	.000
Independence model	2833.138	2658.428	3015.189

### FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.119	.446	.280	.641
Saturated model	.000	.000	.000	.000
Independence model	11.704	10.897	10.225	11.597

### RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.050	.040	.061	.459
Independence model	.228	.221	.235	.000

### AIC

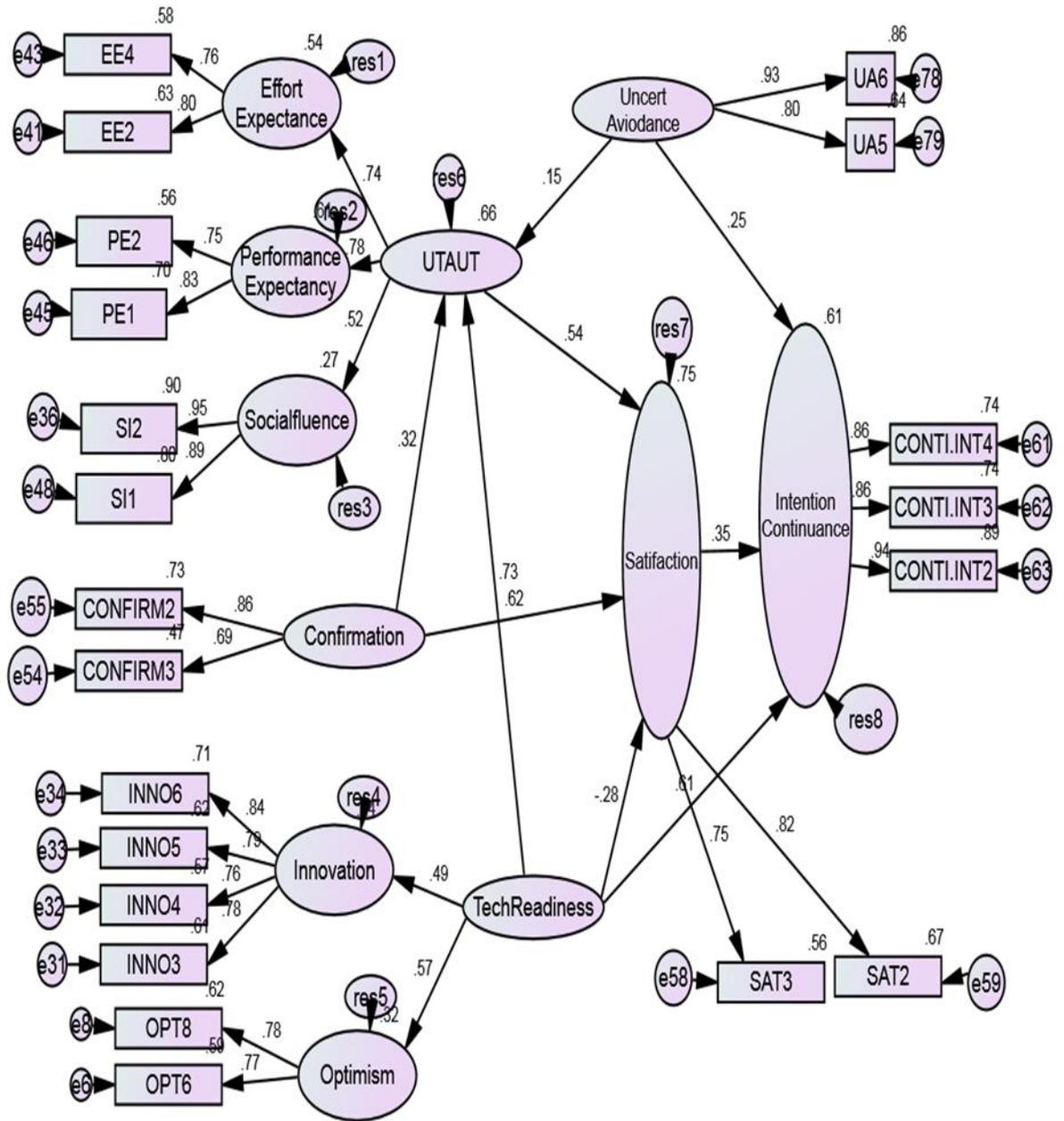
Model	AIC	BCC	BIC	CAIC
Default model	402.856	413.209	602.470	658.470
Saturated model	462.000	504.706	1285.404	1516.404
Independence model	3085.138	3089.020	3159.993	3180.993

### ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.549	1.384	1.745	1.589
Saturated model	1.777	1.777	1.777	1.941
Independence model	11.866	11.194	12.566	11.881

### HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	185	198
Independence model	21	23



## Appendix F3

### [STRUCTURAL MODEL]

#### Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
UTAUT	<---	Confirmation	.256	.073	3.524	***	par_16
UTAUT	<---	TechReadiness	1.231	.306	4.024	***	par_21
UTAUT	<---	Uncert_Avoidance	.077	.037	2.052	.040	par_23
Satisfaction	<---	Confirmation	.623	.105	5.933	***	par_17
Satisfaction	<---	UTAUT	.665	.246	2.701	.007	par_19
Satisfaction	<---	TechReadiness	-.582	.383	-1.520	.129	par_20
Effort_Expectance	<---	UTAUT	.836	.148	5.654	***	par_12
Performance_Expectancy	<---	UTAUT	.772	.131	5.886	***	par_13
Innovation	<---	TechReadiness	1.547	.367	4.211	***	par_14
Optimism	<---	TechReadiness	1.000				
Socialfluence	<---	UTAUT	1.000				
Intention_Continuance	<---	Satisfaction	.310	.061	5.103	***	par_18

Intention_Continuance	<---	TechReadiness	1.127	.240	4.702	***	par_22
Intention_Continuance	<---	Uncert_Avoidance	.139	.036	3.852	***	par_24
OPT6	<---	Optimism	1.000				
INNO3	<---	Innovation	1.000				
INNO4	<---	Innovation	.962	.078	12.327	***	par_1
INNO5	<---	Innovation	.944	.073	12.858	***	par_2
INNO6	<---	Innovation	1.092	.080	13.719	***	par_3
EE2	<---	Effort_Expectance	1.000				
EE4	<---	Effort Expectance	.860	.098	8.758	***	par_4
CONFIRM3	<---	Confirmation	1.000				
CONFIRM2	<---	Confirmation	1.439	.155	9.294	***	par_5
CONTI.INT4	<---	Intention_Continuance	1.000				
CONTI.INT3	<---	Intention_Continuance	1.036	.057	18.251	***	par_6
CONTI.INT2	<---	Intention_Continuance	1.043	.050	20.671	***	par_7
OPT8	<---	Optimism	1.019	.163	6.266	***	par_8
PE1	<---	Performance_Expectancy	1.000				
PE2	<---	Performance_Expectancy	.749	.080	9.407	***	par_9
SII	<---	Socialfluence	1.000				

SI2	<---	Socialfluence	.996	.084	11.842	***	par_10
UA5	<---	Uncert_Avoidance	.842	.148	5.697	***	par_11
UA6	<---	Uncert_Avoidance	1.000				
SAT3	<---	Satisfaction	1.000				
SAT2	<---	Satisfaction	1.105	.099	11.115	***	par_15

### [STRUCTURAL MODEL]

#### Standardised Regression Weights: (Group number 1 - Default model)

			Estimate
UTAUT	<---	Confirmation	.318
UTAUT	<---	TechReadiness	.730
UTAUT	<---	Uncert_Avoidance	.153
Satisfaction	<---	Confirmation	.624
Satisfaction	<---	UTAUT	.537
Satisfaction	<---	TechReadiness	-.279
Effort_Expectance	<---	UTAUT	.737
Performance_Expectancy	<---	UTAUT	.779
Innovation	<---	TechReadiness	.486
Optimism	<---	TechReadiness	.567
Socialfluence	<---	UTAUT	.517
Intention_Continuance	<---	Satisfaction	.348
Intention_Continuance	<---	TechReadiness	.605

Intention_Continuance	<---	Uncert_Avoidance	.251
OPT6	<---	Optimism	.771
INNO3	<---	Innovation	.780
INNO4	<---	Innovation	.758
INNO5	<---	Innovation	.787
INNO6	<---	Innovation	.842
EE2	<---	Effort_Expectance	.796
EE4	<---	Effort_Expectance	.763
CONFIRM3	<---	Confirmation	.688
CONFIRM2	<---	Confirmation	.856
CONTI.INT4	<---	Intention_Continuance	.860
CONTI.INT3	<---	Intention_Continuance	.862
CONTI.INT2	<---	Intention_Continuance	.941
OPT8	<---	Optimism	.785
PE1	<---	Performance_Expectancy	.834
PE2	<---	Performance_Expectancy	.749
SI1	<---	Socialfluence	.895
SI2	<---	Socialfluence	.948
UA5	<---	Uncert_Avoidance	.799
UA6	<---	Uncert_Avoidance	.928
SAT3	<---	Satisfaction	.751
SAT2	<---	Satisfaction	.819

**[STRUCTURAL MODEL]**

**Variances: (Group number 1 - Default model)**

	Estimate	S.E.	C.R.	P	Label
Confirmation	.286	.051	5.563	***	par_25
Uncert_Avoidance	.738	.145	5.094	***	par_26
TechReadiness	.065	.023	2.894	.004	par_27
res6	.064	.028	2.288	.022	par_28
res7	.071	.023	3.096	.002	par_29
res1	.109	.026	4.194	***	par_30
res2	.072	.019	3.815	***	par_31
res4	.506	.079	6.395	***	par_32
res5	.137	.031	4.392	***	par_33
res8	.088	.017	5.013	***	par_34
res3	.510	.070	7.271	***	par_35
e6	.138	.032	4.256	***	par_36
e8	.131	.033	3.943	***	par_37
e31	.425	.048	8.796	***	par_38
e32	.455	.050	9.164	***	par_39
e33	.361	.042	8.667	***	par_40
e34	.324	.044	7.317	***	par_41
e36	.078	.053	1.473	.141	par_42
e41	.138	.026	5.235	***	par_43
e43	.127	.021	6.142	***	par_44
e45	.080	.018	4.504	***	par_45

e46	.080	.011	6.958	***	par_46
e48	.173	.055	3.127	.002	par_47
e54	.319	.037	8.548	***	par_48
e55	.217	.054	3.981	***	par_49
e58	.219	.027	8.009	***	par_50
e61	.080	.009	8.716	***	par_51
e62	.084	.010	8.645	***	par_52
e63	.032	.007	4.693	***	par_53
e78	.119	.125	.957	.339	par_54
e79	.297	.092	3.231	.001	par_55
e59	.171	.028	6.138	***	par_56

**[STRUCTURAL MODEL]**

**Squared Multiple Correlations: (Group number 1 - Default model)**

	Estimate
UTAUT	.657
Satisfaction	.750
Socialfluence	.267
Performance_Expectancy	.607
Intention_Continuance	.612
Effort_Expectance	.544
Innovation	.236
Optimism	.322
SAT2	.670

UA5	.638
UA6	.861
CONTI.INT2	.886
CONTI.INT3	.743
CONTI.INT4	.739
SAT3	.565
CONFIRM2	.732
CONFIRM3	.473
SI1	.801
PE2	.561
PE1	.696
EE4	.583
EE2	.633
SI2	.898
INNO6	.709
INNO5	.620
INNO4	.574
INNO3	.609
OPT8	.616
OPT6	.595

## Appendix G

### Respondents Demographics

#### Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18 - 24	11	4.2	4.2	4.2
25 - 34	137	52.5	52.9	57.1
35 - 44	81	31.0	31.3	88.4
45 - 54	29	11.1	11.2	99.6
55 - 65	1	.4	.4	100.0
Total	259	99.2	100.0	
Missing System	2	.8		
Total	261	100.0		

### Experience with internet

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid very poor	1	.4	.4	.4
poor	5	1.9	1.9	2.3
moderate	20	7.7	7.7	10.0
good	150	57.5	57.5	67.4
very good	85	32.6	32.6	100.0
Total	261	100.0	100.0	

### Education

	Frequency	Percent	Valid Percent	Cumulative Percent
High School or less	3	1.1	1.1	1.1
Diploma	42	16.1	16.1	17.2
Bachelor's Degree	161	61.7	61.7	78.9
postgraduate	55	21.1	21.1	100.0
Total	261	100.0	100.0	

### Experience with computer

	Frequency	Percent	Valid Percent	Cumulative Percent
5 - 10	65	24.9	24.9	24.9
more than 10 years	196	75.1	75.1	100.0
Total	261	100.0	100.0	

### Income: S.R.

	Frequency	Percent	Valid Percent	Cumulative Percent
less than 2999	4	1.5	1.5	1.5
3000 - 4999	15	5.7	5.8	7.3
5000 - 9999	70	26.8	26.9	34.2
10.000 - 19.999	158	60.5	60.8	95.0
more than 20.000	13	5.0	5.0	100.0
Total	260	99.6	100.0	

Missing	System	1	.4		
	Total	261	100.0		

**Gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	152	58.2	58.2
	female	107	41.0	99.2
	3.00	2	.8	100.0
	Total	261	100.0	

## Appendix H

### Pilot Study

Performance Expectancy	$\alpha = 0.646$		$\alpha = 0.70$ (Trial 1)	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PE1	.392	.601	.417	.705
PE2	.674	.439	.703	.436
PE3	.516	.529	.506	.671
PE4	<del>.222</del>	.693		

Effort Expectancy	$\alpha = 0.774$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
EE1	.449	.787
EE2	.648	.680
EE3	.608	.703
EE4	.623	.701

Social Influence	$\alpha = 0.747$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SI1	.565	.683
SI2	.666	.636
SI3	.475	.715
SI4	.341	.756
SI5	.549	.699

Facilitating Conditions	$\alpha = 0.72$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
FC1	.490	.676
FC2	.304	.729
FC3	.459	.685
FC4	.686	.574
FC5	.534	.654

<u>Culture</u> Uncertainty Avoidance	<b><math>\alpha = 0.85</math></b>	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UA1	.484	.845
UA2	.563	.833
UA3	.757	.795
UA4	.747	.796
UA5	.608	.825
UA6	.616	.825

<u>Culture</u> Individualism Collectivism	<b><math>\alpha = 0.627</math></b>		<b><math>\alpha = 0.716</math> (Trial 1)</b>	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ID1	.232	.619	.235	.731
ID2	.347	.596	.410	.693
ID3	.389	.573	.406	.691
ID4	.573	.490	.657	.599
ID5	.655	.495	.623	.626
ID6	.350	.587	.413	.687
ID7	<del>.013</del>	.716		

Confirmation	$\alpha = 0.73$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CON1	.566	.638
CON2	.617	.584
CON3	.517	.697

Continuance Intention	$\alpha = 0.82$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CI1	.574	.809
CI2	.741	.740
CI3	.741	.733
CI4	.561	.824

Satisfaction	$\alpha = .75$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<b>SAT1</b>	.434	.753
<b>SAT2</b>	.644	.640
<b>SAT3</b>	.434	.758
<b>SAT4</b>	.711	.597

Optimism	$\alpha = 0.85$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OPT1	.446	.849
OPT2	.482	.847
OPT3	.687	.829
OPT4	.632	.833
OPT5	.543	.841
OPT6	.697	.828
OPT7	.381	.853
OPT8	.624	.835
OPT9	.525	.844
OPT10	.593	.837

Innovation	$\alpha = 0.74$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
INNO1	.665	.663
INNO2	-.273	.863
INNO3	.647	.665
INNO4	.408	.723
INNO5	.661	.662

INNO6	.833	.618
INNO7	.531	.701

Discomfort	$\alpha = 0.667$		$\alpha = 0.690$ (Trial 1)	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
DIS1	.444	.690		
DIS2	.609	.578	.555	.618
DIS3	.426	.621	.469	.639
DIS4	.337	.642	.396	.657
DIS5	.181	.674	.136	.715
DIS6	.439	.617	.405	.656
DIS7	.375	.634	.442	.646
DIS8	.136	.677	.165	.701
DIS9	.482	.613	.484	.639

Insecurity	$\alpha = 0.81$	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
INSEC1	.465	.794
INSEC2	.538	.781
INSEC3	.659	.765
INSEC4	.519	.783

INSEC5	.527	.783
INSEC6	.503	.785
INSEC7	.506	.786
INSEC8	.367	.801
INSEC9	.439	.793

## Appendix I

The Research Models	Main Findings	
Davis et al. (1989)  <u>MODELS:</u> TAM TRA  Word Student(107) Studied Longitudinal  Per. usefulness Per. ease of use Attitude Beh. Intention Subjective Norms	<b>Significant: TAM</b>	
	Per. usefulness	Attitude
	Per. usefulness	Beh. intention,
	Per. ease of use	Attitude
	Per. ease of use	Beh. Intention
	<b>Not significant:</b>	
	Attitude	Beh. intention
	<b>Significant: TRA</b>	
	Attitude	Beh. Intention
	<b>Not significant:</b>	
Subjective Norms	Beh. intention	
Igbaria (1991) Revised TAM	<b>Significant:</b>	
	Age	computer anxiety

The acceptance of microcomputer technology 187 student Cross-sectional  Age Gender Education Com. anxiety user training experience Man. Support Per. usefulness Attitude Beh. Intention Beh. use		
	Gender	Com. anxiety
	Education	Com. anxiety
	User training	Com. anxiety
	Experience	Com. anxiety
	Man. support	Com. anxiety.
	Age	Per. usefulness
	Gender	Per. usefulness
	Education	Per. usefulness
	Com. anxiety	User Training
	user training	Experience
	experience	Man. support
	Man. Support	Com. anxiety
	Per. usefulness	Gender
	Attitude	Experience
	Beh. Intention	Management support
	Beh. use	Per. usefulness
		Age
		Gender
		Education
	user training	
	Experience	
	Man. Support	
	Com. anxiety	
	Per. usefulness	
	Attitude	
	Beh. Intention	
	Beh. Intention.	
	Beh. Intention.	
	Beh. Intention.	

	Attitude	Beh. Intention.
	Age	Behaviour
	Education	Behaviour
	user training	Behaviour
	Experience	Behaviour
	Man. support	Behaviour
	Per. usefulness	Behaviour
	Attitude	usage
	Beh. intention	Behaviour
	<b>Not significant :</b>	
	Age	Attitude
	Education	Attitude
	User training	Attitude
	Com. Anxiety	Attitude
	Gender	Behaviour
	Com. Anxiety	Behaviour
Igbaria and Iivari(1995) Revised TAM	Experience	Self-Efficacy
	Experience	Com. Anxiety
Models: TRA, TPB, TAM	Org. support	Self-Efficacy
	Self-Efficacy	Com Anxiety
computer Usage and Self-efficacy	Experience	Per. Ease of Use

(450) Employees Cross-sectional study Experience Self Efficacy Com. Anxiety Org. Support Per. Usefulness Per. Ease of Use Behaviour	Org. Support	Per. Ease of Use
	Self-Efficacy	Per. Ease of Use
	Com. Anxiety	Per. Ease of Use
	Experience	Per. Usefulness
	Org. support	Per. Usefulness
	Per. Ease of Use	Per. Usefulness
	Experience	Behaviour
	Per. Usefulness	Behaviour
	<b>Not significant :</b>	
	Org. support	Com. Anxiety
	Self-Efficacy	Per. Usefulness
	Com. Anxiety	Per. Usefulness
	Org. Support	Behaviour
	Self-Efficacy	Behaviour
Com. Anxiety	Behaviour	
Per. Ease of Use	Behaviour	
Igbaria et al.,(1995) TAM  <b>Models: TAM, TPB</b>  The use of Micro computer	<b>Significant</b>	
	User Training	Per. ease of use
	User Training	Per. usefulness
	User Training	Per. usage,
	User Training	variety of use
	Experience	Per. ease of use
	Experience	Per. usefulness
Experience	variety of use	

(212) Students  Cross-section Study  User Training  Experience  end user computing support,  management support  system quality  per. ease of use  per. usefulness  per. usage,  variety of use,	Experience	Per. usage
	end user computing support	Per. ease of use
	end user computing support	Per. usefulness
	end user computing support	variety of use,
	end user computing support	Per. usage
	Man. support	Per. ease of use
	Man. support	Per. usefulness
	Man. support	Per. usage
	Man. support	variety of use,
	system quality	Per. ease of use
	system quality	Per. usefulness
	system quality	variety of use
	Per. ease of use	Per. usefulness
	Per. ease of use	Per. usage
	Per. ease of use	variety of use,
	Per. usefulness	Per. usage,
	Per. usefulness	variety of use,
<b><u>Not significant:</u></b>		
System Quality	Per. usage.	
Igbaria et al. (1997) Revised TAM	<b>Significant :</b>	
Man. support	Per. ease of use	
<b>Models:</b> TAM, TRA	External computing support	Per. ease of use

<p>Computing Technology</p> <p>Usage in Small and medium enterprises</p> <p>(358) Employees</p> <p>Cross-sectional study</p> <p>Per. usefulness</p> <p>Per. ease of use system usage,</p> <p>internal computing support</p> <p>internal computing training</p> <p>man. support</p> <p>external computing support</p> <p>external computing training</p>	External Computing Training	Per. ease of use
	Internal computing training	Per. usefulness
	Man. support	Per. usefulness
	External computing support	Per. usefulness
	Per. ease of use	Per. usefulness
	Man. support	System usage
	External computing support	System usage
	External Computing Training	System usage
	Per. usefulness	System usage
	Per. ease of use	System usage
	<b><u>Not significant :</u></b>	
	Internal computing support	Per. ease of use
	Internal computing training	Per. ease of use
	Internal computing support	Per. usefulness
Internal computing support	System use	
Internal computing training	System use	
Hu et al. (2003) TAM	<p><b>Significant:</b></p> <p><b>Before training</b></p> <p>Job relevance</p>	Per. usefulness

TAM in teaching	Compatibility	Per. ease of use
Word Program Provided by Microsoft	Self-efficacy	Per. ease of use
(130) Academic Worker	Self-efficacy	Beh. intention
Longitudinal	Subjective Norms	Beh. intention
	Subjective Norms	Per. usefulness
	Per. usefulness	Beh. intention
Per. usefulness	Per. ease of use	Per. usefulness.
Per. ease of use	<b>After training</b>	
Subjective Norms	Job relevance	Per. usefulness
Job relevance	Compatibility	Per. ease of use
Compatibility	Compatibility	Per. usefulness
Self-efficacy	Self-efficacy	Per. ease of use
Beh. intention	Self-efficacy	Beh. intention
	Subjective Norms	Per. ease of use
	Subjective Norms	Beh. intention
	Subjective Norms	Per. usefulness
	Per. usefulness	Beh. intention
	Per. ease of use	Per. usefulness
	<b>Not significant:</b>	
	<b>Before training :</b>	
	Per. usefulness	Beh. intention
	Compatibility	Per. usefulness

	<b>After training :</b>	
	Per. usefulness	Beh. Intention
	Subjective norms	Beh. intention
Gupta et al. (2008) UTAUT	<b>Significant :</b>	
ITC adoption E-Government	Performance Expectancy	Beh. Intention
102 Employees	Effort Expectance	Beh. Intention
Cross-sectional	Social influence	Beh. intention
	Facilitating conditions	Behaviour
Performance expectancy		
Effort Expectancy	<b>Not significant:</b>	
Social influence	Beh. intention	Behaviour
Facilitating conditions	PE	Beh. Intention
Beh. intention	EC	Beh. intention
Gender	SI	Beh. intention
Behaviour		
Hsu and Chiu (2004) <b>Revised DTPB</b>	<b>Significant:</b>	
	interpersonal influence	eService satisfaction
Electronic services prediction	Per. Usefulness	eService satisfaction
(100) Taiwanese companies	Per. playfulness	eService satisfaction
(149) employees	self-efficacy	interpersonal influence
Cross-sectional	<b>not significant:</b>	
	risk	eService satisfaction

interpersonal influence	self-efficacy	eService satisfaction
external influence	Per. controllability	interpersonal influence
Per. Usefulness		
Risk		
Per. playfulness		
self-efficacy		
Per. controllability		
eService satisfaction		
<b>Venkatesh et al.(2003) UTAUT</b>	<b>Significant:</b>	
Four different	Performance expectance	Beh. intention
Organizational systems.	via age to	
Employees (215)		
Longitudinal Study	PE via gender to	Beh. intention
	EE via age to	Beh. intention
Performance expectancy (PE)	EE via gender to	Beh. intention
Effort expectancy (EE)	EE via experience to	Beh. intention
Social influence (SI)	FC via age to	Beh. intention
Facilitating conditions (FC)	FC via experience to	Beh. intention
Attitude		
Com. anxiety,	<b>Not significant</b>	
self-efficiency	facilitating conditions	Beh. intention
Age gender experience voluntariness	self-efficiency	Beh. Intention
Com. anxiety,	Com. anxiety	Beh. Intention
	Attitude	Beh. Intention

	Beh. intention	Beh. use	
Venkatesh and Davis (2000) TAM2	Subjective Norms via experience to	Beh. intention	
TAM, TPB	Subjective Norms via voluntariness to	Beh. Intention	
Studying four Organizational systems 156 Employees Longitudinal Study	Subjective Norms via experience to	Per. Usefulness	
	Subjective Norms	Image	
	Image	Per. Usefulness	
	Job relevance via output quality to	Per. Usefulness	
	result demonstrability	Per. Usefulness	
	Per. ease of use	Per. usefulness	
	Job relevance	Per. ease of use	Beh. intentions
	output quality	Per. usefulness	
	result demonstrability		Beh. Intentions
	Per. usefulness	Beh. Intentions	Beh. use
Per. ease of use			
Beh. intention			
Beh. use			
experience and voluntariness			
Huh et al., (2009)	Significant: <b>TAM</b>		

<p>Comparing TAM, TPB, DTPB</p> <p>Hotel sector in South Korea</p> <p>319 employees</p> <p>Cross-sectional Study</p> <p>Per. usefulness</p> <p>Per. ease of use</p> <p>attitude</p> <p>Beh. intention</p> <p>subjective norms</p> <p>Per. Beh. control,</p> <p>compatibility</p> <p>peer influence</p> <p>social influence</p> <p>self-efficiency</p> <p>technical support</p>	Per. ease of use	Per. usefulness
	Per. ease of use	Attitude
	Per. usefulness	Attitude
	Per. usefulness	Beh. intentions
	Attitude	Beh. intentions
	<b>TPB</b>	
	Attitude	Beh. intentions
	Subjective Norms	Beh. intentions
	Per. Beh. Control	Beh. intentions
	<b>DTPB</b>	
	Per. usefulness	Attitude
	Per. computability	Attitude
	peer influence,	Subjective Norms
	social influence	subjective norms
self-efficacy,	Per. Beh. control	
technical support	Per. Beh. Control	
<b>DTPB</b>		
<b>not significant</b>		
Per. ease of use	attitude	

Per. Perceived. Man. Management. Beh. Behavioural. Com. Computer. Org. Organisational...		

