Customer Behaviour towards Internet Banking: A Study of the Dormant Users of Saudi Arabia

by

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Abstract

Technology acceptance, especially internet banking acceptance has become a vital issue in the business world today. A number of studies agree on the importance of customer adoption and full utilization of internet banking services as the key factors for banks to achieve the benefits from launching this channel (eg. Guriting & Ndubisi, 2006; Nor, 2005; Yousafzai, 2005; Mols et al., 1999). They also highlight the crucial role of the comprehensive understanding of the factors and their interactions with each other that influence customers in accepting and using internet banking services. A review of literature related to internet banking indicates that while there are numerous studies that have tried to identify the factors affecting non-adopters and/or users of internet banking there is no single study, specifically in Saudi Arabia, that sheds light on the factors affecting dormant users of internet banking. Hence, the present study provides additional insights into this issue.

The study adds to the body of knowledge in the technology acceptance field by developing a comprehensive model for internet banking acceptance. The model extended the Technology Acceptance Model (TAM) to include additional components, namely task-technology fit (TTF), perceived trust and perceived risk

The subjects for this study were Saudi bank customers who are dormant users of internet banking services. One thousand copies of the questionnaire were distributed in five Saudi cities: Riyadh, Jeddah, Dammam, Abhah and Buraydah. A total of 430 completed questionnaires were received, giving a response rate of 43% of the original sample. Structural equation modelling (SEM) was the statistical technique employed in this study. The main results of this study suggest that two factors, namely perceived usefulness and service visibility directly influence Saudi customers' intention to use internet banking. Perceived ease of use is indirectly significant on the behavioral intentions through perceived usefulness. Moreover, perceived trust, system reliability and accessibility significantly influence perceived ease of use of internet banking. The results also reveal that customer trust in internet banking can be developed by focusing on only one theoretical construct of trust, perceived bank trustworthiness of the internet banking provider. Based on the findings, implications for internet banking practice and related future research have been identified.

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1. Introduction

Chapter 1 presents the research background and the rationale for the research. It introduces the reader to the objectives this study aims to achieve and highlights the theoretical and practical value of the present study. The chapter also provides a brief introduction to electronic financial services literature. Finally, the chapter presents the outline of the thesis.

1.1 Study Background

A recent commercial phenomenon has been the growth in the use of the internet in all business activities, particularly for financial services industries. Internet technologies have essentially changed the way in which banks provide their services and customers conduct their banking needs. One of these technologies, which has increasingly become a favoured distribution channel by service providers and customers alike, is internet banking services (Haque, 2009). Internet banking is defined as 'the use of the internet as a remote delivery channel for banking services and internet banking is defined as a bank that offers (web-based) transactional services' (Gopalakrishnan et al., 2003: p. 413). Internet banking as a banking channel allows customers to conduct all traditional banking services, such as making online bill payments, balance enquiry and fund transfer to other accounts without visiting their bank branch.

Internet banking research points out that banks which do not offer internet banking services are expected to lose more than 10% of their customers over the next five years because their competitive advantages in banking service delivery will erode (Tower Group, 2005). By

providing internet banking services as an alternative delivery channel, banks seek to lower operating costs by reducing their branch networks and downsizing the number of service staff, improve their banking services and customer satisfaction and retain their existing customers (Khalfan et al., 2006; Almogbil, 2005). Internet banking is considered as the cheapest distribution channel for standardised bank operations (Polasik & Wisniewski, 2009). Booz Allen & Hamilton (2001), cited in Yousafzai, (2005), claim that an average payment transaction through the internet costs 0.01 US$ as compared with 0.02 US$ for a personal computer banking service, 0.027 US$ for an ATM service, 0.54 US$ for a telephone banking service and 1.07 US$ at a bank branch. From the customers' perspective, this banking channel facilitates a convenient and effective approach to manage personal banking needs, as it is accessible 24 hours a day and 365 days a year from any location and without visiting a bank branch (Rotchanakitumunai & Speece, 2003; Bruno, 2003).

Banks cannot achieve the benefits of internet banking unless customers accept and fully utilise its associated capabilities. Al-Gahtani & King (1999) state there will be little return from technological developments if customers fail to adopt and fully utilise its capabilities. Technology acceptance, especially internet banking has become a vital issue in the business world today. Understanding customers' requirements and meeting their demands and expectations regarding internet banking has become a challenge for banks. Courtier & Gilpatrick (1999) recommend that banks must survey customers' requirements on a regular basis in order to understand the factors that can influence their intention to accept and fully utilise internet banking services. Such understanding will help banks to build appropriate websites and strategies in order to encourage their customers to adopt and fully utilize the internet banking channel.

1.2 Rationale for Research

Previous studies agreed on the importance of customer acceptance and fully utilizing internet banking services as the key factor in order for banks to achieve the benefits from launching this channel (Guriting & Ndubisi, 2006; Nor, 2005; Yousafzai, 2005; Mols et al., 1999). They also highlighted the crucial role of the comprehensive understanding of the factors and their interactions with each other that influence customers in accepting and using internet banking. A review of the literature related to internet banking indicated that while there are numerous studies that have tried to identify the factors affecting non-adopters (Guriting & Ndubisi, 2006; Gerrard et al., 2006) or users (Cheng et al., 2006), there is currently no study that sheds light on the factors influencing customers who are dormant users of internet banking. Moreover, most of the previous research that studied internet banking users' behaviour has not distinguished between heavy users and dormant users of internet banking. Users of internet banking tend to be treated as a homogeneous population. This might have led to a generalisation of some factors that were not accurate and appropriate for both groups (heavy users or dormant users).

Mearian (2001) claimed that most of the banks' websites are accessed by huge numbers of customers in the USA, however only a minority of customers have made online financial transactions. Furthermore, recent private reports revealed by some Saudi banks have shown that although a high number of Saudi customers have registered for their internet banking service as users, most of them rarely use this channel and only a few of them have fully utilized its capabilities (Saudi Arabian Monetary Agency, 2009). As a result, in order to provide additional insights into this topic, a comprehensive study is needed to focus more on the factors affecting Saudi customers who are dormant users of internet banking services. In

this study, dormant users of internet banking are defined as 'bank customers who have already registered as users of internet banking channels, but who still use two other banking channels, i.e., branch banking, ATM or phone banking as the most frequent ways of conducting their banking services'. There are three issues which should be highlighted regarding this definition. First, in the present study, the definition of dormant users of internet banking is based on how frequently a customer uses internet banking compared with other banking channels. This definition is based on the suggestions provided by the marketing research department of the Al-Rajhi Bank, one of the leading banks of Saudi Arabia. According to this department, the majority of Saudi bank customers frequently utilise (heavy use) only two banking channels, such as branch banking with ATM, or phone banking with ATM and other banking channels are rarely used (dormant use). Thus this study considers the customers who do not utilise internet banking as one of the two most frequent channels for conducting their financial services as dormant users of this channel. Second, this definition does not differentiate dormant users from heavy users based on the variety and number of banking services they access through the internet. This is because all bank customers are different in terms of the variety and number of banking services conducted through different banking channels they utilise. The last issue is that the definition does not segment internet banking user categories (dormant and heavy users) based on their experience regarding the use of internet banking. This is because some customers may have two or three years experience with internet banking, but they are still considered to be dormant users of internet banking.

1.3 Research Objectives

The overall aim of this research is to add to the body of knowledge in the area of technology acceptance and to extend our knowledge of the factors influencing intentions towards the use

of internet banking among customers who are dormant users of this channel. Consumer use of internet banking in Saudi Arabia is used as the vehicle to develop this knowledge, with the study designed to achieve the following objectives:

1. To identify the factors affecting Saudi customers' intentions towards the use of internet banking.

2. To explain the interactions between those factors affecting the intentions towards internet banking use.

3. To examine the role of Saudi customers' trust with regard to the use of internet banking.

4. To examine how trust might be developed to increase the use of internet banking.

5. To examine how the dimensions of task-technology fit influence behavioural intention and perceived ease of use with regard to internet banking use.

1.4 Research Questions

The framework for this study is based on the technology acceptance model (TAM) (Davis, 1986), outlined in Chapters 2 and 5 because of its parsimony and the wealth of empirical support for it (Agarwal & Prasad, 1999; Adams et al., 1992; Lin & Lu, 2000; Venkatesh et al., 2003; Phaal et al., 2006). Furthermore, in order to overcome the existing weaknesses of the TAM that have been observed in the present study, this research extends the TAM by

including additional components, namely task-technology fit (TTF), perceived trust and perceived risk (see Chapter 5, Section 5.1, p: 141 for more detail). This study is intended to answer the following research questions:

1. What are the factors that directly influence Saudi customers' intentions towards the use of internet banking?

2. What is the relationship between Saudi customers' perception of usefulness and ease of use of internet banking?

3. How do these perceptions affect Saudi customers' intention to use internet banking?

4. What is the main role of Saudi customers' trust in internet banking acceptance?

5. How might Saudi customers' trust in internet banking be increased?

6. Do the dimensions of task-technology fit have varied influences on behavioural intention and perceived ease of use?

7. Which of the task-technology fit dimensions has more influence on Saudi customers' intentions and their perceptions of ease of use?

1.5 Theoretical and Practical Value of the present Research

This research makes a contribution to both theory and practice. From a theoretical viewpoint, the present research adds to the body of knowledge in five areas:

1- Extending existing literature by identifying the factors influencing the acceptance of internet banking among banks customers who have already accepted this channel, but who have not fully utilised its capabilities.

2- Developing a comprehensive model which contributes to online customer behaviour literature by extending the Technology Acceptance Model (TAM) to include the Task-Technology Fit (TTF) model, perceived trust and perceived risk and applying them to the context of internet banking.

3- Extending existing literature by applying the developed model to Saudi customers.

4- Contributing to the online trust literature by examining the role of customer trust in the context of internet banking and how it might be increased.

5- Contributing to technology acceptance theories by showing the role of the task-technology fit's dimensions in the acceptance of internet banking.

Aside from theoretical values, identifying the factors affecting the acceptance of internet banking and understanding the relationships between them will help banks, particularly in Saudi Arabia, to respond to their customers' perceptions and address their customers' needs.

This can be achieved by building appropriate websites and formulating proper strategies in order to encourage their customers to fully utilize the internet banking channel.

1.6 Electronic Financial Services

The growth of the internet has dramatically changed the structure and nature of financial services. It has affected financial systems by moving from restricted propriety systems to open networks. The internet and related technologies have allowed financial providers to distribute their products and services through new channels, such as ATMs, telephone and internet banking. The main aim of this section is to provide a brief introduction to electronic financial services literature. The section divides into four sub-sections. Section 1.6.1 presents the revolution of electronic finance. In section 1.6.2, recent trends in financial services and the impact of IT will be discussed. Section 1.6.3 contains an overview of the Saudi Arabian financial sector and then internet banking in Saudi Arabia is presented in Section 1.6.4

1.6.1 A Revolution in Electronic Finance

Electronic finance is defined as 'the provision of finance services and markets using electronic communication and computation' (Allen et al., 2002: p. 5). The use of electronic finance goes back much further than the 1970s, particularly in 1918 when the Fedwire payment system allowed electronic settlement of payments between banks over the telegraph (Allen et al., 2002). This use of electronic communication in payment systems has steadily grown over time. By the end of the 1990s, electronic finance technologies had certainly influenced all aspects of the business of banking and financial intermediation. The internet and related technologies have allowed financial services to be distributed through new channels, such as ATMs, telephone and internet banking. Therefore, providers, such as banks, can offer products and services without much human touch and at very low cost. Cronin

(1998) states that the momentum of electronic finance has picked up substantially for four reasons:

(1) New distribution channel: the development of computer networks, such as the internet have enabled financial institutions to distribute their financial services and products through channels such as the internet and has made it easier for customers to conduct their banking services anywhere and anytime.

(2) No barriers to entry: with technology advances, nonbanking firms have been able to provide banking services. For example, in the area of bill payments, innovations have provided an opportunity for nonbanks, such as Checkfree, to break into the banking business.

(3) Changing customer expectations forcing the need for agility and flexibility: technology innovations have not only enabled financial providers to produce a range of products, but they have also had far reaching effects on customers' expectations. Financial providers should understand that in order to meet customers' expectations, they need to be flexible by separating the content (financial product) from the distribution channel (the branch) and agile enough to meet their customers' demands.

(4) Digital convergence of financial management transactions: technology advances have allowed for a convergence of a broad range of financial management activities, which were previously disparate. By the end of the 1990s, diverse transactions, such as bank, credit card and fund transfer were able to be conducted through one common interface. Therefore, a precondition for convergence was the need for communication among a wide range of financial institutions.

Claessens et al. (2002), cited in Allen et al., 2002, reviewed the state of electronic finance around the world and highlighted that the developments can be divided into two broad areas. The first is the impact on banking and financial services. They stated that the advent of the internet and other electronic communication means has fundamentally changed many aspects of the banking industry. For example, a number of financial services which were traditionally provided by banks are being provided by other entities. The second broad area is the transformation of the financial market. Due to the advances in technologies and the growth of the internet, these no longer need to be associated with a physical place. As a result most financial services have become global, such as trading systems for equities, bonds and foreign exchange. All these changes have important impacts for public policy with regard to the financial services industry and financial markets. Claessens et al. (2002) consider the implications for consumer and investor protection, safety and soundness regulation, competition policy and global public policy.

Recently, providers of financial services have offered their services and products through a number of delivery channels, from traditional bricks-and-mortar branches to wireless devices. Claessens et al. (2002) highlight six steps which can be distinguished in the production and distribution of financial services, although in practice these steps often overlap or are vertically integrated. These steps are:

1- *Access devices* (rather than a teller or branch) have become a first point for many customers to contact for financial services. These devices include personal computers and other wireless communication devises. These channels are complemented by low-cost "branch," kiosks (standalone computers connected to bank systems).

2- *Portals* have started to play a critical link between access devices and financial service companies. They offer access to many financial service providers, often for free or a fixed price, but they get revenue from fees paid by providers. These include specialised portals developed by financial service companies as well as general portals, such as Yahoo and Lycos. Portal companies aim to process and personalise information to capture customers. Moreover, customers can get access to financial service providers through many private networks, and also some providers of financial services have established their own portals.

3- *Aggregators* which complement portals and allow customers to compare, such as mortgage, insurance or lending products, offered by providers of financial services. Other specialised aggregators have undertaken functions on behalf of larger banks or insurance companies and developed online techniques to offer financial products to customers.

4- *Financial institutions* are conglomerate financial services providers that are global brands, such as Deutsche bank and Citigroup, and specialised financial services companies. Moreover, telecom companies have formed alliances to extend their global networks to deliver financial services online, such as Deutsche Telecom.

5- *Financial products* are being created to meet the needs of customers. These products are distributed through specialized providers of financial services or financial conglomerates.

6- *Electronic enablers (Enabling companies)* play an important role in supporting existing financial service providers and virtual banks. These companies include CheckFree and Sanchez.

1.6.2 Recent Trends in Financial Services and the Impact of IT

A number of the recent trends in financial services have been driven by the globalisation of financial markets and reshaped by technological innovations. Nieto (2001) states that among the many different trends shaping the provision of financial services, globalisation, deregulation and consolidation pose the greatest challenges for policy making. These trends will be explained based on Nieto (2001) in the following sub-sections.

1.6.2.1 Globalisation

This trend of financial services has increased financial integration, mergers and acquisitions and lowered barriers between markets. This is because technology advances have dramatically increased the ability of information to be transferred both in terms of volume and speed. This has made information available anywhere and anytime. For example, one of the advantages of internet banking is the ability to reach a larger customer base in geographically remote markets without building and maintaining a branch network. Therefore, IT has increased competition in financial services by making it much easier for foreign financial providers to penetrate local markets and rendered the process of price formation more transparent.

1.6.2.2 Deregulation

Two decades ago, financial services were heavily regulated. Regulation controlled both qualitative and quantitative aspects of financial providers' activities. This means that the administrative determination of prices charged for financial services, such as interest rate ceilings, and the types of services offered were restrictions on banks and were barriers to entry (limitations on activities of foreign banks) as well as geographic restrictions (limitations

on the opening of branches. The main aim of financial regulators is always to minimise system risk by providing government guarantees and addressing the moral hazards caused from them. However, in the light of the advent of new innovations, such as the internet, deregulation in financial activities has been reinforced. Deregulation in financial services was aimed at increasing competition and integrating financial markets while preserving financial stability. In other words, the basic objective was to achieve welfare gains from greater competition. Moreover, the aim of the integration aspects of deregulation was to globalize financial activities and break the historical segmentation between financial providers. Due to these developments, regulators' attention has increasingly turned to focus on customer and investor protection and competition, though in the case of banking, reducing system risk has remained their priority.

1.6.2.3 Consolidation

There are two regulatory developments which have influenced consolidation in financial activities. Firstly, regulators removed entry barriers within and across borders. Secondly, regulatory barriers separating the activities of the different financial activities, such as banking, insurance and securities activities, have been blurred, favouring mergers across sectors. It is noticeable that factors influencing consolidation may vary across financial activities. For example, the banking sector has been subject to strong competition from capital markets, especially for their larger clients in both their assets and liabilities. These forces required banks to increase their capital base via mergers and acquisitions so as to achieve economies of scale in the medium-size loan maket, where larger banks have potential competitive advantages. However, the agreement exists that a plethora of financial services, such as lending to small firms, brokerage services and trading systems, have witnessed a

reduction in their economies of scale and an increase in competition because of the advances of IT. Technology innovations have also influenced securities markets which have allowed securities trading and capital raising activities to move to global financial centers. This results in consolidation of trading systems.

1.6.3 Saudi Arabian Financial Sector

The financial system in Saudi Arabia comprises two main parts, the Saudi Arabian Monetary Agency (SAMA) and the private commercial banks. These two parts will be discussed in the following sub-sections.

1.6.3.1 Saudi Arabian Monetary Agency SAMA (The Central Bank)

The Saudi Arabian Monetary Agency (SAMA) was established in 1952 to stand at the apex of the financial system (Saudi Arabian Monetary Agency, 2009). The main aim of SAMA was to serve as a regulatory agency and act as the government's bank. In the 1960s, SAMA created banking regulations to develop the banking industry further (Saudi Arabian Monetary Agency, 2009). In 1972, the Saudi currency, Riyal, was initially circulated (Saudi Arabian Monetary Agency, 2010). At the beginning of 1980, SAMA started working as a consultant to the government in managing its public debt, restructuring the financial market, and regulating and monitoring commercial banks (U.S.-Saudi Arabian Business Council, 2010). SAMA acts as a central bank controlling all financial activities. SAMA and the commercial banks play significant parts in upgrading and developing Saudi banking technology such as electronic clearing, ATMs, stock trading, and the Electronic Funds Transfer System (Saudi Arabian Monetary Agency, 2010).

1.6.3.2 Commercial Banks in Saudi Arabia

There are eleven private commercial banks in Saudi Arabia (Saudi Arabian Monetary Agency, 2010). All these banks have become the primary financial institutions for provision of all financial services. The rapid growth in consumer lending, which started since 2000, has up to now, been the primary engine of banking sector earnings. According to the Saudi Arabian Monetary Agency's annual report (2008), consumer lending by Saudi banks increased significantly from SR 11 billion in December 1998 to SR 188 billion as of December 2007. Consumer lending allowed Saudi banks to have a significant supply of high-yield and low-risk assets at a time of declining interest rates (Alhudaithy, 2009). Homidan (2006) states that this high advantage was not related to economic performance, but was rather driven by institutional and technological innovation, namely, the launch of SARIE, an electronic payment system, and the subsequent leveraging of the SARIE platform to automate public sector salary payments. The new salary payment mechanism thus transformed individuals' future earning power into security to support bank lending (Alhudaithy, 2009). At the beginning of 2004, optimistic economic conditions started to contribute more directly to Saudi banks' incomes as the continuing boom in local equities generated fast increase in brokerage fees as well as special commission income from margin lending (Kardouche, 2005).

Recently, some Saudi banks have lead the listings of the biggest banks in the Middle East. Saudi Arabia's Al-Rajhi Bank, National Commercial Bank, and the Samba Bank top the listing (The Banker, 2009). In 2006, four Saudi banks were ranked by market value among the biggest 500 companies in the world (Financial Times, 2008).

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1.6.4 Internet Banking in Saudi Arabia

Internet services were officially made available in the Kingdom of Saudi Arabia, for the public, in 1999 (Saudi Arabia Online, 2007). There are approximately 35 companies licensed to provide an internet service (Saudi Arabian Monetary Agency, 2009). Table 1.1 shows Middle East internet usage with Saudi Arabia user growth of 3,090% in the period 2000 to 2008. The Kingdom of Saudi Arabia is considered to be one of the rapidly growing countries in some fields especially in the internet market. The number of internet users has risen from 200,000 users in 2004 to 6,380,000 in 2008 (Internet World Stats, 2009). This growth rate is expected to keep on growing rapidly in Saudi Arabia due to the underlying strength of the economy and also the fact that 60% of the Saudi population consists of teenagers and young adults who adopt new technologies faster than expected (Saudi Arabia Online, 2009).

Table 1.1: Middle East Internet Usage and Population Statistics

Middle East	Population (2008 Est.)	Usage in Dec.2000	Internet Usage Latest Data	% Population (Penetration)	User Growth(2000-2008)
Bahrain	718,306	40,000	250,000	34,8%	525,0%
Iran	65,875,223	250,000	23,000,000	34,9%	9,100,0%
Iraq	28,221,181	12,500	275,000	1,0%	2,100,0%
Israel	7,112,359	1,270,000	5,263,146	74,0%	314,4%
Jordan	6,198,677	127,300	1,126,700	18,2%	785,1%
Kuwait	2,596,799	150,000	900,000	34,7%	500,0%
Lebanon	3,971,941	300,00	1,570,000	39,5%	423,3%
Oman	3,311,640	90,000	340,000	10,3%	277,8%
Palestine (west Bk.)	2,407,681	35,000	355,000	14,8%	915,7%
Qatar	824,789	30,000	351,000	42,6%	1,070,0%
Saudi Arabia	28,146,657	200,000	6,380,000	22,7%	3,090,0%
Syria	19,747,586	30,000	3,470,000	17,6%	11,466,7%
United Arab Emirates	4,621,399	735,000	2,260,000	48,9%	207,5%
Yemen	23,013,376	15,000	320,000	1,4%	2,033,3%
Total Middle East	196,767,614	3,284,800	45,861,346	23,3%	1,296,2%

Source: Internet World Stats, 2009

The rapid growth of internet users in the Kingdom of Saudi Arabia has encouraged more banks and companies to offer more of their services online. An economic report ranked Saudi Arabia first among Arab countries in terms of e-commerce growth, as the value of e-commerce transactions in Saudi Arabia has peaked at SR 12 billion (Arab Advisor Group, 2009). It further indicated that 3.5 million internet users or 14.26 % of the Saudi population

were engaged in e-commerce transactions. The results confirmed the country's emergence as an ideal market for regional e-commerce activities (Arab Advisor Group, 2009).

The first features of electronic innovation in Saudi banks was the introduction of Automated Teller Machines (ATMs) and point of sale networks that became operational in 1990 (Saudi Arabian Monetary Agency, 2009). ATMs offered basic bank services for Saudi customers, such as cash withdrawal, balance enquiries and fund transfers. The total number of ATMs increased from 2,577 in 2001 to 6,079 in 2006, and the total number of cards issued also grew from 5,561,353 in 2001 to 9,971,521. In 2006 the number of ATM transactions exceeded 626,711,813 (Saudi Arabian Monetary Agency, 2009). A further feature of the electronic revolution in Saudi banks was phone banking, which was introduced in 2000. Phone banking that utilises an automated voice response system offers a variety of banking services for Saudi customers, such as transfers between accounts, utility bill payments and balance enquiries.

In the middle of 2000, further advancements in the technology revolution and increases in the number of internet users among Saudis encouraged eight Saudi banks to establish their own websites. The contents of the websites included information about the bank and addresses of ATMs/branches (together with telephone and fax numbers), press release information, newsletters, feedback channels, site maps, etc. The websites also provided information regarding customer services, financial markets, retail and corporate banking and treasury services (Jasimuddin, 2001). In 2001, the National Commercial Bank (NCB) and Arab National Bank (ANB) were the first Saudi banks to offer internet banking services for their customers.

Currently, all Saudi banks offer internet banking services for their customers. A review of Saudi banks' websites revealed that they offer a wide variety of services available online. These services range from basic financial services, such as bill payments, balance enquiries and money transactions, to more sophisticated financial services, such as stock trading and SMS services. Table 1.2 reviews internet banking services offered by Saudi banks.

Table 1.2: Review of internet banking services provided by Saudi Banks

Bank	Bank services available online
Al Rajhi Bank	View account and credit card statements, transfer funds within clients' own accounts or to other clients of the bank and to other accounts in local or international banks, standing order services, utility bill and government payments, investment services, car insurance services, mail and SMS services, cheque book services, credit card services, online stock trading
Banque Saudi Fransi	Manage accounts, utility bills payments, transfer funds within clients' own accounts, to other clients of the bank and to other accounts in local or international banks, manage credit cards, update contact information, request cheque book and accounts statements, project clients' balances with financial organiser, online stock trading.
The National Commercial Bank	Request bank statements as a text, MS Excel or mailed statement, transfer funds between clients' own account, to other clients of the bank and to local or international banks, bill payments, manage credit card accounts, request card statements, fund summary and trading history, SMS services (registration/ edits), check deposit rates and fund rates, online stock trading.
Arab National Bank	Balance enquiries, view detailed statements or mini statements, fund transfers, create and manage standing orders, make payments, utility bill payments, create beneficiaries for clients who want to transfer money to them, online stock trading, view and send messages, request cheque book and debit/ credit cards, subscribe for the mobile bank.
Riyad Bank	Review account balances and transactions, transfer funds between clients' own accounts to other the bank accounts holders and to designated accounts at other banks, online stock trading, receive and pay bills and traffic fines, book and break time deposits, contact customer service via email, set up family or business members to use the service using clients' own rules.

Table 1.2: Review of internet banking services provided by Saudi Banks (Continued)

Bank	Bank services available online
The Saudi British Bank	Check account and credit card balances, transfer funds between clients' own accounts and to other accounts world-wide, online account opening, term deposit and demand deposit account opening, open a fixed deposit account and change existing maturity instructions, create and manage standing orders, online stock trading, bills and credit card payments.
Samba Financial Group	Account and credit card enquiries, utility bill payments, fund transfers between clients' own accounts, to other clients of the bank; and to other accounts in local or international banks, online stock trading, investment services, make payments, cheque book services, loans services, standing orders services, register for SMS alerts, receive and send emails.
Saudi Investment Bank	Check accounts; transactions; loans and deposits, view foreign exchange rates, transact in and between any of the bank currencies, utility bill payments, transfer funds between clients' own accounts to third parties (national or international transfers); online stock trading
Bank Al Jazira	Account enquiry, cheque book services, view loans, view or order account statement, register for SMS alerts, transfer funds between clients' own accounts, online stock trading.
Saudi Hollandi Bank	Check account details, check investment portfolios, online stock trading, check international brokerage portfolios/details, credit cards payments, transfer funds between clients' own accounts, to other clients of the bank and to other accounts in local or international banks, obtain secure e-mail address to communicate with the bank.
Bank Albilad	Account enquiries, national or international transfers, online stock trading, utility bill payments, manage beneficiaries, credit card services, investment services.

Source: This research

1.7 Organisation of the Thesis

To answer the research questions outlined in Section 1.4, the thesis is organised into nine chapters. Figure 1.1 shows a road map to the thesis. Chapter 2 discusses consumer behaviour in the context of the financial services industry and reviews the literature relevant to technology acceptance models, namely the innovation diffusion theory (IDT), the theory of reasoned action (TRA), the theory of planned behaviour (TPB), technology acceptance model (TAM) and task-technology fit (TTF) model. Chapter 3 reviews the role of trust in the context of internet banking. The main objective of this chapter is to examine the notion and meaning

of the trust concept based on reviewing various theories of trust, namely personality theories, sociology and economics and interpersonal theories. The chapter will then identify the dimensions, antecedents and consequences of trust, which are considered to be more related to internet banking. This will lead to the proposition of a model of trust that provides a framework for trust in the internet banking context. Chapter 4 reviews previous studies conducted in the context of internet banking, and then identifies the main issues with these studies.

The literature review presented in Chapter 2 to Chapter 4 lays the foundations for Chapter 5. Chapter 5 develops a conceptual framework for internet banking acceptance. The conceptual model incorporates some of the most important factors influencing customer behaviour towards the use of internet banking. The chapter also proposes hypotheses for the relationships between these factors. Chapter 6 provides an overview of the philosophical assumptions related to the position of the present study and describes the methodology used to collect and analyse the data so as to explore the hypotheses associated with the proposed conceptual model in Chapter 5.

Chapter 7 presents the results of the data analysis using structural equation modelling (SEM) performed through LISREL, version 8.8. The chapter is divided into five sections. In Section 1, the results of the data screening procedures are presented; this section includes the treatment of missing data, checking for outliers, and assessing normality. In Section 2 and 3, the results pertaining to the assessment of the measurement model and the reliability and validity of the measurement constructs are presented respectively using the confirmatory factor analysis method (CFA). In Section 4, the structural model is evaluated and the

hypotheses developed in Chapter 5 are examined. The findings are summarised in the final section. Chapter 8 presents the discussion of the findings. Finally, Chapter 9 explores the implications of the results for theory and practice. It also summarises the limitations of the study, future research directions and conclusion.

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                          │   Chapter 1     │
                          │  Introduction   │
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Chapter 2	Chapter 3	Chapter 4
Literature Review of Technology Acceptance Models	The Role of Trust Relating to the Acceptance of Internet Banking	Internet Banking Research

Chapter 5
Conceptual Development

Chapter 6
Methodology

Chapter 7
Statistical Analysis

Chapter 8
Discussion

Chapter 9
Conclusion
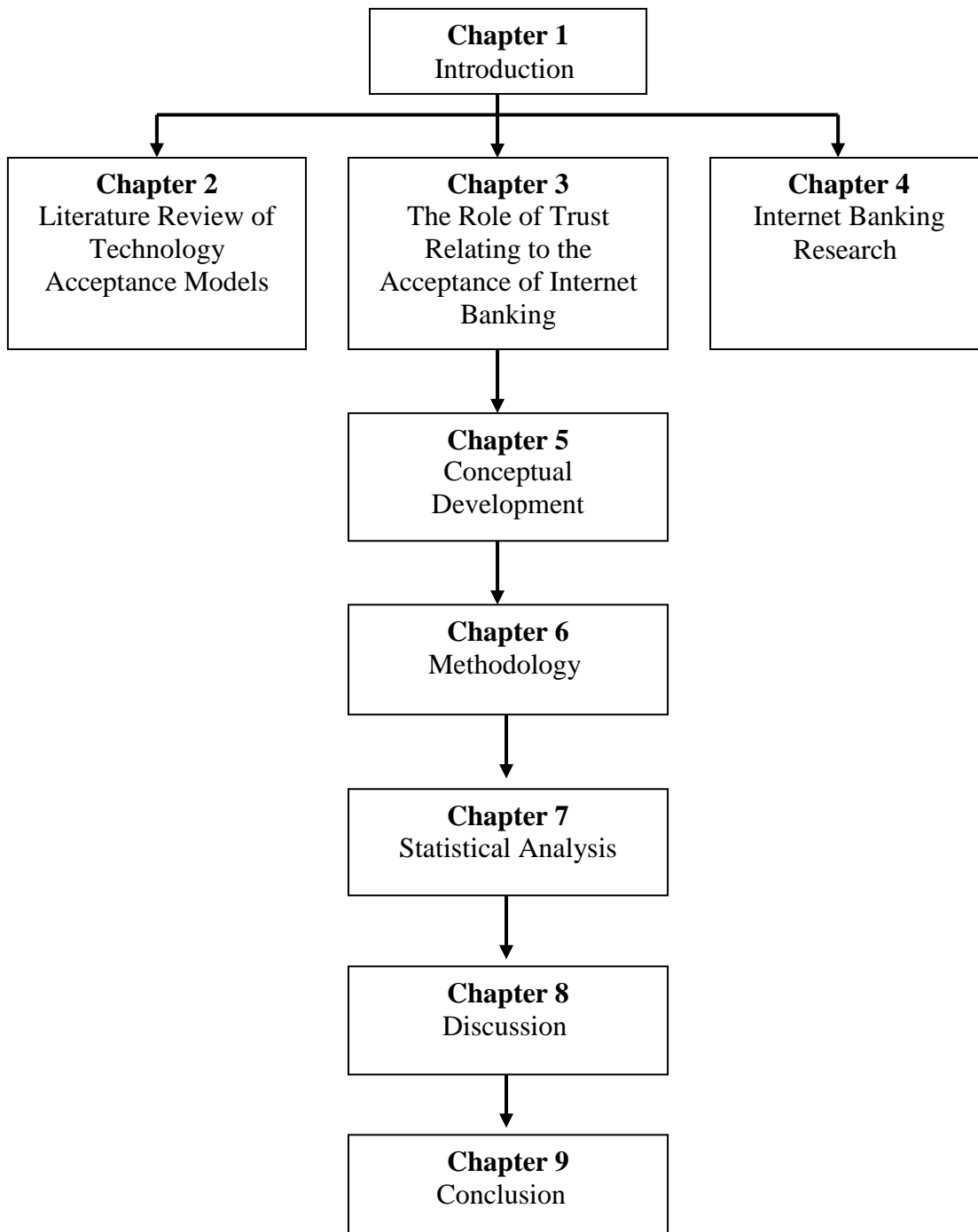
Figure 1.1: A Road Map to the Present Thesis

Chapter 1 introduced the research background and the rationale for research. It also presented the objectives that this study aims to achieve and provided an overview of the academic and managerial contributions made by the study. Moreover, a brief introduction to electronic

financial services literature was presented. The chapter concluded with the outline of the thesis. The next two chapters review the literature relevant to technology acceptance models and the role of online trust. Chapter 4 reviews previous studies conducted in the context of internet banking and then identifies the main limitations with these studies. These three chapters will pave the way to develop a conceptual framework that intends to explain Saudi customers' behaviour towards the use of internet banking.

2. Literature Review of Technology Acceptance Models

The aim of this chapter is to lay the foundations for proposing and developing a theoretical framework for internet banking use, as a conceptual basis for the empirical investigation reported in later chapters. Therefore, the chapter examines a series of models that address technology acceptance, namely the innovation diffusion theory (IDT), the theory of reasoned action (TRA), the theory of planned behaviour (TPB), the technology acceptance model (TAM) and the task-technology fit (TTF). In the present study, it is important to note that the TAM augmented by the TTF will be the chosen framework for the empirical investigation and therefore the features of the TAM and TTF model will be reviewed in more detail in this chapter and Chapter 5 as well.

2.1 Background

Organizations spend vast sums of money on information systems to obtain a number of advantages, such as cutting costs and improving the quality of their services and products (Lederer et al., 1998). However, if individuals are not willing to accept and fully utilize information technology, such as internet banking, it will not bring full benefits to the organizations (Davis, 1993). Venkatesh (1999) points out that in order for information technology to bring value to organizations, it has to be accepted and fully used. It is extremely important to find out the reasons why individuals choose to use or not use information technology. Swanson (1988) states that understanding individuals' behavior towards accepting or rejecting computers has proven to be one of the most challenging issues in information systems research. Understanding users' behaviour will help both systems

designers and developers to build systems that encourage individuals to accept and fully utilize them.

As a result of a lack of grounded theory in the information technology context, information systems researchers have based their investigation on models developed in other areas, for example, intention models drawn from social psychology (Harrison et al., 1997; Christie, 1981) in order to assist researchers to provide an understanding of the factors that determine information technology acceptance and usage. A review of the literature reveals that there are a number of models which have been widely used to study individuals' acceptance and usage behaviour of new technology. These models include the IDT (Rogers, 1983), the TRA (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980), the TPB (Ajzen, 1991), the TAM (Davis, 1989) and the TTF model (Goodhue & Thompson, 1995). These models are discussed in detail in sections 2.3 to 2.7 respectively. The next section briefly discusses consumer behaviour.

2.2 Consumer Behaviour in the Context of the Financial Services industry

Lamb et al. (2005) state that the term consumer behaviour refers to the process that inspires or causes an individual's decisions on what, when, where, and how to purchase goods and services. There are many definitions of consumer behaviour; however, these definitions tend to be very similar in meaning. For example, consumer behaviour has been defined as 'the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas, or experiences to satisfy needs and desires' (Solomon et al., 2006, p. 27). Schiffman et al. (2008) gave a similar definition as 'the behaviour that consumers display in searching for, purchasing, using, evaluating and disposing of products and services that they

expect will satisfy their needs' (p. 3). According to Andersone & Gaile-Sarkane (2008), these definitions generally describe responses to products in terms of mental, emotional or physical processes, actions and thoughts, feelings and experiences involved in the buying and consuming process and explain these as psycho-emotional processes.

As the present study focuses on consumer behaviour towards internet banking, which is one of the financial channels in banks, it is important to shed light on consumer behaviour in the context of the financial services industry. Beckett (2000) mentions three characteristics that distinguish financial services, namely transparency of performance, uncertainty of outcome and poor comparability. Transparency of performance refers to the availability of information and to consumers' ability to make evaluations based on that information (Laitos, 2008). By reason of the varying degrees of performance transparency, consumers might have difficulties in understanding and identifying the outcomes of some financial services. Some of the services are more transparent than others, such as information about credit cards and savings, while the available information and performance evaluations of a service, such as investment funds might prove difficult (Beckett, 2000).

Uncertainty of outcome refers to the role of services in giving consumers control over the uncertain external environment (Laitos, 2008). Beckett (2000) highlights that some financial services, such as money transactions or bank accounts, are designed to increase consumers' control and thus make life easier by giving certain promises for the future.. However, other financial services, such as investments, expose customers to uncertainty and are problematic for them to evaluate. When buying these kinds of services, customers are in fact buying a set of promises regarding the future. (Beckett, 2000). Finally, some financial services are

characterized by poor comparability, such as investments. Product and service comparisons are an important stage in a consumer's decision process (Laitos, 2008). Some financial services have more identifiable attributes and benefits, and therefore are more comparable (Beckett, 2000).

To better understand consumer behaviour in the context of the financial services industry, Beckett et al. (2000) developed a matrix which is based on the work of Dwyer et al. (1987) and Thibaut & Kelly (1959). Beckett et al. (2000) identified two principal factors that motivate and determine individual contracting choices, namely involvement and uncertainty. From a consumer behaviour perspective, involvement is defined as 'a motivation state of mind (arousal) that is goal directed' (Zaltman & Wallendorf, 1983, p. 550). This means that there is a link between the level of an individual's motivation towards a particular goal and the level of involvement of that individual (Aldlaigan & Buttle, 2001). Beckett et al. (2000) state that consumer involvement in the buyer-seller interchange incorporates several subsets: customer control (Bateson, 1989), customer participation and level of contact (Chase, 1978). Along the same lines, it is suggested that uncertainty or confidence is largely determined by perceptions of risk, which are determined by the complexity of the product or service being purchased and the certainty of outcome associated with that product (Shostack, 1977). Beckett et al. (2000) constructed a two-dimensional matrix of consumer behaviour by placing these factors, involvement and confidence, on to a simple continuum running from high to low. This matrix provides greater insights into the possible range of interaction modes. Beckett et al. (2000) claim that the advantage of this matrix is that it is developed based on economics, consumer behaviour and psychology. In this matrix, there are four quadrants and each one represents a different combination of involvement and uncertainty (see Figure 2.1). These

quadrants will be explained briefly in terms of the context of financial services based on Beckett et al. (2000) in the following paragraphs.
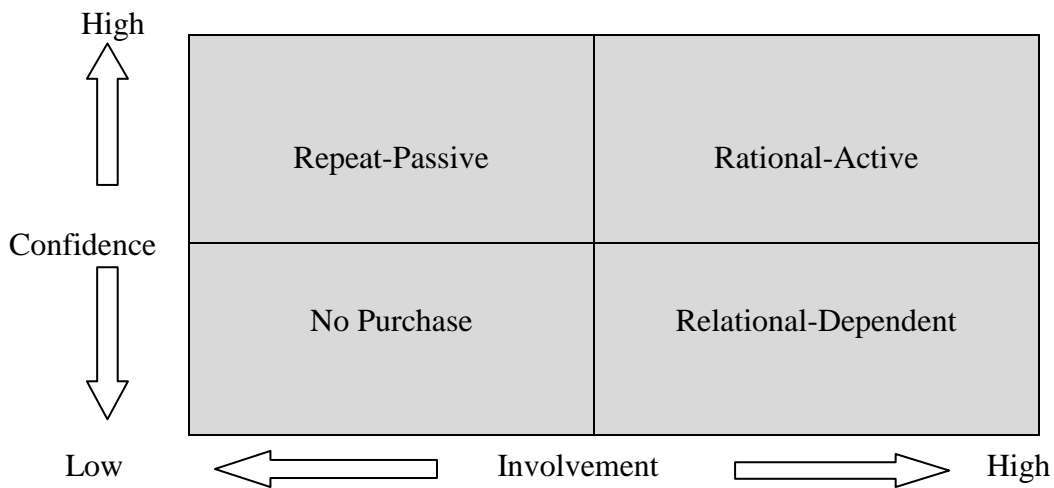
Figure 2.1: Consumer Behaviour Matrix (Beckett et al., 2000)

Repeat-Passive: customers, in this quadrant, have low levels of involvement and limited perception of uncertainty with a financial service because they are fully aware of the service's salient features. These customers can be described as 'passive' in the sense that they will make repeated interactions without actively looking for alternatives.

Rational-Active: in this quadrant, customers' involvement with regards to the process dimensions of control, participants and contact, and their confidence with regards to financial services complexity and certainty of outcome are all high. These customers own the ability and inclination to make carefully considered decisions across all financial services' choices.

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They tend towards discrete, rational contracting to structure their behaviour regarding the financial services whenever possible.

No Purchase: in this quadrant, customers make no purchase, because their levels of involvement and confidence with the financial services are low. A significant amount of marketing activity is directed at these customers, in an attempt to increase their awareness of alternative products or services and convince them of their relative advantages.

Relational-Dependent: customers, in this quadrant, have high levels of involvement, however they are not in control because of the complexity of the financial services or products and uncertainty of eventual outcome. Therefore, this reduces customers' confidence. Customers will look for advice and help from banks or third parties in order to make choices. These customers are described as 'dependent customers' who make relationships to reduce uncertainty and structure their pattern of purchases.

Black et al. (2002) highlight that consumer research needs to focus not just on understanding product choice, but also on understanding the reasons for channel choice. Therefore, in their study, they identified the factors which influence channel choice in financial services. Based on the results of focus group discussions, they developed a model of channel selection for financial services. In their model (Figure 2.2), they suggested that the choice of channel is affected by the consumers themselves, the nature of the product, the characteristics of the channel and the reputation of the organisation.
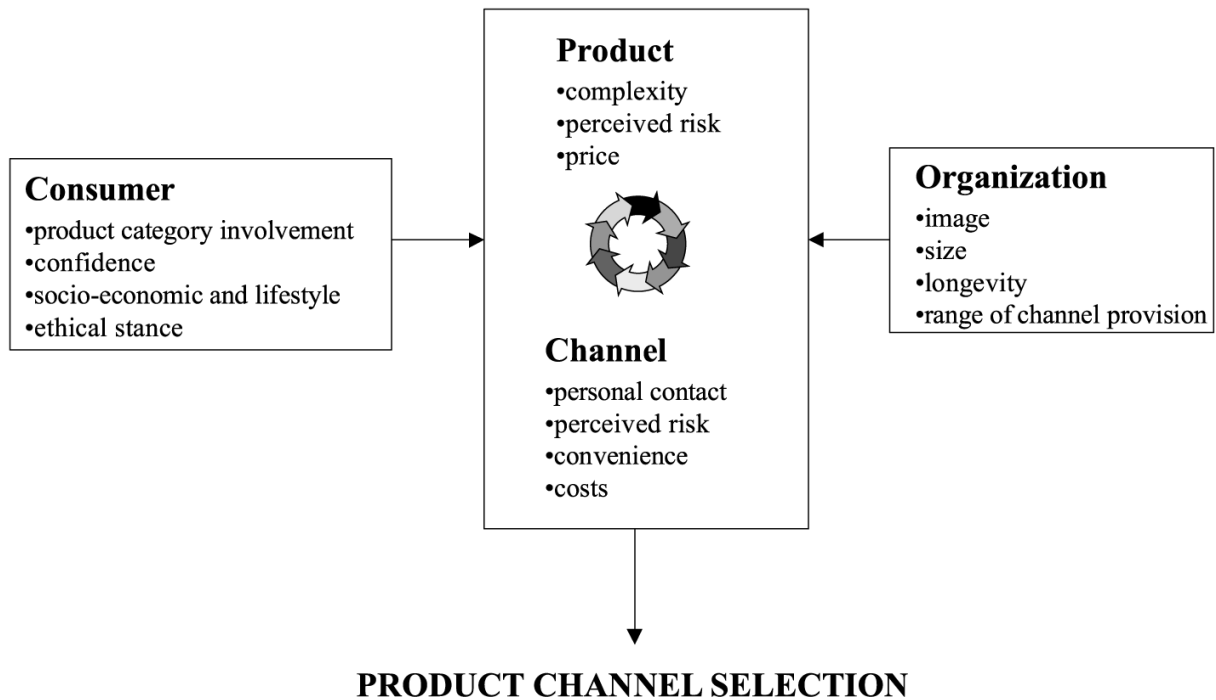
Figure 2.2: A Model of Product Chanel for Financial Services (Black et al., 2002)

In addition, a number of studies have documented the factors affecting customers' attitudes towards the adoption of financial services channels and the acceptance of new technology related to the financial services mode of delivery (Zeithmal & Gilly, 1987; Kwan, 1991; Lockett & Littler, 1997; Mols, 1998). This line of research has focused its attention on the customer's attitude towards the use of ATMs (e.g., Zeithmal & Gilly, 1987; Kwan, 1991; Marshall & Heslop, 1988).

These studies, in the context of financial services, indicated that the important factor for the non-use of ATMs was the preference for conducting financial services through customer assistants (human teller), and the main reasons for adopting this channel were the benefits associated with this channel (Zeithmal & Gilly, 1987; Kwan, 1991; Leblanc, 1990). Leblanc (1990) further suggested that the customers who adopted innovative financial services

channels were educated and perceived little to no security risk of using these channels. Similarly, Rugimbana (1995) indicated that the most significant factors related to customer's attitude towards the adoption of online financial services channels were convenience, ease of use and compatibility of the service channels with customers' lifestyles. However, Lewis' (1991) study suggests that a small minority of customers, around 42% of the sample, were concerned with privacy, safety and operational issues associated with online financial services adoption. Furthermore, Marr and Prendergast (1993) indicated that the main factors encouraging the adoption of self-service innovative technology related to financial services were concerns for time, and place utility; whereas the inhibiting factor was the customer's preference for dealing with human service providers.

Therefore, time, cost savings and freedom have been suggested as the main reasons behind the acceptance of innovative financial services (Black et al., 2002; Howcroft et al., 2002). Several studies further indicate that internet financial services users are the most profitable and wealthiest segment to banks (Mols, 1998; Robinsons, 2000). Extant research has also suggested that security and privacy issues play an important role for the acceptance of innovative financial services including internet banking (Sathye, 1999; Black et al., 2002; Howcroft et al., 2002; Tan & Teo, 2000). Sathye (1999) found security and privacy to be the main obstacles for the adoption of internet banking in Australia. Many consumers around the globe are reluctant to give private information over the phone or the internet, for example, information about their credit cards (Hoffman & Novak, 1998). Additionally, Craner et al. (1999), and Westin and Maurici (1998) indicated privacy issues as significant barriers to the adoption of online financial services.

This section briefly discussed consumer behaviour in the context of the financial services industry. The following sections examine in detail some theories which have been widely used to study individuals' acceptance and usage behaviour of new technology. In the next section, innovation diffusion theory is discussed.

2.3 Innovation Diffusion Theory (IDT) and Perceived Attributes of Innovation (PAI)

Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 1995). Diffusion is a special type of communication concerned with the spread of messages, which are perceived as an innovation, new idea, practice or object. Communication refers to a process in which participants create and share information with one another in order to reach a mutual understanding (Rogers, 1995).

The concept of innovation diffusion can be traced to the rural sociology research tradition, which started in the 1940s (Rogers & Scott, 1997). In particular, it was first introduced by Ryan and Gross (1943) who studied the adoption of hybrid seed among American farmers. Their study focused on the factors that determine the speed with which new ideas spread through communities. In the 1980s, the innovation diffusion theory (Rogers, 1983) emerged. The aim of the IDT is to provide individuals from any domain interested in the diffusion of an innovation with a conceptual paradigm for understanding the process of diffusion and social change (Brown, 1999). Rogers (1995) outlines five stages that occur during the innovation decision process. The first stage is knowledge, in which the individual is exposed to an innovation's existence and gains an understanding of how it functions. The second stage is persuasion, in which favourable or unfavourable attitudes are formed towards the innovation,

followed by the decision stage, in which the individual arrives at a decision to accept or reject the innovation. Rogers (1995) argues that the rejection decision can happen at any stage of the innovation decision process. The fourth stage occurs if the individual decides to adopt the innovation. He or she moves to the implementation stage by actually using the innovation. In the confirmation, final stage, the individual reinforces his or her decision by fully using the innovation.

With regards to perceived attributes of innovation, Rogers (1983), based on a survey of several thousand innovation studies, identified five characteristics of an innovation which influences the rate of diffusion of an innovation. These attributes are:

1. **Relative advantage:** 'the degree to which an innovation is perceived as being better than the idea it supersedes' (Rogers, 1995, p. 212).

2. **Compatibility:** 'the degree to which an innovation is perceived as consistent with the existing values, past experience and potential needs of adopters' (Rogers, 1995, p. 224).

3. **Complexity:** 'the degree to which an innovation is perceived as relatively difficult to understand to use' (Rogers, 1995, p. 242).

4. **Trialability:** 'the degree to which an innovation may be experimented with on a limited basis' (Rogers, 1995, p. 243).

5. **Observability:** 'the degree to which the result of an innovation are visible to others' (Rogers, 1995, p. 244).

Rogers' perceived attributes of innovation have been the focal point of many studies. One of the first applications of attributes of innovation was by Moore and Benbasat (1991) who adapted Rogers' work to develop an instrument with seven dimensions to measure the perceived characteristics of an innovation. They added two additional constructs beyond Rogers's classification, namely image and voluntariness. Image refers to 'the degree to which use of innovation is perceived to enhance one's image or status in one's social system' (p. 195). Voluntariness of use refers to 'the degree to which use of the innovation is perceived as being voluntary' (p. 195). They also split Rogers' observability construct into two separate constructs, namely demonstrability and visibility. The result revealed a parsimonious 38-item instrument including eight scales, which provides a useful tool to study the initial adoption and diffusion of innovations (Figure 2.3). It is important to notice that relative advantage and ease of use in the IDT are similar to perceived usefulness and perceived ease of use from the technology acceptance model (TAM), which will be explained later in this chapter.
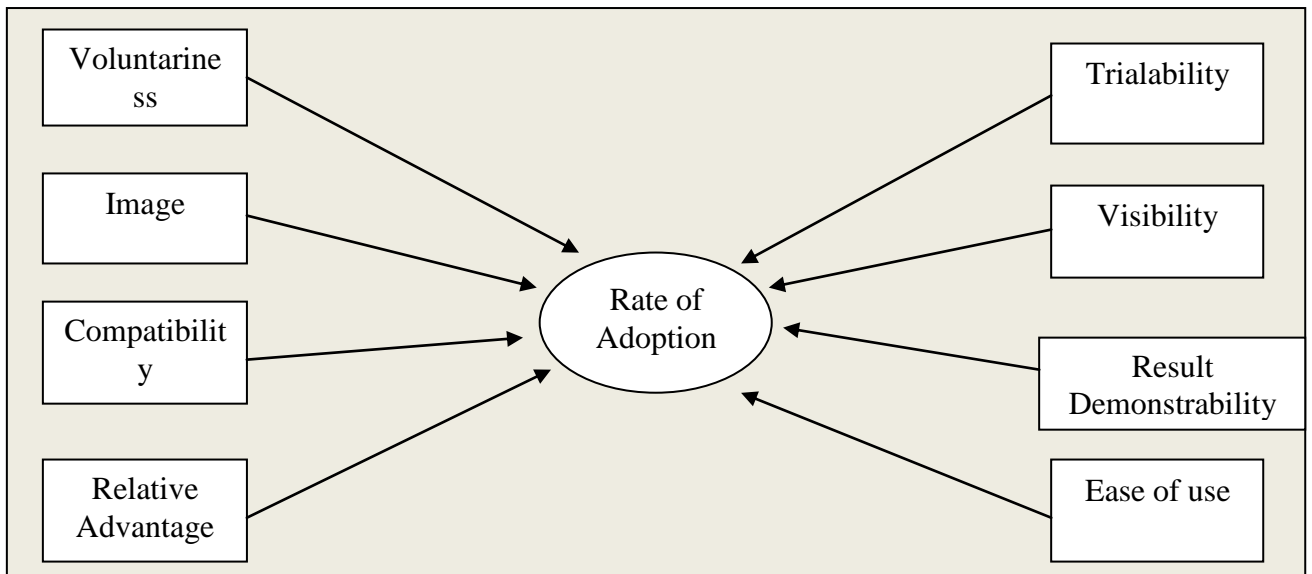
Figure 2.3: Characteristics of Innovations (Moore & Benbasat, 1991)

Rogers (1995) highlights that the perceptions developed by individuals regarding an innovation are largely dependent on what they learn through a variety of communication channels. Rogers classified the adopters into five categories on the basis of their innovativeness level (see Table 2.1).

Table 2.1 Adopters' categories based on innovativeness

Adopter category	Definition
Innovators (2.5%)	Play a gatekeeping role in the flow of new ideas into a system. Exhibit high degree of venturesomeness, which leads them beyond local peer networks.
Early Adopters (13.5%)	More integrated into the local system than innovators; locally focused and active. Exhibit the greatest degree of opinion leadership as potential adopters look to them for advice and information.
Early Majority (34%)	Adopt just before the average member of a system. Frequently interact with their peers but seldom hold positions of opinion leadership. May deliberately wait for some time before completely adopting a new idea.
Late Majority (34%)	They approach the innovations with a sceptical and cautious air and do not adopt until most others in their system have done so. Adoption may be the result of increasing network pressures from peers.
Laggards (16%)	They are the most locally focused in their outlook; many are near isolates in the social networks of their system. Decisions are often made in terms of what has been done previously.

Source: Based on Rogers and Scott (1997)

The IDT and PIA have been widely used in IT acceptance research. It has been applied to several technologies, including automation technology (Speier & Venkatesh, 2002), multimedia message service (Hsu et al., 2007), computer technology (Al-Gahtani, 2004) and internet banking (Saleh, 2003; Gerrad & Cunningham, 2003). For example, Agarwal & Prasad (1997) studied the role of innovation characteristics and perceived voluntariness in the acceptance of the WWW and found that relative advantages and result demonstrability were relevant in explaining acceptant of that technology. They found that the two variables together explained 46% of the variance in future intentions. Similarly, Slyke et al. (2002) applied IDT to identify factors that may influence intentions to use groupware applications. The results

revealed that relative advantage, complexity, compatibility and result demonstrability were significantly related to intention.

The IDT has also been applied with different models. Chen et al. (2002) applied the technology acceptance model (TAM) and IDT to examine consumer behaviour towards the virtual-store domain. They found that compatibility, perceived usefulness and perceived ease of use were the primary determinants of consumer attitudes in using virtual stores.

Extant research has suggested that the attributes of innovation are the key determining factors which influence users' behaviour towards the adoption of a particular innovation, including innovative financial services. Several researchers, for example Leblanc (1990) and Zeithmal and Gilly (1987), suggested that a major factor for people not adopting an innovative financial services mode of delivery was the fact that customers like to interact with customer assistants instead of ATMs. In a similar vein, Rugimbana and Iversen (1994) reported that perceived risk and the perceived complexity associated with the innovation were negatively related to the adoption of ATMs and telephone based banking services (Lockett & Littler, 1997). In addition, the study by Black et al. (2001) also highlighted that the perceived attributes of the innovation were important factors for the adoption of internet based financial services, whereas trialability of the innovative financial service was found to be the determining factor for future adoption decisions.

Previous studies have documented internet banking as an innovation which was perceived as easy to understand and use (Cheng et al., 2006; Liao & Cheung, 2002; Liao et al., 1999). In line with the innovation diffusion theory (Rogers, 1995), research has also suggested that

users' perceptions of the innovation's attributes influenced their adoption decisions regarding innovative financial services and information systems related technologies (e.g., Liao et al., 1999; Lean et al., 2009; Lin, 2010; Papies & Clement, 2008). In a similar vein, Zolait's (2010) study also acknowledges the salient attributes related to financial innovation adoption, e.g. compatibility of innovation, attitude and observability were some of the prominent factors behind the adoption of internet banking services among the Yemeni customers. In a similar vein, Joaquin Aldas-Manzano et al.'s (2009) study also confirms that customer innovativeness is a key factor which influences the adoption of electronic banking services. Similarly, Gerrard and Cunningham (2003) applied the diffusion innovation theory in a study of internet banking acceptance in Singapore. The authors suggested that adopters of internet banking perceived the service convenient, less complex, and more compatible. In addition, Lau (2002) used diffusion innovation theory attributes to investigate brokers' adoption of online trading in Hong Kong. Lau's study indicated that perceived usefulness, perceived complexity, relative advantage, compatibility, and observability of innovative trading services were significantly correlated with attitude of using the online trading system. Similarly, Gounaris and Koritos (2008) investigated the users and non-users of internet banking through the use of web survey and found that perceived characteristics of innovation provide better understanding than the TAM, and that the IDT is significantly better in predicting customers' acceptance of internet banking.

The application of Innovation diffusion theory in the context of internet banking suggests that the extent of internet banking adoption by customers can be explained by their perception about the internet banking services compared to traditional banking environments and how they view the complexity and compatibility of the internet banking than branch banking (Lai

et al., 2010). These studies confirm the applicability of innovation diffusion theory in the realm of innovative financial services adoption. Some of these previous studies related to innovation diffusion theory are summarised in Table 2.2.

Table 2.2 Summary of Selective Studies related to the Innovation Diffusion Theory (IDT) and Perceived Attributes of Innovation (PIA)

Study	Technology Type	Comment and Result
Moore &Benbasat (1995)	Personal work station	The study developed a model based on IDT and theory of reasoned action. The main results revealed that ease of use, relative advantage and compatibility had most significant effect on degree of use.
Plouffe et al. (2001)	A smart card-based payment system	The perceived attributes of the innovation explain more variance than does the TAM. Relative advantage, compatibility, image, visibility, triability and voluntariness were significant antecedents of the intention to adopt.
Speier & Venkatech (2002)	Sales force automation technology	Salespeople had positive perceptions of the technology. However, six months after implementation, the technology had been rejected. Relative advantage and voluntariness had significant results.
Hardgrave et al. (2003)	Software development methodology	The study investigated in why developer accept or resist software development methodology. The results revealed that significant determinants of intentions were usefulness and compatibility.
Joo & Kim (2004)	E-Marketplace	The results revealed that external pressure and organizational size had positive relationships with organizational adoption of e-Marketplaces, while relative advantage did not significantly influence the adoption.
Al-Gahtani (2004)	Computer technology	Relative advantage, compatibility, observability and trialability had positive and significant correlation with computer usage and satisfaction. Complexity was negatively correlated to both computer usage and satisfaction.
Carter & Bělanger (2005)	Electronic government	The study adopted constructs from TAM, IDT and web trust models. The results showed that perceived ease of use, compatibility and trustworthiness are significant predictors of citizens' intention to use e-government services.

Table 2.2 Summary of Selective Studies related to the Innovation Diffusion Theory (IDT) and Perceived Attributes of Innovation (PIA) (Continued)

Study	Technology Type	Comment and Result
Hsu et al. (2007)	Multimedia message service	Relative advantage and compatibility had positive relationships with the technology adoption. Results related to ease of use, trialability, result demonstrability, visibility, image and voluntariness were mixed for different categories, potential adopters and users.
Alam et al. (2007)	Electronic commerce (EC) by business enterprises	The study integrated Roger's five innovation diffusion characteristics. The results revealed that Relative advantage and compatibility had positive and significant influence on EC adoption whereas complexity and security had negative effects.
Gounaris & Koritos (2008)	Internet banking	The study adopted perceived characteristics of innovation (PCI) suggested by Moore and Benbasat (1991) and compared them with TAM and IDT. The results revealed that PCI performed significantly better than TAM and IDT.
Parry & Wilson (2009)	Online recruitment	Subjective norm, relative advantage and negative beliefs had a significant influence on the use of a corporate website for recruitment, whereas compatibility and relative advantage had a significant impact on the adoption of commercial jobs boards

Source: This research

2.3.1 Criticisms of the IDT and PIA

One of the criticisms of the IDT is given by Eveland and Tornatzky (1990) who highlight that 'problems arise when the diffusion model is applied in situations where its basic assumptions are not met ─ that is to say, virtually every case involving complex, advanced technology' (p. 123). They claim that the IDT has a tendency to focus on adoption decisions by individuals and on a relatively rationalistic adoption decision. However, for advanced production technologies, 'decisions are often many (and reversed), and technologies are often too big and complex to be grabbed by a single person's cognitive power ─ or usually, to be acquired or

deployed within the discretionary authority of any single organisational participant' (Eveland & Tornatzky, 1990, p. 124). Attewell (1992) pointed out that when adoption is not a single event, and when complex organisational processes rather than individual decision-making comes to the front, the innovation diffusion model, based on individuals' decisions being primarily affected by means of communication with external agents, appears less applicable. Another criticism of the IDT, provided by Straub (2009) is that the IDT provides a framework, although the breadth and depth of the theory makes it difficult to frame a single study within the structure. Moreover, Straub (2011) states that because the IDT is primarily descriptive rather than prescriptive, it does not tell how to facilitate adoption but rather why adoption occurs.

Regarding Perceived Attributes of Innovation (PAI), most previous researchers including Rogers (1983) and Moore and Benbasat (1991) who identified perceived attributes of innovation, did not pay more attention to the factors related to environmental uncertainty (perceived trust and perceived risk). Therefore, these factors have been missed in perceived attributes of innovation. Trust is an essential element in any social and business relationship whenever risk and uncertainty exist, such as in e-finance activites (McKnight & Chervany, 2001). Finally, another weakness of the PAI is that they do not adequately understand or explain IT utilization based tasks. Goodhue and Thompson (1995) claimed that the lack of task focus in evaluating IT and its acceptance, use and performance contributes to mixed results in IT evaluations. The task-technology fit perspective that will be explained in more detail later in this chapter addresses this problem more fully.

2.4 Theory of Reasoned Action (TRA)

The TRA is a well established model from social psychology research, which is concerned with the determinants of consciously intended behaviours (Fishein & Ajzen, 1975). It is concerned with rational, volitional and systematic behaviour; for example, behaviour over which the individual has control (Fishein & Ajzen, 1975). The TRA consists of attitudes toward behaviour, social influence (Subjective Norms) and intention variables to predict behaviour (Figure 2.4).
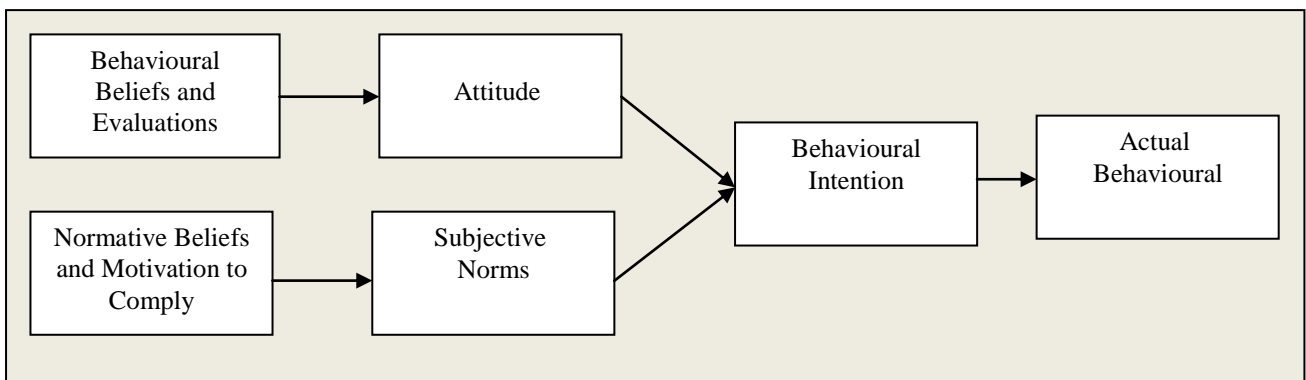
Figure 2.4: Theory of Reasoned Action (Fishbein & Ajzen, 1975)

According to the TRA, a consumer's behaviour is determined by the consumer's behavioural intention (BI) to perform the behaviour. In turn, behavioural intention is a function of the person's attitude (A) toward the behaviour and his or her subjective norms (SN), with relative weights typically predicted by regression:

BI = A + SN

Attitude is defined as 'an individual positive or negative evaluation of performing the behaviour' (Fishbein & Ajzen, 1975, p. 216). The TRA assumes that a person's attitude towards a behaviour is determined by his or her salient beliefs (b_i) about consequences of

performing the behaviour multiplied by the evaluation (e_i) of those consequences. A behaviour belief (b_i) refers to an individual's subjective probability that performing the target behaviour will result in a particular outcome. The evaluation (e_i) defines as "an implicit evaluative response" to the consequence (Fishbein & Ajzen, 1975, p. 29). Therefore, attitude can be illustrated as:

$$A = \sum b_i \; x \; e_i$$

The TRA postulates that an individual's subjective norm (SN) is determined by a function of his or her normative beliefs (nb_i), and his or her motivation to comply (mc_i) with these expectations (Fishbein & Ajzen, 1975). Normative beliefs 'are concerned with the likelihood that important referent individuals or groups would approve or disapprove of performing the behaviour' (Ajzen & Madden, 1986: p. 455). Subjective norm can be illustrated as:

$$SN = \sum nb_i \; x \; mc_i$$

Davis et al. (1989) noted that the TRA assumes that any other factors that influence behaviour do so only indirectly by influencing A, SN, or their relative weights. This means that the TRA mediates the impact of uncontrollable environmental variables and controllable interventions on user behaviour. If that is true, this implies that the internal TRA variables may be used as a common frame of reference to integrate various research studies (Davis et al., 1989).

There are a number of studies that have successfully applied the TRA in a variety of research settings, including the context of information systems to predict the performance of behaviour and intentions. Sheppard et al. (1988) conducted two meta-analyses of 87 separate studies

which had a total sample of 12,624 observations to investigate the effectiveness of the TRA model in research to date. They found that the predictive utility of the TRA was strong across research boundaries which are, for example, behaviour that is under an individual's volitional control.

The TRA has also been used to examine the acceptance of new technology. Chen & Chen (2006) conducted a study based on the TRA model to explore the attitude towards participation in the teaching of online courses amongst university faculty members in the field of human resources in Taiwan. Their findings support the use of the TRA model for understanding the attitude of a university faculty in this context. Their results also confirmed and identified that both attitude and subjective norm were the predictors of behavioural intention.

In a similar study that used the TRA as a foundation model, Liker and Sindi (1997) applied the TRA to predict individuals' intentions to use an expert system. They tested the model by using a cross-sectional design based on a self-administered questionnaire completed by a sample of 94 users and non-users from two of the largest accounting firms in the U.S. Their findings revealed that subjective norm was a significant determinant of intention. The most interesting result was that attitude did not significantly influence intention to use the expert system. According to the authors, the justification for this result is that the influence of attitudes on the intention is dependent on the context of use and the technology. They point out that professionals in expert system studies, or in PC studies, may pay more attention to cognitive judgments of the impacts of the system on productivity in their decision to accept the system, rather than their feelings.

Extant research has investigated internet banking adoption through the lens of the TRA, TPB and TAM. For example, Shih and Fang (2004) applied the TRA and TPB models in the context of internet banking adoption in Taiwan and concluded that both models provide a good fit. Amin et al. (2010) studied the determinants of Qadhul Hassan banking financing among Malaysian customers by applying the TRA and suggested that attitudinal factors i.e., attitude and subjective norms to be important variables for the decision to adopt Qadhul Hassan financing. Similarly, Wan et al. (2005) also found that psychological beliefs were the main factors behind the adoption of ATM and internet based banking services. The authors further contended that the TRA is less applicable when the customer shows habitual behaviour for the adoption of branch or telephone banking channels. Previous research has also suggested that demographic factors are important variables regarding the adoption decision of electronic financial services (Daniel, 1999; Sathye, 1999; Mattila, 2001; Karjaluoto, 2002). In addition, research has also indicated that the typical internet banking user belongs to the upper class and has higher involvement and career orientation (Jayawardhena & Foley, 2000). Table 2.3 summaries some previous studies related to the TRA.

Table 2.3: Summary of Selective Studies Related to the Theory of Reasoned Action (TRA)

Study	Technology Type	Intention → Actual Behaviour	Attitude → Intention	Subjective Norm → Intention
Sheppard et al. (1988)	meta-analyses	√	√	√
Davis et al. (1989)	Word processing program (Writeone)	√	√	NS
Liker & Sindi (1997)	Expert system	X	NS	√
Pavlou (2003)	E-commerce	√	X	X
Korzaan (2003)	Purchasing online	X	√	X
Yoh et al. (2003)	Internet apparel shopping	X	√	X
Hansen et al. (2004)	Online grocery buying	X	√	√
Chen & Chen (2006)	Online courses	X	√	√
Wu & Liu (2007)	Online games	X	√	√
Nor et al. (2008)	Internet banking	X	√	√

Source: This research

Note: √ = Relationship Validated; NS = Relationship Non-Significant or Rejected; X = Relationship not tested.

2.4.1 Criticisms of the TRA

Davis et al. (1989) claim that the TRA is a general model and therefore it does not specify the beliefs that are operative for a particular behaviour. Thus, researchers using the TRA must first identify the beliefs that are salient for subjects regarding the behaviour under investigation. Another limitation of the TRA is its inability to predict outcomes or results from behaviour (Sheppard et al., 1988). Ajzen and Fishbein (1980) acknowledged their model's limitation regarding the distinction between a goal intention and a behavioural intention. For example, the theory could predict if a person would actually go on a diet (e.g. taking a diet pill, eat less, etc.) but could not actually assess if the person would achieve his or her target to lose weight (Sheppard et al., 1988).

Another limitation is that the TRA deals with only that behaviour that is under an individual's volitional control. Thus, actions that are at least in part determined by factors beyond a person's voluntary control fall outside the boundary conditions established for the model (Sheppard et al., 1988). This assumption has been widely criticized. Whenever the performance of an action requires skills or resources, the conditions of the model cannot be met. In this case, the individual may not be able to perform the action; although, the intention to do it is strong (Sheppard et al., 1988). For example, a person may not be able to use internet banking, if he or she does not have the resources, such a computer or internet access. Therefore, the TRA is not equipped sufficiently to predict individuals' behaviour, if they have low levels of volitional control (Ajzen, 1985). Such consideration is incorporated into the TPB, which is an extension of the TRA.

2.5 Theory of Planned Behaviour (TPB)

The TPB has been one of the most influential theories in explaining and predicting behaviour, and it has been shown to predict a wide range of behaviours (Sheppard et al., 1988). The TPB is derived from the TRA by incorporating an additional construct, which is perceived behavioural control (PBC) as the third factor influencing the intention-behaviour relationship, to account for situations where a person lacks substantial control over target behaviour (Ajzen, 1991). Therefore, the TPB is proposed to eliminate the limitations of the TRA model when dealing with behaviour over which individuals have incomplete volitional control (Figure 2.5).
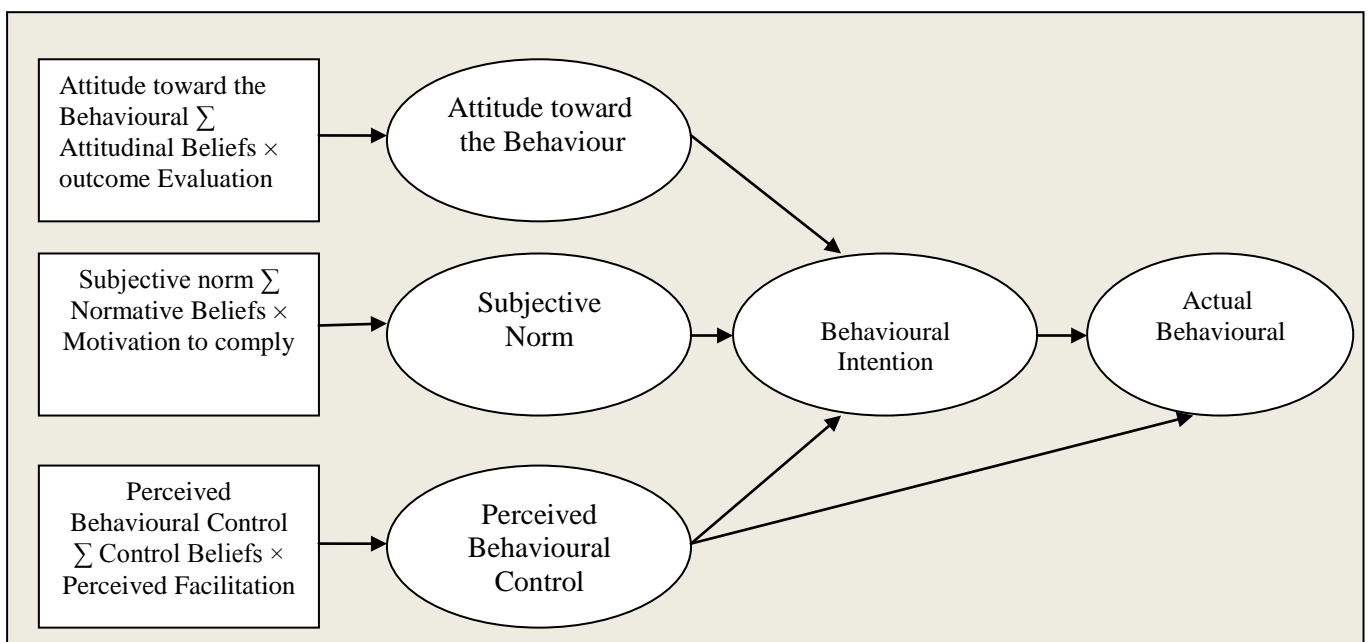
Figure 2.5: Theory of Planned Behaviour (Ajzen, 1991)

The constructs of attitude and subjective norm are identical to those previously discussed for the TRA. Thus, only the third construct, perceived behavioural control, is discussed here. Ajzen (2002) refers to perceived behavioural control to perceived ease or difficulty in

conducting the behaviour of interest. It is associated with the beliefs about the presence of control factors that may facilitate or hinder the performance of the behaviour. Thus, control beliefs (resources and opportunities) are associated with an underlying perceived behaviour control. Control beliefs are divided into external and internal constraining factors. External control is associated with the environment, while internal control relates to knowledge and self-efficacy.

Ajzen (1991) suggests that behaviour is influenced by a person's confidence in his or her ability to perform the behaviour. Therefore, behaviour is influenced by perceived behavioural control and intention and also attitude, subjective norm and perceived behaviour control influence behaviour indirectly through intention (Ajzen, 1991). There are two rationales for the direct path from perceived behavioural control to actual behaviour provided by Ajzen (1991). First, if intention is held constant, the effort needed to perform the behaviour is likely to increase with perceived behavioural control. For example, if two persons have equally strong intentions to learn how they can use internet banking and if both try to do so the person who is confident that he or she can master this activity is more likely to use internet banking than a person who doubts his or her ability. Second, perceived behavioural control can often be used as a substitute for actual control, and insofar as perceived control is a realistic estimate of actual control, perceived behavioural control should help to predict actual behaviour.

Ajzen (1991, p. 188) states that 'the relative importance of attitude, subjective norm, and perceived behavioural control in the predicting of intention is expected to vary across behaviours and situations'. Therefore, in some situations only one or two of these

determinants may be significant. For example, Riemenschneider et al. (2002), whose research was based on 128 applications developers at a Fortune 1000 company, found that only attitude and subjective norm were significant factors that influenced the developers' intention to adopt a software development methodology. Perceived behavioural control was however, not significant.

There are a number of studies that have compared the TPB to other models. For example, Hansen et al. (2004) tests the ability of the TRA and the TPB in predicting consumer online grocery purchase behavioural intention. Their findings strongly suggest that both theories are capable of explaining a high proportion (more than 55%) of the variation in future online grocery purchase behavioural intention. However, the TPB with the inclusion of a path from SN to attitude provides the significantly best fit to the data and provides the best prediction of online grocery purchase behavioural intention.

Several researchers have tried to incorporate additional variables into the TPB to increase the explanatory power of the model. For example, Morris et al. (2005) extend the TPB by incorporating gender and age as moderators of the model's core relationships to investigate the differences in employee decisions about new technology. Based on 342 usable responses from five organizations, they found that the pattern of gender differences in individual technology adoption varies with age such that gender differences were more pronounced with increased age. The study also indicated that attitude was important to men, while attitude, subjective norm and perceived behavioural control were all important to woman. Interestingly, gender differences however, decline dramatically among younger workers. Table 2.4 summarizes some previous studies related to the TPB.

Jaruwachirathanakul and Fink (2005) investigated internet banking adoption in the context of Thailand by applying the TPB and found that features of the web site and perceived usefulness of the channel were the determining factors for internet banking adoption. The authors further suggested that the significant inhibiting factor was perceived behavioural control which they labelled as external environment.

Table 2.4: Summary of Selective Studies related to the Theory of Planned Behaviour (TPB)

Study	Technology Type	Intention →AB	Behavioural Control → Actual Behaviour	Attitude → Intention	Subjective Norm → Intention	Behavioural Control → Intention
Notani (1998)	meta-analyses	√	√	√	√	√
Limayem et al. (2000)	Online shopping	√	√	√	√	√
Riemenschneider et al. (2002)	Software development methodology	X	X	√	√	NS
Hansen et al. (2004)	Online grocery buying	X	X	√	NS	PS
George (2004)	Internet purchasing	X	√	X	X	X
Pavlou & Fygenson (2006)	Getting product information from a web vendor	√	√	√	NS	√
	Product purchasing from a web vendor	√	√	√	NS	√
Liao et al (2007)	Online service	X	X	X	√	√
Huang & Chuang (2007)	Back-end system	X	NS	X	X	X
Crespo & Bosque (2008)	Online shoppers	X	X	√	√	NS

Source: This research

Note: √= Relationship Validated; NS = Relationship Non-Significant or Rejected; X = Relationship not tested; PS = Partially Support

2.5.1. Criticisms of the TPB

The TPB has been criticized on several grounds. First, despite the impressive predictive power of the TPB, a large proportion of the potentially explainable variance remains unaccounted for (Morris et al., 2005). Conner et al. (2000) suggest two ways to address this unexplained variance through the inclusion of additional variables and moderator variables. Second, in the TPB, the precise situational correspondence is still essential to accurate prediction, because the TPB supposes temporal contiguity between intention and behaviour (Foxall, 1997). In this situation when intention and behaviour are measured concurrently the model is suitable to predict current behaviour rather than to predict future behaviour. Ajzen and Fishbein (1980) point out that it is very difficult for future behaviour to be predicted, because of the time interval between the intention and the behaviour and that time may include unexpected actions or factors that disturb the relation between intention and the behaviour.

2.6 Technology Acceptance Model (TAM)

Based on the belief-attitude-intention-behaviour relationship, Davis (1986) introduced the TAM, which was an adaptation of the TRA. TAM, specifically, is designed for modeling user acceptance of information systems. Davis et al.(1989) state that 'the goal of TAM is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified' (p. 985). They claim that the purpose of the TAM is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intention.

In Figure 2.6, the TAM hypothesises that the acceptance of new technology is determined by intention to use that technology and the intention is jointly determined by the person's attitude toward using that technology and perceived usefulness. The attitude, in turn, is determined by two specific beliefs perceived usefulness and perceived ease of use (Davis et al., 1989). Perceived usefulness is defined as 'the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context' (Davis et al., 1989: p. 985), while perceived ease of use refers to 'the degree to which the prospective user expects the target system to be free of effort' (Davis et al., 1989, p. 985).
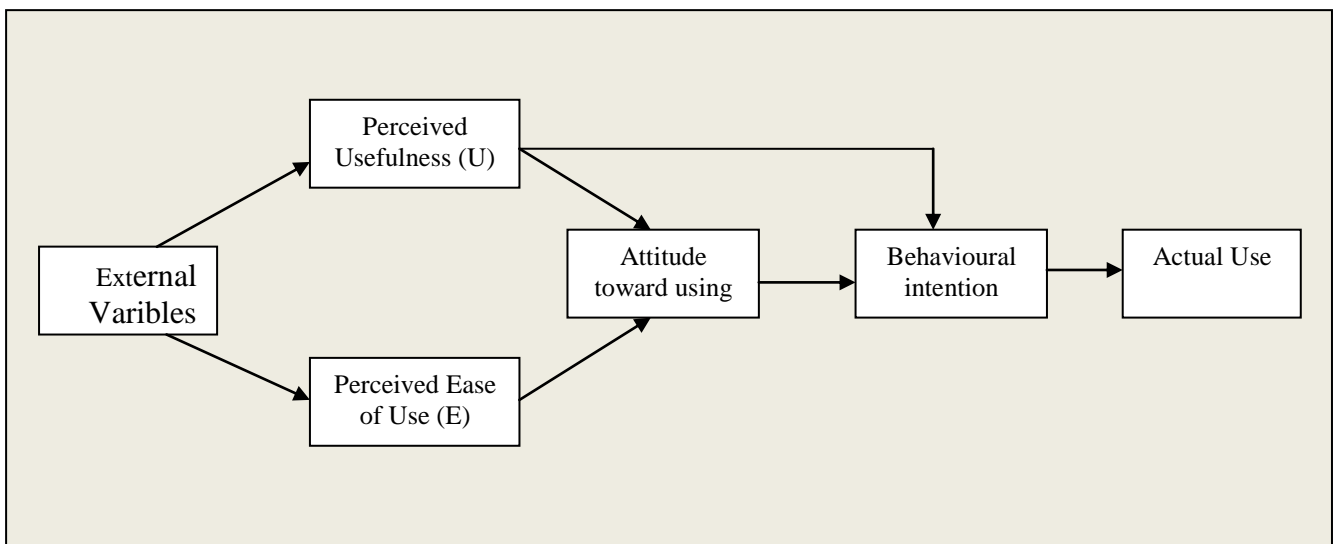
Figure 2.6: Technology Acceptance Model (Davis et al., 1989)

Davis et al. (1989), in a longitudinal study of 107 full-time MBA students during their first of four semesters on the MBA programme, conducted a comparison study of the TAM and TRA to predict people's acceptance of a word processing program (Writeone). Their results revealed that the TAM had greater explanatory powers than the TRA. It was found that the TAM explained 47% and 51% of behavioural intention's variance at time 1 (after one hour)

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and time 2 (after fourteen weeks) respectively. They summarised their results in three points: (1) the use of computers can be predicted reasonably well from people's intentions, (2) perceived usefulness was a major determinant of people's intentions to use computers and (3) perceived ease of use had a small but significant effect on intentions as well, despite this effect decreasing over time (see Section 2.6.2, p: 58). Along the same lines, Mathieson (1991) compared the TAM and TPB to predict an individual's intention to use IS (spreadsheet software). The study involved 262 subjects who were juniors and seniors in an introductory management course at a western university. The results indicated that both the TAM and TPB predicted intention to use IS quite well; however the TAM had slight empirical advantages. The TAM also explained attitude towards using an IS much better than TPB. Moreover, the TAM is easier to apply, because there are standard instruments for it, while measures of TPB's beliefs need to be developed for each domain.

The TAM has been widely used by information systems researchers because of its parsimony and the wealth of empirical support for it (Agarwal & Prasad, 1999; Adams et al., 1992; Hardgrave & Johnson, 2003). The TAM has been applied in different types of technologies; for example, spreadsheet software, e-mail, voice mail, word processing and graphics software, the World Wide Web and tele-medicine technology (Mathieson, 1991, Adams et al., 1992; Gefen & Straub, 2000; Chau & Hu 2001). Venkatesh and Davis (2000) suggest that the TAM is quite robust and can be applied to a range of technologies.

Straub et al. (1997) compared the TAM model across three different countries: the U.S., Switzerland and Japan. The study was conducted by administering the same instrument to employees of three different airlines in these three countries, all of whom had access to the

same information technology innovation, which was e-mail. They found that the TAM model was significant in explaining usage behaviour in both the U.S. and Switzerland, but not in Japan. Moreover, perceived usefulness was significant for both the U.S. and Switzerland, but not for the Japanese sample. Perceived ease of use was not significant for any of these countries' samples.

In the web context, Gentry and Calantone (2002) explained shop-bot use on the web by conducting a study of a comparison of three models: TRA, TPB and TAM. Their findings revealed that all three models work in the web context. However, TAM was superior to both TRA and TPB for explaining variance in behavioural intention and in terms of model fit. In another study to predict and explain the propensity to bid in online auctions, Bosnjak et al. (2006) compared the TAM with TPB and found that both models were capable of explaining a large amount of variance associated with predicting the propensity to bid in online auctions (explained variance of 84% and 87% respectively). However, the TAM was the more parsimonious model. With respect to the TAM, they also found that attitude towards bidding emerged as a better direct predictor of the willingness to bid than perceived usefulness that indirectly affected the intention by attitude. Furthermore, perceived usefulness is significantly influenced by perceived ease of use, which also slightly influences attitude.

As the TAM has been tested more and more in different applications and environments, conflicting and contradicting results have started to appear (Legris et al., 2003). For example, there are some studies that show that intention is influenced by both perceived usefulness and ease of use (Moon & Kim, 2001; Simon & Paper, 2007; Tang & Chiang, 2009) or influenced only by perceived usefulness (Gefen & Straub, 2000; Hu et al., 2003; Cheng et al., 2006).

Furthermore, some researchers found that perceived ease of use significantly influences perceived usefulness (Shih, 2004; Lin, 2007), while others found that that relationship is not significant (Hwang, 2005; Wu et al., 2007). Therefore, TAM research remains inconclusive. There are some explanations for the differences in these results including: 1) differences in the type of technology that has been studied, 2) differences in the sample size that have been engaged (experience and no experience with the target system) and 3) differences in environments and countries.

2.6.1 Attitude Construct in TAM

The TAM postulated that behavioural intention was jointly determined by the person's attitude toward using the system and perceived usefulness (Davis et al., 1989). This means that the original theoretical conceptualization of TAM included the attitude construct. However, based on a longitudinal study, Davis et al. (1989) later found that the power of the TAM remains equally good and is more parsimonious without having an attitude construct. There were three reasons to remove the attitude construct from the TAM. First, there was a strong direct link between perceived usefulness and intention in both, after one hour and fourteen weeks later, in their longitudinal study. Second, a weak direct link between perceived usefulness and attitude was found. Third, attitude was partially mediated by the impact of beliefs on intentions. Davis et al. (1989) claim that when the TAM is applied in settings where other factors, such as ease of use or usefulness are independently taken into account the attitude construct may not be a strong determinant of intentions. Jackson et al. (1997, p. 383) support this by stating that 'Attitude, like many behavioural variables, may be a necessary but not sufficient condition for success'. Therefore, there have been a number of researchers who have applied the TAM without the attitude construct, such as Venkatesh, 2000; Hong et al.,

2002; Hwang, 2005; Chang, 2008; Gumussoy & Calisir, 2009 and the explanatory power of their models remained good.

2.6.2 Perceived Usefulness and Ease of Use Beliefs in the TAM

Davis (1989) states that previous research suggests two determinants play the main role in accepting or rejecting information technology. First, individuals tend to use or not use an application to the extent they believe it will help them perform their task better. This refers to perceived usefulness. Second, if potential users believe that a given application is useful, they may believe that the system is very difficult to use and that the performance benefits of usage are outweighed by the effort of using that technology. Therefore, in addition to perceived usefulness, usage is influenced by ease of use as well. However, perceived usefulness plays an important role in accepting new technology more than perceived ease of use. Davis (1989) states that despite this the system that requires some effort can inhibit adoption; no amount of ease of use can compensate for an application that does not perform a useful function. In two studies, involving 152 users and four application programs to develop and validate new scales for perceived usefulness and ease of use, Davis (1989) found that usefulness was significantly more strongly linked to usage than was ease of use in both studies. He justified this by saying that individuals are often willing to cope with some difficulties in using a system that helps them to perform their job better. Davis et al. (1989) found that people's intentions were jointly determined by perceived usefulness and ease of use in the early stages of learning and behaviour. However, intention is directly affected by usefulness alone and ease of use affects intention, only indirectly via usefulness with time and experience.

King & He (2006) provided a review of 134 papers that applied the TAM. With respect to perceived usefulness and ease of use, they found that the influence of perceived usefulness on behavioural intention is profound, capturing much of the influence of perceived ease of use. They also noticed that internet applications are the only context in which the direct effect of ease of use on behavioural intention is very important. Another meta-analysis of the TAM conducted by Schepers & Wetzels (2007) examined 51 articles. The results revealed that in western cultures, perceived usefulness seems to be most important in determining intentions and actual use, while ease of use is a key in non-western cultures.

2.6.3 Dependent Variables of the TAM

The original dependent variable in the TAM as Davis (1986) suggests is 'actual use'. However, the research conducted in the TAM has focused on 'intention' or 'usage' as the ultimate dependent variable. In the present study, behavioural intention is used as the dependent variable instead of actual use for two reasons. First, several researchers have suggested that individuals' actual behaviour can be explained by their intentions for the behaviour (Fishbein & Ajzen, 1975; Davis, 1989). A number of studies have found a strong and significant relationship between behavioural intention and actual use of targeted behaviour (Davis et al., 1989; Chen et al., 2002; Gumussoy & Calisir, 2009). Thus, it is theoretically justifiable to adopt behavioural intention as an ultimate dependent variable to examine the acceptance of internet banking (Cheng et al., 2006). Second, the present study sheds light only on the intentions of individuals who have not fully utilized internet banking (dormant users). Therefore, the use of behavioural intention, as the dependent variable is considered to be appropriate.

2.6.4 External Variables in the TAM

Davis et al. (1989 p. 985) state that 'a key purpose of TAM is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intentions'. The TAM hypothesises that two particular behavioural beliefs, perceived usefulness and perceived ease of use, are of primary relevance for technology acceptance behaviour, and the effect of external variables on intention are mediated by these two beliefs. However, the TAM does not specify the external variables that influence these beliefs (Mathieson, 1991). A number of researchers have examined the possible antecedents of perceived usefulness and ease of use toward computer usage. For example, in three experiments to investigate the determinants of perceived ease of use, Venkatesh and Davis (1996) found that general computer self-efficacy significantly affected perceived ease of use at all times. They also indicated that objective usability of the system affected individuals' perceptions after they had direct experience with the system. Moreover, Venkatesh (2000) also conducted three longitudinal field studies in three different organisations to investigate the determinants of perceived ease of use. The main results indicated that control (internal and external conceptualised as computer self-efficacy and facilitating conditions respectively), intrinsic motivation (computer playfulness) and emotion (computer anxiety) serve as anchors that users employ in forming perceived ease of use. In another example, in the context of online auctions, Stern et al. (2008) examined the antecedents of perceived usefulness and perceived ease of use. They found that affinity with the computer positively influenced perceived usefulness and perceived ease of use, and individuals with higher levels of risk tolerance perceive online auctions to be easier to use. Table 2.5 presents selective studies that have tried to propose a number of external variables to specify the antecedents of perceived usefulness and ease of use in several technologies related to computer usage.

Table 2.5: Summary of Selective Studies that proposed external variables as antecedents of perceived usefulness and ease of use.

Study	External variables																							
	SC	OS	OU	SP	PA	TTF	TE	TF	PEC	CPF	PE	SN	CO	Ind	FA	PBC	CU	T	TQ	UA	SI	ECS	NE	R
Igbaria et al. (1995)	√√	√√												√√										
	√	√												√										
Venkatesh & Davis (1996)																								
			√											√										
Karahanna & Straub (1999)		√√		√√							√√													
		√			√																			
Dishaw &Strong (1999)						√√	√√																	
						√	√	√																
Venkatesh (2000)																								
			√						√	√	√			√										
Roberts & Henderson (2000)														√√										
														√										
Mathieson et al. (2001)																√√								
																√								
Chen et al. (2002)													√√											

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Table 2.5: Summary of Selective Studies that proposed external variables as antecedents of perceived usefulness and ease of use (Continued)

Study	External variables																							
	SC	OS	OU	SP	PA	TTF	TE	TF	PEC	CPF	PE	SN	CO	Ind	FA	PBC	CU	T	TQ	UA	SI	ECS	NE	R
Hong et al. (2002)	√√																							
	√													√										
Gefen et al. (2003a)																								
															√									
Klopping & McKinney (2004)						√√																		
						√																		
Luarn & Lin (2005)																								
														√										
Al Sukkar & Hasan (2005)																	√√	√√	√√					
																	√	√	√					
Burton-Jones & Hubona (2005)														√√										
														√										
Hwang (2005)											√√													
											√									√				

Table 2.5: Summary of Selective Studies that proposed external variables as antecedents of perceived usefulness and ease of use (Continued)

Study	SC	OS	OU	SP	PA	TTF	TE	TF	PEC	CPF	PE	SN	CO	Ind	FA	PBC	CU	T	TQ	UA	SI	ECS	NE	R
Burton-Jones & Hubona (2006														√√										
														√										
Porter & Donthu (2006)														√√										
														√										
Lee et al. (2006)												√√									√√			
																					√			
Wu et al. (2007)		√√				√√						√√		√√								√√		
		√				√						√		√								√		
Chang (2008)						√√																		
						√																		
Stern et al. (2008)														√√										
													√											
Gumussoy & Calisir (2009)												√√	√√											
													√			√								

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Table 2.5: Summary of Selective Studies that proposed external variables as antecedents of perceived usefulness and ease of use (Continued)

Study	External variables																							
	SC	OS	OU	SP	PA	TTF	TE	TF	PEC	CPF	PE	SN	CO	Ind	FA	PBC	CU	T	TQ	UA	SI	ECS	NE	R
Lee (2009a)																		√√						
Kim et al. (2009)												√√												

Source: This research

Note: √√ = hypothesised to influence Perceived Usefulness; √= hypothesised to influence Perceived Ease of Use; SC = System Characteristics; OS= Organisational Support; OU= Objective Usability; SP= Social Presence; PA= Perceived Accessibility; TTF= Task-Technology Fit; TE= Tool Experience; TF= Tool Functionality; PEC= Perceived External Control; CPF= Computer Play Fullness; PE= Perceived Enjoyment; SN= Subjective Norm; CO= Compatibility; Ind= Individual Differences; FA= Familiarity; PBC= Perceived behavioural Control; CU= Culture; T= Trust; TQ= Technical Quality; UA= Uncertainty Avoidance; SI= Self- Identity; ECS= External Computing Support and Training; NE= Network Externality; R= Risk.

2.6.5 The TAM Measurement Scales

There are multiple-items scales to operationalize behavioural intention, perceived usefulness and perceived ease of use in order to help to measure these constructs more reliably and better than using single-item scales (Davis & Venkatesh, 1996). The Cronbach alpha reliability of the TAM scales has generally exceeded 0.9 across numerous studies and also these scales have exhibited a high degree of convergent, discriminate and nomological validity (Davis & Venkatesh, 1996).

There are a number of researchers who have tried to develop and validate the items of measuring the perceived usefulness and ease of use constructs, such as Davis (1986; 1989; 1993), Adams et al. (1992) and Segars & Grover (1993). In two studies involving a total of 152 users and four application programmes to develop and validate new scales for two beliefs (perceived usefulness and ease of use) by Davis (1989), the measures were refined and streamlined, resulting in two six-item scales with reliabilities of 0.98 for usefulness and 0.94 for ease of use.

The TAM instrument physically groups together the multiple items measuring each individual construct (Davis & Venkatesh, 1996). Measurement bias may be present if researchers advocate intermixing items, targeting one construct with those of other constructs, in order to minimize such artificially inflated consistency (Davis & Venkatesh, 1996). Davis & Venkatesh (1996) conducted three experiments involving 708 subjects and two systems to test whether such carryover biases are present in the TAM measures. The results revealed that all three experiments found that item grouping versus item intermixing had no significant effect (positive or negative). Moreover, they found that the subjects were more confused and

annoyed when items were intermixed. They suggest that researchers who employ the TAM measures should continue using the original (grouped) format in order to have the best prediction and explanation of user acceptance of information technology. Therefore, in the present study, the researcher will use the original (grouped) format for the TAM measures.

2.6.6 Review of Extended TAM Research

Since the introduction of the TAM, many researchers have integrated a number of constructs into it to improve its predictive, explanatory power and to enhance the comprehensiveness of the context (see Table 2.6). For example, Venkatesh & Davis (2000) extended the TAM to include variables relevant to social influence (subjective norms, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use). The extended model was strongly supported, accounting for 40% - 60% of the variance in usefulness perceptions and 34% - 52% of the variance in usage intentions and the resulting model was consequently labeled TAM2. In another study, Mathieson et al. (2001) extended the TAM by adding perceived user resources to the model to examine volitional use of a bulletin board system (BBS) developed by the Institute for Management Accountants (IMA). The results confirmed that the perceived user resources are a valuable addition to the model.

Moreover, some theories have been combined with the TAM to increase its explanatory power. For example, Gumussoy & Calisir (2009) integrated two important theories with the TAM, namely the TPB and the innovation diffusion theory (IDT) to understand factors influencing e-reverse auction usage in companies. The results revealed that subjective norms, perceived behavioural control and perceived usefulness explained 76% of employees'

intention to use e-reverse auction. Along the same lines, Lee (2009b) integrated the expectation confirmation model (ECM) and the TPB with the TAM to predict and explain an individual's continued use of e-learning services. The results suggested that these three models together provided good explanatory power of user satisfaction. The variances explained for satisfaction and continuance intention were 82% and 50% respectively.

The TAM was also extended to include trust issues. Gefen et al. (2003a) conducted a study expanding the TAM to include a familiarity and trust aspect of e-commerce adoption. The aim of the study was to examine how the relative importance of customer trust in an e-vendor in comparison with the TAM variables differs between potential e-commerce customers and repeat customers. The results reveal that repeat customers have more trust in the e-vendor, perceived the website to be more useful and easier to use and are more willing to purchase from it. Moreover, trust in the e-vendor and perception that the website is useful, influences repeat customers' purchase intentions, while potential customers are not influenced by perceived usefulness, but only by their trust in the e-vendor.

In the financial services context, Lai and Li (2005) applied the invariance analysis of TAM and concluded that TAM was invariant across different users groups, i.e. age, gender and IT competency which shows the usefulness of TAM in the adoption of internet banking. In addition, McKechnie et al. (2006) applied the TAM to the online retailing of financial services and suggested that past experience with the use of the internet as a purchasing channel for non -financial services and attitudinal aspects of it as a distribution channel for financial services are the key factors towards the adoption of online retailing of financial services. The authors further concluded that insecurity about the adoption of the online

channel does not seem to be an obstacle for the adoption of online retailing of financial services, and perceived usefulness of this channel is not directly linked to the extent of use of online retailing services, but mediated by ones attitude towards the channel. This study shows that the TAM is helpful but additional aspects need to be included to fully understand the adoption behaviour towards innovative financial services. Furthermore, Pikkarainen et al. (2004) conducted their research in Finland and suggested that TAM related factors, i.e. perceived ease of use, perceived usefulness along with privacy and security were the important factors for the acceptance of internet banking. This belief about usefulness of internet banking, according to prior TAM related studies (e.g., Hu et al., 1999b; Lai & Li, 2005; Luarn & Lin, 2005; Porter & Donthu, 2006), influences customers' behaviour towards the acceptance of internet banking.

Yousufzai et al. (2010) compared three theories: TRA, TPB and TAM in the context of internet banking adoption, indicates that the TAM has superior value in terms of explaining customer behaviour towards internet banking adoption and that trust plays an important role towards this channel. In a similar vein, Lee (2009) suggested that intention to adopt internet banking is adversely affected mainly by the concerns of privacy and security risks and is positively affected by perceived usefulness and benefits of internet banking adoption. Lee's study also underscored the importance of the TAM as a useful predictor of internet banking services adoption. Furthermore, Lai et al. (2010) combined the TAM with the IDT and suggested that the combined models are better in explaining customers' behaviour towards the adoption of internet banking than either of these models alone. In addition, Kuisma et al. (2007) suggested that both functional and psychological factors arising from the distribution channel and customer and communication related factors inhibit internet banking adoption.

Research has suggested a positive relationship between attitude and intention to use internet banking (Chau & Hu, 2001; Cheng et al., 2006; Davis, 1989; Karahanna et al., 1999).

Associated with TAM, researchers have also investigated the role of trust towards the adoption decision of internet banking services. In the innovative financial services channels adoption context, Dimitriadis and Kyrezis (2008) showed that trust in the service channel and reputation of the bank determined the customer's behaviour towards the adoption of internet banking related distribution channels. In a similar vein, Luo et al. (2010), also indicate that trust and perceived risks as key determining factors towards customers' decisions to adopt internet banking services. Yousufzai et al. (2009) also highlighted the important role of trust in shaping the customer's behaviour towards internet banking. These studies further highlight the important role of trust alongside the TAM in explaining customers' adoption behaviour towards internet banking. Similarly, Suh and Han (2002) used the TAM framework to study the adoption decision of internet banking. They also proposed trust as an important variable for the understanding of internet banking adoption decisions. These studies show that individual beliefs can play an important role in the adoption of innovative financial services, including direct phone banking, ATMs and internet banking.

In addition, Lewis et al's. (2010) study indicated that compatibility, perceived usefulness and risk are also key factors for the adoption of mobile banking adoption. They further contended that trust and credibility of the service channel provider are key elements in reducing the overall perceived risk of internet banking. Ozdemir and Trott (2008) studied the adopters and non-adopters of internet banking in the context of Turkey and found that perceptual differences exist between these two groups. They further indicated that internet banking

adopters perceived the channel as user friendly, more useful and were less risk adverse compared to non-adopters. Generally speaking, the literature related to internet banking adoption decisions appears to be consistent in reporting that perceived risk associated with online banking to be negatively linked to the customer's attitude towards online banking (Black et al., 2001; Singh, 2004; Lee et al., 2005; Gerrard et al., 2006; Polasik & Wisniewski, 2009)..

Furthermore, Yiu et al. (2007) investigated the correlation of personal innovativeness, perceived usefulness (PU) and perceived ease of use (PEOU), and confirmed that these variables were all significant to the adoption of internet banking. Wessels and Drennan (2010) found PU; perceived risk, cost and compatibility as significantly related with the customer's acceptance of mobile banking services in the Australian context. Whereas, Chan and Lu (2004) suggested that subjective norms and self -efficacy with computers, both have an important effect on the customer's intention to adopt internet banking, whereas PEOU had an indirect effect on the intention to accept internet banking through perceived usefulness. Others have also reported similar results (Chau et al., 2003; Eriksson et al., 2005; Suh & Han, 2002).

Table 2.6 Summary of Selective Previous studies that extended the TAM

Study	New variables added to TAM	Key finding related to new variables
Dishaw & Strong (1999)	Task-technology fit theory (task-technology fit , tool functionality, task characteristics and tool experience)	Task and tool affect task-technology fit (TTF) and TTF affects perceived ease of use and actual use.
Venkatesh & Davis (2000)	Subjective norm, voluntariness, image, job relevance, output quality, result demonstrability and perceived ease of use	These variables significantly influence user acceptance.
Moon & Kim (2001)	Perceived playfulness	Perceived ease of use is found to be significantly related to perceived playfulness. Moreover, perceived playfulness has a strong influence on attitude and behavioural intention. It has a more significant effect on individuals' attitudes than perceived usefulness.
Mathieson et al. (2001)	Perceived user resources	The perceived resources affect users' intention to use an information system. The construct is found to be related to intention and perceived ease of use as well as usefulness.
Chen et al. (2002)	Compatibility	Compatibility is one of the primary determinants of consumer attitude towards using virtual stores. Moreover, compatibility influences perceived usefulness of virtual stores.
Gefen et al. (2003a)	Familiarity, Disposition, and Trust	Familiarity and trust are the sole determinants of purchasing intentions for potential customers, while repeat customers are influenced by both trust and useful.
Klopping & McKinney (2004)	Task-technology fit (TTF)	TTF positively affects perceived usefulness, ease of use and behavioural intention to use,
Vijayasarathy (2004)	Compatibility, Privacy, Security, Normative beliefs, and Self-efficacy	Compatibility and security are significant predictors of attitude toward online shopping, but privacy is not. Furthermore, normative beliefs and self-efficacy strongly influence intention to use online shopping.

Table 2.6 Summary of Selective Previous studies that extended the TAM

Study	New variables added to TAM	Key finding related to new variables
Shih (2004)	Relevance	Perceived usefulness, ease of use, and users' attitudes toward internet use for information seeking are strongly influenced by the relevance of information needs. Moreover, relevance has a greater positive effect on perceived performance and usefulness for enterprise internet users than for simple/interactive Intraweb users.
Hsu & Lu (2004)	Social influences (social norms, critical mass) and flow experience.	Social norms and flow experience significantly influence intentions to play an online game, but perceived critical mass has no significant direct effects. Furthermore, users' attitudes toward playing online games are statistically significantly related to perceived critical mass. Social norms and flow experience, however, do not significantly affect attitude. The perceived ease of use is also found to be positively related to the flow experience.
Burton-Jones & Hubona (2005)	Staff seniority, age, and education level.	These individual user differences have significant direct effects on both the frequency and volume of usage, and indirect effects through perceived usefulness and ease of use.
Luarn & Lin (2005)	Perceived credibility, Perceived self-efficacy, and Perceived financial cost.	Credibility, self-efficacy and financial cost significantly influence behavioural intention to use mobile banking. Perceived credibility is found to have a stronger influence on behavioural intention than the traditional TAM variables. Moreover, self-efficacy has a significant effect on perceived ease of use, which in turn has positive influences on perceived usefulness, credibility and behavioural intention.

Table 2.6: Summary of Selective Previous studies that extended the TAM (Continued)

Study	New variables added to TAM	Key finding related to new variables
Lee et al. (2006)	Subjective norm and Self identity.	Self-identity has a significant direct and indirect effect on technology acceptance. There is also a significant direct effect of self-identity on the acceptance in voluntary and experienced situations, while subjective norm has no significant effect on either situation.
Burton-Jones & Hubona (2006)	System experience, level of education and age	For the email application, system experience has a direct effect on usage volume and frequency. System experience also has a significant effect on perceived ease of use. For the word processor application, both system experience and age have direct effects on usage frequency. Moreover, level of education and age have a significant effect on perceived ease of use.
Porter & Donthu (2006)	Demographic variables (age, education, income, and race) and Perceived access barriers.	Age, education, income and race are found to be associated differentially with certain beliefs about the internet and that these beliefs mediate consumer attitudes toward use of the internet. Perceived access barriers also have a significantly negative effect on attitude.
Schepers & Wetzels (2007)	Subjective norm	Subjective norm has a significant influence on perceived usefulness and behavioural intention to use.
Wu et al. (2007)	Individual factors (computer self-efficacy, computer enjoyment), internal factors (subjective norm, management support, internal computing support and training), External factors (external computing, support and training, network externality), and System factors (task-technology fit).	Perceived usefulness, ease of use, and computer enjoyment all directly influence actual usage. The results also show that task-technology fit has a direct influence on the perceived ease of use.
Simon & Paper (2007)	Subjective norms	Subjective norm is a statistically significant predictor of behavioural intention. Therefore, the extended TAM, using subjective norm as an additional factor, is a robust model with an excellent ability to predict system use.
Amin (2008)	Perceived credibility, amount of information about mobile phone credit cards and perceived expressiveness	Perceived usefulness, perceived ease of use, perceived credibility and the amount of information contained on mobile phone credit cards are important factors to predict the intentions of Malaysian customers to use mobile phone credit cards.

Table 2.6 Summary of Selective Previous studies that extended the TAM

Study	New variables added to TAM	Key finding related to new variables
Gumussoy & Calisir (2009)	Subjective norms, compatibility and perceived behavioural control.	Behavioural intention is explained by subjective norms, perceived behavioural control and perceived usefulness. Among these factors subjective norms have the highest impact on intentions.
Lee (2009a)	Perceived risk, perceived benefits, trust, perceived behavioural control and subjective norms	Perceived risk, perceived benefits, attitude, perceived behavioural control and perceived usefulness significantly influence customers' intention to trade online. The results also revealed that trust influences perceived usefulness and perceived ease of use affects trust.

Source: This research

2.6.7 Criticisms of the TAM

The TAM has been criticized on several grounds. First, one of the limitations of the TAM is that it sheds light only on the determinants of intention by perceived usefulness and ease of use and does not pay attention to how these beliefs are formed (Mathieson, 1991).

Second, as mentioned before, one of the TAM's assumptions is that the perceived usefulness and ease of use constructs fully mediate the influence of external variables on intentional behaviour. This assumption has been criticized by a number of researchers, including Burton-Jones & Hubona (2006; 2005). They claim that the TAM's full mediation assumption is overstated. Finding that, contrary to the normally accepted assumption, the external variables can have direct effects on usage behaviour over and above their indirect effects. For example, Burton-Jones & Hubona (2005) conducted a study involving 106 professional and administrative staff in the IT division of a large manufacturing company who voluntarily use email and word processing. They found that user differences (staff seniority, age and education level) have significant direct effects on both the frequency and volume of usage.

Therefore, these effects are beyond the indirect effects as mediated through the TAM belief constructs.

Third, the TAM does not have any social variables. Mathieson (1991) claims that these variables are important as they may capture variance that is not already explained by other variables. However, there is still no agreement on the hypothesised subjective norm relationships in the TAM because some studies have found it to be significant in the TAM (Robinson et al., 2005; Wu & Wang, 2005) while other studies, which included subjective norm, found it had no significance (Chau & Hu 2002; Lewis et al., 2003). Miller & Hartwick (2002) point out that the influence of subjective norms on the intention to accept is more salient when IT use is mandatory rather than voluntary. This is because in mandatory environments, the direct effect of subjective norm on intention is proposed to operate when employees perceive that their managers want them to perform a specific behaviour, and their managers have the right to punish the employees who do not perform the behaviour (Warshaw, 1980). Therefore, since use of internet banking services is voluntary by customers, subjective norms may not play an important role in explaining the use of internet banking. Thus, this variable will not be included in the present study.

Fourth, there are also some other variables, such as perceived trust and perceived risk that have been missed in technology acceptance models, such as the TAM. Torkzadeh & Dhillon (2002) highlighted that trust has been identified as a critical factor for the success of e-commerce. This is because the open and global nature of the internet as a transaction infrastructure where uncertainty arises and risk in online transactions makes trust a vital element of e-commerce (Hoffman et al., 1999). A number of researchers have found that trust

directly or indirectly affects consumers' intention to engage in online activities (Pavlou, 2003; Kim & Ahn, 2005; Teo & Liu, 2007; Hahn & Kim, 2009; Kim et al., 2009). Therefore, to overcome this limitation, the next chapter discusses the role of trust and perceived risk relating to the acceptance of internet banking.

Finally, another weakness of attitude/behaviour models, such as the TAM is that it does not adequately understand or explain IT utilization based tasks (D′Ambra & Rice 2001; Hoffman & Novak 1996; Koufaris 2002). IT is used as a tool by which individuals accomplish organisational tasks. In the internet banking domain, for example, a bank's website is used as a tool by which bank customers can conduct bank services that are available online. Goodhue & Thompson (1995) state that the lack of task focus in evaluating IT and its acceptance, use and performance contributes to mixed results in IT evaluations. The concept of usefulness in the TAM includes the task, that is to say usefulness means useful for something. However, more explicit inclusion of task characteristics may help to provide a better model of IT utilization (Dishaw & Strong, 1999). The task-technology fit perspective that will be explained in more detail in the next section addresses this problem more fully.

2.7 The Task-Technology Fit (TTF) Model

Another model of technology acceptance, the task-technology fit (TTF) model (Goodhue & Thompson, 1995), extends the TAM by considering how the task affects use. The TTF theory is derived from the cognitive fit theory of Vessey (1991). Vessey proposed the cognitive model from the perspective of cognitive cost. The cognitive model hypothesises that a cognitive fit between problem-solving aids and the problem-solving task reduces the complexity of the task at hand, thereby improving the problem-solving effectiveness. The

fundamental argument of fit models postulates that IT will be adopted and will provide advantages if the functions available to the user supports the activities of the user (Dishaw & Strong 1998a). Dishaw (1994) points out that IT functions are considered to support activities if they facilitate these activities or lower the cost to the user of performing these activities. The ability of IT to support a task is expressed by a formal construct; task-technology fit.

The basic fit model consists of two constructs, task-technology fit as the independent variable and an outcome measure, such as utilization as the dependent variable (Dishaw & Strong, 1998a), as shown in Figure 2.7. This model hypothesises that a higher degree of fit leads to expectations by users of beneficial consequences of use (Goodhue, 1992). There are a number of versions of the TTF model that include downstream and upstream variables (Dishaw & Strong, 1998a). On the downstream side, TTF models may include factors that are affected by fit, such as attitude toward tools, intention to use, tool utilization and performance, while on upstream variables the models may have factors that affect fit (e.g. technology, task and individual characteristics). For example, task and technology characteristics typically are assumed to directly affect fit and individual characteristics, such as computer experience, sometimes moderate these relationships (Dishaw & Strong, 1998a).
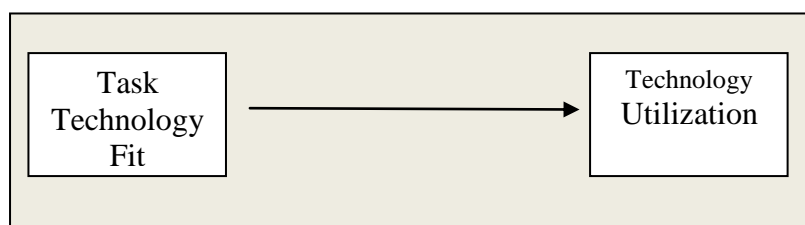
Figure: 2.7: The basic fit model (Dishaw &Strong, 1998a)

The TTF construct captures a person's belief system regarding the possible outcomes of task-system fit that result from information technology use (Dishaw & Strong, 1998a). Goodhue (1992) defines task-system fit as 'the degree to which an information system or systems environment assists individuals in performing their tasks, or the fit between task requirements and the functionality of the IS environment' (p. 304). This definition is similar to that which was employed in auditors' use of software tools by Nance (1992, p. 50): 'the degree to which an available information technology is useful in supporting the unique needs of a given task'. Based on these definitions, the task-technology fit construct in the internet banking context refers to the degree to which the functionality of internet banking websites assists internet banking users in conducting their banking services.

A task, in the task- technology fit literature, is broadly defined as 'the action carried out by individuals in turning inputs into outputs' (Goodhue & Thompson, 1995, p. 216). Tasks can be software maintenance (Dishaw, 1994), or be of a decision-making nature (Goodhue, 1995), or perform bank services available online, such as making a payment or checking accounts. Technologies, in the task-technology fit literature, are viewed as 'tools used by individuals in carrying out their tasks' (Goodhue & Thompson, 1995, p. 216). Technologies include a wide range of information technologies; for example, hardware, software, data, user-support services or any combinations of these. In the context of internet banking, technology refers to the bank website. Individuals may use technologies to assist them in performing their tasks. Individual characteristics, such as experience and training, could affect how easily and well he or she will utilize the technology (Goodhue & Thompson, 1995).

Goodhue & Thompson (1995) state that the antecedents of task-technology fit constructs are the interaction between task, technology and the individual. Therefore, certain kinds of tasks require certain kinds of technology functionality. TTF will be reduced if the gap between the requirements of a task and the functionalities of a technology widens.

2.7.1 Dependent Variables of the TTF Model

The dependent variable in this model is either intention to use technology (actual use), individual performance or both utilization and performance (Dishaw & Strong, 1998a). Utilization refers to the behaviour of employing the technology in completing tasks (Goodhue & Thompson, 1995). Dishaw & Strong (1998a) point out that tool utilization is a direct effect of positive, expected consequences of use. Performance means that the accomplishment of a number of tasks by individuals (Goodhue & Thompson, 1995). Goodhue and Thompson (1995) point out that higher levels of performance mean some mix of improved efficiency and effectiveness and higher quality. Utilization or intention, as dependent variables, are appropriate only when use is voluntary (e.g. in the context of internet banking); otherwise, performance is the most appropriate dependent variable (Goodhue, 1995). This is because in the mandatory environment, such as in organizations, employees may highly utilize a technology (e.g. a new system), although that system has low task-technology fit, due to their managers who have forced them to use it. Therefore, more utilization of a new technology does not necessarily mean that there is a high task-technology fit of that technology or system in mandatory use. On the other hand, in the voluntary environment, such as internet banking, customers have the right to accept or reject a new technology. Thus high utilization or intention to use a new technology means that the technology has high task-technology fit and is useful for individuals in voluntary environments. Goodhue & Thompson (1995) state that

task-technology fit should be an important determinant of whether new technologies are believed to be more useful and give more relative advantages.

2.7.2 Dimensions of TTF

With respect to task-technology fit elements, there are a number of researchers who have developed and measured validity of task-technology fit items (Goodhue, 1995; 1998; Goodhue & Thompson, 1995). Goodhue & Thompson (1995) developed eight dimensions to measure task-technology fit. The Cronbach's alpha reliabilities for these factors range from .60 to .88. These eight components of task-technology fit which were successfully measured included (1) data quality; (2) locatability of data; (3) authorization to access data; (4) data compatibility; (5) training and ease of use; (6) production timeliness, (7) systems reliability; and (8) IS relationship with users. Goodhue (1998) also conducted an extensive test to develop and validate the task-technology fit dimensions to measure the degree to which an organisation's information systems and services meet the information needs of its managers. The author used a sample of 357 users in 10 companies and found that the instrument has excellent reliability and discriminate validity for 12 dimensions of task-technology fit. It also exhibits strong predictive validity. The 12 dimensions are: 1) level of detail, 2) accuracy, 3) compatibility, 4) locatability, 5) accessibility, 6) meaning, 7) assistance, 8) ease of use, 9) systems reliability, 10) currency, 11) presentation, and 12) confusion.

2.7.3 Review of the TTF Model Research

Task-technology fit has been successfully applied in a variety of research contexts (see Table 2.7). Goodhue (1995) proposes four task-technology fit propositions, which are task, technology, individual and user evaluations to understand user evaluations of information

systems. Data was collected from 10 large organizations, and 500 individual questionnaires were distributed. The results revealed that user evaluations were found to be influenced directly by system, task and individual characteristics. Moreover, the strength of the link between system characteristics and user evaluations depended on the level of certain task characteristics. In the context of software maintenance, Dishaw & Strong (1998b) conducted a study based on task-technology fit to explain factors that drive or determine the usage of software maintenance support tools. The major finding of this study was that the fit between a maintenance task and the available maintenance support software tools is strongly associated with maintenance support software tool use.

The task-technology fit has also been used in World Wide Web (WWW) usage to develop valid and reliable scales needed for an application of the TTF model to assess the extent to which the WWW supports the procurement process and to present the expected benefits from such usage when WWW functionalities meet corporate buyers' needs. Based on 110 corporate buyers from over 100 organisations, Benslimane et al. (2003) found that a better fit between the tasks required during the procurement process and internet websites' functionalities leads to a higher level of WWW usage, which then leads to an improved performance for users.

There are a number of researchers who have extended the task-technology fit to increase the explanatory power of the model. For example, Strong et al. (2006) extend the TTF model to include the computer self-efficacy construct. The domain in this study was the utilization of modeling tools by business students. The findings indicate that fit has a significant effect on utilization, but the direct effects of task and technology were not significant. Moreover, computer self-efficacy has a direct effect on tool utilization. This study found that computer

self-efficacy increased the explanatory power of the model over one with only task characteristics, technology functionality, and the fit (interaction) between them.

In another study, Lee et al. (2007) extend the task-technology fit by adding an individual differences construct, which includes demographic variables (gender, age, education and position experience), computer experience, cognitive style and computer self-efficacy to explore the factors affecting the effective adoption of mobile commerce in the insurance industry. The major findings reveal that position, experience, cognitive style and computer self-efficacy are major factors that can predict the fit of applying personal digital assistance technology for insurance tasks. Other demographic variables, such as gender and age are found to be non-significant.

In the context of mobile banking services, Zhou et al. (2010) integrated the TTF with the theory of acceptance and usage of technology, and found performance expectancy, task technology fit, social influence and facilitating conditions all have significant effects on customers' acceptance of mobile banking services.

The task-technology fit has been combined with other different models, such as TAM. Dishaw & Strong (1999) demonstrate the efficacy of using a combined TAM and TTF model for workplace technology adoption. In their study, the results indicate that the TTF was more effective than the TAM for predicting use in work-related tasks. However, the results conclude that a combination of the TAM and TTF into one model explains significantly more of the variance in utilization than either the TAM or TTF alone. In that study, task and technology are found to affect task-technology fit and task-technology fit directly affected

perceived ease of use and actual use. Surprisingly, task-technology fit did not affect perceived usefulness as expected. The influence of task-technology fit in perceived ease of use is also supported by Wu et al. (2007) who conducted an empirical study to investigate what determines end user computing (EUC) acceptance. They found that task-technology fit has only a direct influence on the perceived ease of use. However, in online shopping activity, Klopping & McKinney (2004) found that task-technology fit significantly influences perceived ease of use, perceived usefulness and behavioral intention to use. The significant affect of task-technology fit on both perceived usefulness and perceived ease of use was also found in investigating the employment of intelligent agents in a web-based auction process (Chang, 2008).

Based on the above studies, there is total agreement on the effectiveness of the integration of TTF with TAM models, however these studies presented different and conflicting results. There are three possible reasons to explain these. First, all these studies were conducted in different domains. Klopping & McKinney (2004) state that e-commerce is more voluntary than some workplace adoptions, which means that consumer perceptions of usefulness are more dependent on technology fit to the task at hand rather than in the workplace domain where perceived usefulness may be more influenced by work factors, such as reward. Second, each of these studies adapted different task-technology fit dimensions based on previous studies. For example, Klopping & McKinney (2004) adapted task-technology fit dimensions from Goodhue's research (1995), while the measures for task-technology fit in Wu et al.'s study (2007) were developed based on Goodhue's (1998) work. Therefore, the differences of task-technology fit dimensions adapted might also cause the differences and conflicts of results among the studies that combined TAM and TTF models. This is because every study

that has developed and validated a measurement of task-technology fit has created different numbers of task-technology fit dimensions, and it is expected that every task-technology fit dimension has varied influence on the TAM's constructs (See Chapter 5, Section 5.2.7, p: 152 for more details). This leads to the third reason, all the previous studies that integrated the TTF model with the TAM have considered task-technology fit as a single construct in their models, and thus have ignored the varied influence of the dimensions of task-technology fit on the TAM constructs. As a result, they might not have fully measured the influence of task-technology fit on the TAM variables properly consequently, this issue needs further investigation.

Table 2.7: Summary of Selective Previous studies that Utilized Task-Technology Fit (TTF) Model

Study	Technology Type	Task Type	Task→TTF	Tech→TTF	Ind→TTF	TTF→BI	TTF→AU	TTF→Per	AU→Per
Coodhue (1995)	Tools to identify, access, integrate, and interpret the data).	Using quantitative information in managerial tasks	√	√	√	X	X	X	X
Goodhue & Thompson (1995)	Multiple technologies	Multiple tasks	SS	SS	X	X	SS	√	√
Dishaw & Strong (1998a)	Maintenance support tools	Software maintenance tasks	X	X	X	√	√	X	X
Dishaw & Strong (1998b)	Maintenance support tools	Software maintenance tasks	X	X	X	X	√	X	X
Dishaw & Strong (1999)	Software maintenance	Software maintenance tasks	√	√	X	X	√	X	X
Dishaw & Strong (2003)	Maintenance support tools	Software maintenance tasks	X	√	X	X	√	X	X

Table 2.7: Summary of Selective Previous studies that Utilized Task-Technology Fit (TTF) Model (Continued)

Study	Technology Type	Task Type	Task→TTF	Tech→TTF	Ind→TTF	TTF→BI	TTF→AU	TTF→Per	AU→Per
D'Ambra & Wilson (2004)	The world wide web	The use of the Web to seek information related to personal travel	X	X	√	X	X	√	√
Klopping & McKinney (2004)	Web technology	Online shopping activities: Purchase and product information search	X	X	X	√	X	X	X
Strong et al (2006)	Modeling tools	Modeling	X	X	X	X	√	X	X
Lee et al. (2007)	Personal digital assistant (PDA) mobile commerce system	Recruiting new contracts, post-contract customer services and tax and legal information services			PS			√	
Chang (2008)	Intelligent agent software	Online auction	√	√	X	X	X	X	X

Table 2.7: Summary of Selective Previous studies that Utilized Task-Technology Fit (TTF) Model (Continued)

Study	Technology Type	Task Type	Task→TTF	Tech→TTF	Ind→TTF	TTF→BI	TTF→AU	TTF→Per	AU→Per
Larsen et al. (2009)	E-learning tool accessible	Teaching activities	X	X	X	X	√	X	X
Smith & Mentzer (2009)	Forecasting support system	Wholesales and retail forecasting tasks	√	√	X	X	X	√	X

Source: This research

NOTE: Task = Task Characteristics; Tech = Technology Characteristics; Ind= Individual differences; TTF = Task-Technology Fit; Per= Performance; √= Relationship Validated; NS = Relationship Non-Significant or Rejected; X = Relationship not tested; PS = Partially Support.

Chapter 2 discussed consumer behaviour in the context of the financial services industry and examined the principal theoretical models that have been widely used in technology acceptance research. In particular, it reviewed five theoretical models and a number of studies related to these models in order to develop a base for a comprehensive theoretical model proposed for internet banking acceptance in the present study. Based on this chapter, it has been found that one of the weaknesses of attitude/behaviour models (e.g the TAM) is that they do not adequately understand or explain IT utilization based tasks. In other words, these models do not pay attention to the role of task-technology fit in technology acceptance. Thus, previous studies have argued that attitude/behaviour models should be expanded to include some task characteristics and highlight that this helps to provide a better model of IT utilization. For example, previous researchers found that a combination of one attitude/behaviour model (such as TAM) and TTF into one model explains significantly more of the variance in technology acceptance than either the attitude/behaviour model or TTF alone (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Wu et al., 2007) (see Chapter 5, Section 5.1, p: 141 for more details). Moreover, some other important factors, related to environmental uncertainty (perceived trust and perceived risk), have been overlooked in technology acceptance models. There are a number of researchers who argue that technology acceptance models should be extended to include these factors (e.g. Yousafzai et al., 2003; Pavlou, 2003; Guerrero et al., 2007). Therefore, to overcome this limitation, the following chapter discusses trust and perceived risk, which are proved to play important roles in understanding user behaviour behind online activities.

3. The Role of Trust Relating to the Acceptance of Internet Banking

Trust has been identified as a construct that is critical to the acceptance of e-finance, such as internet banking, because trust plays an important role whenever risk, uncertainty and interdependence exists (Mayer et al., 1995). The objective of this chapter is to review the role of trust in the context of internet banking. It attempts to examine the notion and meaning of the trust concept based on reviewing various theories of trust, namely personality theories, sociology and economics and interpersonal theories and then to identify its dimensions, antecedents and consequences, which are considered to be more related to internet banking. This will lead to the proposition of a model of trust that provides a framework for trust in the internet banking environment.

3.1 The Importance of Trust in Electronic Finance

Chopra & Wallace (2002) declare that there are two preconditions for trust to be relevant in a particular situation. Firstly trust can only appear when there is a state of dependence between the trustor and trustee and secondly when acting on this dependence entails risk. The greater the dependence on other people and vulnerability to their misconduct, the greater the need to trust (Deutsch, 1958; Rousseau et al., 1998). Consequently, trust is an essential element in any social and business relationship whenever risk and uncertainty exist (McKnight & Chervany, 2001); trust enables people to be able to live in an uncertain and risky environment (Deutsch, 1962; Mayer et al., 1995). It helps to provide ways to diminish complexity in a complex environment

by decreasing the number of options that a person has to consider in a given situation (Barber, 1983; Lewis & Weigert, 1985).

Trust has been identified as a critical factor for the success of electronic finance (Torkzadeh & Dhillon, 2002) due to the open and global nature of the internet as a transaction infrastructure where uncertainty arises and risk in online transactions makes trust a vital element of e-finance (Hoffman et al., 1999). A number of researchers have examined the role of trust in e-finance and have found that trust directly or indirectly affects consumers' intention to engage in online activities (Pavlou, 2003; Kim & Ahn, 2005; Teo & Liu, 2007; Hahn & Kim, 2009; Kim et al., 2009).

In the context of internet banking, Yousafzai et al. (2003) identify a number of unique dimensions of internet banking transactions that reduce customers' perceptions of control over their online transactions, such as the distance and impersonal nature of the online environment. Dellarocas (2001, p. 2) points out that "the more the two sides of a transaction are separated in time and space, the greater the risks". Grabner-Krauter & Kaluscha (2003) reveal that in the online environment several risks can exist because of the implicit uncertainty of using open infrastructures for transactions (system-dependent uncertainty) or because of the conduct of actors who are involved in the online transactions (transaction specific uncertainty). System dependent uncertainty consists of events that are beyond the direct influence of the web retailers and can be characterised as exogenous or environmental uncertainty (Grabner-Krauter & Kaluscha, 2003). In the context of internet banking, this associates with potential technology

sources of errors and security gaps, or to put it economically, to technology dependent risks that cannot be avoided by an agreement or a contract with a third party who is involved in the transaction (Yousafzai et al., 2003). There are many examples of system dependent uncertainty caused by third parties (hackers) who compromise the transaction process in internet banking, such as stealing credit card information and/or breaching customers' personal information.

Another type of uncertainty is transaction specific uncertainty which is perceived as a kind of endogenous or market uncertainty that results from economic actors' decisions and is caused by an asymmetric distribution of information between the transaction partners (Weiber & Adler, 1995, cited in Grabner-Krauter & Kaluscha, 2003). In the context of internet banking, this uncertainty associates with the bank and its potential behaviour in online transaction processes. Yousafzai et al. (2003) state that transaction specific uncertainty occurs because the bank has a chance to behave opportunistically by taking advantage of the distant and impersonal nature of internet banking and also that the government is not able to monitor all transactions. Examples of transaction specific uncertainty caused by the bank include: leaking of customers' private information, presenting wrong or inadequate information regarding products and services and breaking agreements and promises. These uncertainties and risks associated with internet banking have made trust an essential element of internet banking acceptance. Many researchers have highlighted the significant role trust plays in adopting this channel. For instance, Al-Somali et al. (2009) found that trust is one of the most significant beliefs in explaining customers' attitudes toward internet banking acceptance. In sum, customers' trust is an important factor if banks expect their customers to use their websites to make use of banking services, or conduct banking

transactions. Banks must demonstrate an understanding of how their customers' trust works and how it is formed by identifying its antecedents so as to make this medium a successful channel in their business.

3.2 Theoretical Perspectives of Customer Trust

It appears from the previous studies related to trust issues, which were conducted in internet banking field that there is a disagreement regarding the factors that shape customer trust in the e-commerce domain (see Section 3.4, p: 102). The root of divergence arises from the conceptualisation of trust. Researchers have developed a narrow or wide conceptualisation of trust based on a variety of one or more trust theories, such as personality and interpersonal theories. This has led most of them to include some antecedents of trust that might not be important or may ignore some factors that could be important in the context of e-commerce. Moreover, the researchers do not explain why some perspectives of trust have been excluded from their studies. Therefore, to overcome these problems, it is very important to review the various theories of trust that are derived from different disciplines in order to decide which of these theories are more relevant to the internet banking field and explain which of these are not. This will smooth the way to understanding the meaning of trust and eventually identify the dimensions and antecedents which are important to form customer trust in internet banking. In this section these issues are explicitly addressed.

A number of studies have examined the notion of trust in various domains over the years, such as in bargaining (Schurr & Ozanne, 1985), industrial buyer-seller relationships (Doney & Cannon, 1997), distribution channels (Dwyer et al., 1987), the use of market research (Moorman et al., 1993) and partner cooperation in strategic alliances (Das, 1998). The research streams used in these studies can be classified into three categories, namely personality theories, institution-based trust and interpersonal theories. These streams have conceptualised trust in different ways as discussed below.

Personality theory, also known as dispositional trust, has conceptualised trust as an individual characteristic (Rotter, 1967). It views trust as a belief, expectancy or feeling that is deeply rooted in the personality and originates in the individual's early psychological development (Lee & Turban, 2001). Mayer et al. (1995) state that a disposition to trust will influence how much trust an individual has for a trustee prior to data on that particular party being available. One individual exhibits propensity to trust to the extent that he or she demonstrates a consistent tendency to be willing to be dependent on others across situations or persons (Chen & Dhillon, 2003). Therefore, people vary in their disposition to trust based on their differences of developmental experiences, personality types and cultural backgrounds. However, some researchers, such as Lewicki & Bunker (1995) state that personality traits are less predictive of specific behaviour, because they cannot differentiate between different situations. For example, the dispositional trust construct may not properly explain why a customer who has a high propensity to trust may have less trust towards a new internet vendor. Furthermore, this perspective of trust cannot be influenced by the

internet vendor, because it is an uncontrollable factor (Yousafzai et al., 2003). Based on the above reasons, this theoretical perspective of trust will not be included in this study.

Institution-based trust views trust as a phenomenon within and between institutions (Lewicki & Bunker, 1995; Lee & Turban, 2001). Authors working from this perspective have investigated how institutions and incentives are created to reduce anxiety and uncertainty associated with exchange among relative strangers (Granovetter, 1985; Zucker, 1986). Institution-based trust is defined as being where a customer believes that the requisite conditions are in place to enable the customer to act with the anticipation of a successful future endeavour (Luhmann, 1979; Lewis & Weigert, 1985). Institutional trust is divided into two parts, namely situational normality and structural assurance. Situational normality is referred to as a customer's beliefs that success is likely because the situation is normal (McKnight et al., 1998) or because 'everything seems in proper order' (Lewis & Weigert, 1985, p. 974). McKnight & Chervany (2001) point out that when customers believe that the internet situation is normal and their role and the vendor's roles in the situation are appropriate, then the customer has a basis for trusting the vendor in this situation. However, when an internet vendor requires customers to follow unexpected procedures, the internet will be under suspicion and then the customer will not trust that website. This view is also compatible with the situation in the internet banking domain. If a customer finds that the bank website follows normal procedures, he or she will be inclined to trust it. Since it is very difficult for customers to determine if their bank website follows normal procedures like other banks' websites, because most of them have accounts with one bank and most banks allow their

customers only to have full access for their websites, situational normality will not be included in the present study.

The second part of institution-based trust is structural assurance, which is defined as an individual's belief that success is likely because guarantees, contracts, regulations, promises, legal resources, processes or procedures are in place that assures success (Shapiro, 1987). In the context of e-finance, this type of trust refers to customers' perception about certain conditions, such as safety and security of the internet environment (McKnight et al., 2002) or legal and technical protection (Tan & Sutherland, 2004).

Finally, interpersonal trust which treats trust as a social tie between a specific trustor and trustee is the most common approach to trust (Mayer et al., 1995). This category looks at trust as the expectation and willingness of the trusting party in a transaction, the risk associated with acting on such expectations and focusing on the contextual factors that either enhance or inhibit the development and maintenance of trust (Lee & Turban, 2001). It refers to an individual's trust in another specific party that one trusts (McKnight & Chervany, 2001). Some researchers, such as Lewis & Wiegert (1985) divide interpersonal trust into two streams, cognitive trust and emotional trust. Cognitive trust that also refers to trusting beliefs is defined as a trustor's rational expectation that a trustee will have the necessary attributes, such as competence and benevolence to be relied upon (Komiak & Benbasat, 2004), while emotional trust is defined as the extent to which a trustor feels secure and comfortable about relying on the trusted party (Swan et al., 1999). There is a difference between these streams. Cognitive trust focuses on reasoning or

cognition. It is an individual's cognition grounded on good rational reasons (Lewis & Wiegert, 1985). When a trustor believes that good reasons to trust are identified, cognitive trust will be developed (Lewis & Wiegert, 1985). For example, in working relationships, when a manager believes that one of their subordinates has certain qualities, such as skills and competencies to do his or her assignments properly, the manager's cognitive trust will develop towards that employee. This is similar in the e-finance domain, such as internet banking. When customers believe that their bank has some desirable attributes, such as ability and integrity that enable the bank to deliver its services through the internet in accordance with their expectations, their cognitive trust will be developed towards the internet bank.

However, emotional trust focuses on feeling. It is an emotional security which enables a trustor to go beyond the available evidence and feel assured and comfortable about relying on a trusted party (Holmes, 1991; Komiak & Benbasat, 2004). In order for emotional trust to play an important role in understanding individuals' trust, the relationships between a specific trustor and a trustee should be personal and close (Rempel et al., 1985). Therefore, this stream plays an important role in some situations, such as the organisational context where the relationships between the staff are typically personal and close. However, in the context of electronic finance, such as internat banking, the distance and impersonal nature of the online environment make relationships between customers and financial providers impersonal and therefore not close. Thus emotional trust will not be included in the present study.

3.3 Definition of Trust

Understanding the meaning of trust in the e-finance is an important step in order to identify its dimensions and antecedents that will be used to develop a trust model for the internet banking domain. Several researchers have recognized the importance of the trust issue in different contexts, such as philosophy, psychology, information science, marketing and management. However, there is no agreement about its definition, dimensions, antecedents and outcomes. There are many reasons that justify this disagreement among researchers. The first is that every discipline views trust from its own perspective based on its research domain (McKnight & Chervany, 2001). For example, in the organisational discipline, Mayer et al. (1995) define trust as 'the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party' (p. 712). This definition highlights two important components of trust: a willingness of a trustor to be vulnerable and confident expectations. Another example, in marketing, is given by Moorman et al. (1993) who define trust as 'a willingness to rely on an exchange partner in whom one has confidence' (p. 82). This definition draws attention to the importance of confidence in the concept of trust. Second, many researchers have treated the conceptualisation of trust as an uni-dimensional construct, ignoring the huge body of literature suggesting that it is a multi-dimensional construct (Gefen et al., 2002). This often causes researchers to focus narrowly on specific aspects of trust, failing to fully identify its multi-dimensional nature (Muir, 1994). The third reason is that literature related to trust lacks clear differentiation between trust itself and its antecedents and outcomes (Mayer et al., 1995); for example if trustworthiness is part of trust or a different construct. There is also a failing to clearly understand the relationship between trust and risk (Mayer et al., 1995). Finally,

several studies have failed to consider both the trusting party and the party to be trusted (Mayer et al., 1995).

In a comprehensive review of organisational research on trust, Rousseau et al. (1998) found that the common elements of the definition of trust are similar. They highlighted two significant elements of trust, namely the trusting party towards perception of risk and vulnerability and the expectation that the trustee will behave in the interest of the trusting party. Therefore, from the comprehensive review, they suggest that trust is a 'psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another under conditions of risk and interdependence' (p. 395).

There are several themes that have been highlighted in the conceptualisation of trust across various areas of research and theory. For example, some researchers have focused on belief (Rempel et al., 1985), confidence (McAllister, 1995; Blomqvist, 1997) and expectation (Rotter, 1971; Muir, 1994). Others have paid attention to the concept of risk (Lewis & Weigert, 1985; Deutsch, 1962) or vulnerability to the actions of the trusted party (Boss, 1978; Mayer et al., 1995). However, in recent studies, agreement on some aspects of trust definition has emerged. Some of these aspects, for instance, include the vulnerable position of a trustor, the risk involved, the attitudes and beliefs held by an individual and the view of trust in a specific other. Table 3.1 summarises some selected trust definitions.

Table 3.1: Review of Trust Definitions

Author	Discipline	Trust definition
Sitkin and Roth (1993)	Management	An individual's beliefs and expectations about the likelihood of having a desirable action performed by the trustee.
Mayer et al. (1995)	Management	Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.
Rousseau et al. (1998)	Management	Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectation of the intentions or behaviour of another.
McKnight et al. (1998)	Organisational relationship	One believes in, and is willing to depend on, another party.
Chopra & Wallace (2002)	Electronic environment	Trust is the willingness to rely on a specific other, based on confidence that one's trust will lead to positive outcomes.
Pavlou (2003)	Electronic commerce	The belief that allows consumers to willingly become vulnerable to web retailers after having taken the retailers' characteristics into consideration.
Yousafzai et al. (2003)	Electronic banking	A psychological state which leads to the willingness of a customer to perform banking transactions on the internet, expecting that the bank will fulfil its obligations, irrespective of the customer's ability to monitor or control the bank's actions.
Corritore et al. (2003)	Online environment	An attitude of confident expectation in an online situation of risk that one's vulnerabilities will not be exploited.

Source: This research

Based on the work of Mayer et al. (1995), McKnight et al. (1998) and Pavlou (2003), trust in internet banking is defined here as 'the willingness of customer to be vulnerable to conduct banking services available on the internet, based on their evaluation of the bank characteristics and structural assurances of the transaction medium (the internet)'. This definition has two features of trust in the internet banking domain, also cited by Pavlou, (2003) and Yousafzai et al., (2003). First, it involves the traditional view of trust in a specific party, in this case, the bank offering internet banking services. Second, it implicitly encompasses trust in the integrity of the

internet (transaction medium). It also places emphasis on vulnerability which means that customers are exposed to loss in some way if they use internet banking, such as making themselves vulnerable to breaches in their personal information or vulnerable to credit card fraud. Moreover, this definition looks at trust as a multi-dimensional construct. It consists of two dimensions: perceived bank trustworthiness to provide internet banking (interpersonal trust: customer's perception of it, such as its ability, integrity and benevolence) and institution-based trust (structural assurances of the website). These dimensions are also proposed by several researchers (McKnight et al., 1998; McKnight & Chervany, 2001; Cheung & Lee, 2006).

It is suggested that the likelihood of customers to have positive expectations and ultimately show a willingness to trust internet banking depends on their evaluation of the trustworthiness of the bank to provide internet banking and their evaluation of the functional reliability of the internet banking system (structural assurances of the bank's website). As mentioned before, there are two types of uncertainties related to internet banking, namely system (environmental) uncertainty and market uncertainty. The trustworthiness of the bank will reduce customers' uncertainty related to the bank and its potential behaviour in online transaction processes; a bank that is considered to be trustworthy will fulfil its customers' needs appropriately. On the other hand, applied high levels of structural assurance in the website will reduce customers' uncertainty associated with the system, for instance it will assure customers that the number of hackers who compromise the transaction process will decrease. Overall, it is very important for customers to have a certain level of each of the above dimensions of trust so as to form their trust in internet banking. All

these dimensions of trust and their influences on customer trust will be explained in detail later in this chapter.

3.4 Previous Research Related to Online Trust

Although trust is identified as a major obstacle in e-commerce growth and acceptance, there is still no agreement about how it is formed and its impact on e-commerce. Table 3.2 presents sources of trust and its outcomes proposed by several researchers in the context of e-commerce. Most of these sources of trust proposed are based on one or more of the theoretical perspectives of trust that were described in Section 3.2. For example, Pavlou (2003) examined the role of trust and its consequences on customers' desire to engage in online transactions. The author proposed some antecedents of trust based on the retailer's characteristics (interpersonal perspective), namely reputation and other control variables: satisfaction with previous online transactions and web shopping frequency. The key findings revealed that reputation and satisfaction with past transactions positively influence trust. In turn, trust significantly influences perceived ease of use and perceived usefulness. Moreover trust is found to negatively influence perceived risk. Similarly, Teo & Liu (2007) empirically examined a model of trust in e-commerce vendors, using data from the United States, Singapore and China. The antecedents of trust used in this study were related to e-commerce vendors' characteristics (perceived reputation, perceived size, multichannel integration and system assurance) and consumer characteristics (propensity to trust). The authors found that perceived reputation, system (structural) assurance and propensity of trust influenced customers trust in web vendors and had similar loading across these countries.

The results also revealed that customers' trust positively influenced their attitude and had a negative relationship with perceived risk.

Table 3.2: Sources and Consequences of Trust Proposed in Previous Studies Related to E-commerce.

study	Sources of Trust				Consequences of Trust
	Personality theory	**Institutional trust**	**Interpersonal Trust**	**Other Variables**	
Gefen (2000)	√			Familiarity	Inquire and purchase
Lee & Turban (2001)	√	√	√	Trustworthiness of internet shopping medium and demographic variables.	NA
Shankar et al. (2002)	NA	√	√	Website characteristics, user characteristics and other characteristics (e.g. human service and collaboration)	Intent to act, satisfaction and loyalty and firm's performance
Kaplan & Nieschwietz (2003)	NA	√	√	NA	Willingness to purchase, perceived risk of engaging in internet transactions and perceived quality of the product
Corbitt et al. (2003)	NA	NA	√	Perceived market orientation, perceived site quality, perceived risk and user's web experience	Participation in e-commerce
Gefen et al. (2003a)	√	NA	NA	Familiarity	Purchase intention
Chen & Dhillon (2003)	√	√	√	Characteristics of consumer and the interaction between consumer and the firm	Purchase intention
Yousafzai et al (2003)		√	√	NA	Perceived risk
Hassanein & Head (2004)	NA	NA	NA	Perceived usefulness, perceived ease of use, enjoyment and social presence	NA

Table 3.2: Sources and Consequences of Trust Proposed in Previous Studies Related to E-commerce (Continued)

study	Sources of Trust				Consequences of Trust
	Personality theory	**Institutional trust**	**Interpersonal Trust**	**Other Variables**	
Cheung & Lee (2006)	√	√	√	NA	NA
Cho (2007)		√	√	familiarity and perceived ease of use	Intended use and perceived usefulness
Teo & Liu (2007)	√	√	√	NA	Attitude and perceived risk
Jones & Leonard (2008)	√	√	√	perception of website quality	NA
Wang et al. (2009)	√	NA	√	Knowledge	Online shopping activities
Al-Sajjan (2009)	NA		√	Service quality	Attitude and behavioural intentions
Kim et al. (2010)	NA	√	NA	Navigation functionality, transaction cost and satisfaction	Online loyalty

Source: This research

Note: NA= Not Applicable

Some authors have incorporated three streams of trust theories, as directly influencing online trust, to capture more variables that gain online trust. For instance, Cheung & Lee (2006) developed and empirically examined an integrative model of customer trust in internet shopping by proposing direct variables affecting consumer trust from three theoretical perspectives of trust; personality, sociology and interpersonal theories. The results showed that trustworthiness of the internet merchant (perceived integrity, perceived competence and perceived security control) and the external environment (third-party recognition and legal framework), which is similar to the structural assurance, influenced consumer trust in internet shopping. The authors refer to third party recognition as perceived effectiveness of third party recognition bodies in assuring the trustworthiness of internet vendors and refer to the legal framework as the perception of effectiveness of the law and codes of practice established to protect internet shoppers during electronic transactions. It was also found that dispositional trust did not significantly affect consumer trust. Their suggested antecedents of trust explained 84% of the variance of consumer trust in internet shopping. On the other hand, some researchers have applied one stream of trust theories as a direct effect on trust and used other streams of trust that indirectly influence customer trust. For example, Chen & Dhillon (2003) proposed a theoretical model of customer trust in an internet vendor. They conceptualised trust to include cognitive trust and emotional trust (interpersonal theories) and applied the three perspectives of trust, namely personality theories, institution-based trust, interpersonal theories, and another variable, namely interaction between parties (exchange theory) as indirectly influencing overall trust through both cognition-based and emotion-based trust.

Trust has been also examined in the context of internet banking. There are a number of researchers who have identified the role of customer trust in accepting internet banking. Guerrero et al. (2007) show that trust in the internet as a channel for financial operations significantly affects the use of internet banking. However, the majority of the studies conducted in this field have not rigorously endeavoured to understand how customer trust can be gained, and what its relationship is with perceived risk. Although only a few studies paid attention to the antecedents of trust in the internet banking domain, they overlooked other important theoretical perspectives of trust or included some unimportant factors. For example, Al-Sajjan (2009) ignored one important perspective of trust, which is institution-based trust. It is considered that institution-based trust (structural assurance) may be a very important theory of trust in the internet banking field (see Section 3.5.1, p: 108). On the other hand, some researchers, such as Nor (2005) adopted dispositional trust as one of the antecedents of perceived trust, ignoring a number of researchers who argue that personality traits are less predictive of specific behaviour, such as related to e-commerce behaviour as mentioned in Section 3.2, p: 93.

3.5 A Conceptual Model of Trust for Internet Banking

Based on previous research and the definition of trust proposed in Section 3.3, the author has proposed a model of trust for internet banking. This model views trust as a multi-dimensional construct. The model integrates two theoretical perspectives of trust as 'dimensions of trust'. Moreover, it sheds light on the consequences of trust in the context of internet banking. The proposed model is shown in Figure 3.1. This model will be combined with the conceptual model for internet banking acceptance developed in Chapter 5. The present study proposes that trust is

influenced by perceived bank trustworthiness and structural assurance of a bank's website. Furthermore, the structural assurance of a bank's website is affected by perceived bank trustworthiness. Customer trust is suggested to negatively influence perceived risk of conducting internet banking services. In turn trust and perceived risk affect customers' intention to use internet banking. The theoretical justification for the paths of the model is explained in the following sub-sections.
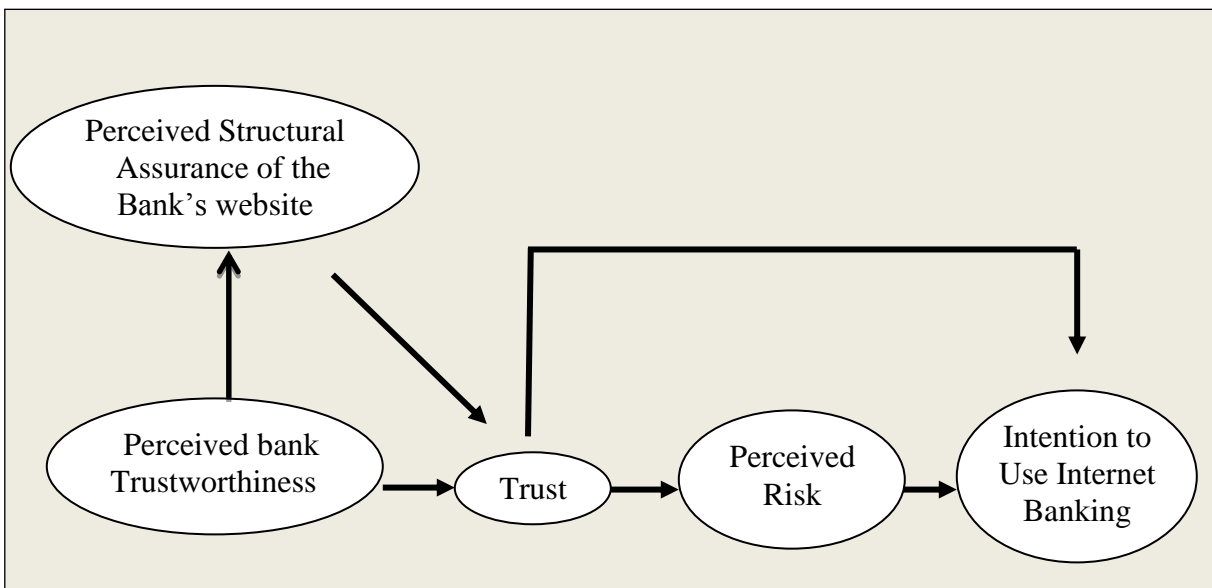
Figure 3.1: A proposed Model of Trust for Internet Banking (Source: This Research)

3.5.1 Trust Antecedents

Gefen (2002) states that trust in the e-commerce domain should be viewed as a multi-dimensional construct. However, after reviewing the literature related to dimensions of trust, two streams of research were found for dealing with it. One stream looked at trust as a multi-dimensional

construct based on only one theory of trust, such as interpersonal theory (Gefen, 2002) while the other stream conceptualised it also as multi-dimensional, but based on more than one theory of trust (Mayer et al., 1995; Cheung & Lee, 2006). The present study adopts the second stream which views trust as multi-dimensional based on two theories of trust. The rationale behind taking more than one trust theory as dimensions of trust is that several researchers, including Teo & Liu (2007) empirically found that dimensions of trust arose from more than one theory of trust. Therefore, the antecedents of trust, in the present study, are based on multi-dimensions of trust, which are related to two theoretical perspectives of trust, namely interpersonal trust and institution-based trust. These antecedents are explained as follows:

Perceived bank trustworthiness (Interpersonal trust): one approach to understanding why a given party has a greater or lesser amount of trust for another party is to consider attributes of the trustee (Mayer et al., 1995). A number of researchers claim that trustee characteristics and actions lead a trustor to trust that person (Johnson-George & Swap, 1982). Trustworthiness is known as trusting beliefs (McKnight & Chervany, 2001). Trusting beliefs refer to the trustor's perception of trustee characteristics that are desirable to the trustor (McKnight & Chervany, 2001; McKnight et al., 2002). There is a distinction between trust and trustworthiness. Mayer et al. (1995) point out that trustworthiness is the trustor's perception of how trustworthy the trusted party is, while trust is the willingness that the trustor has to engage in a risky behaviour that arises from the trustor's vulnerability to the trusted party's behaviour.

Perceived trustworthiness of a trustee arises from a number of desirable attributes to a trustor that the trustee has. Several characteristics of a trustee have been used in various studies to evaluate the trustworthiness of a trustee. However, three characteristics of a trustee are frequently used in the trust literature: ability, integrity and benevolence (Mayer et al., 1995; Lee & Turban, 2001; Yousafzai et al., 2003). Mayer et al. (1995) declare that a trusted party who has these traits is very desirable as an exchange partner, because the trusted party will behave kindly, honestly, ethically and skilfully. They also point out that these three characteristics explain a major portion of trustee trustworthiness. Thus, the present study will adopt these characteristics in order to assess a bank's trustworthiness in providing internet banking services. As defined by McKnight & Chervany (2001), ability (competence) means that a trustor believes that a trusted party has the power to fulfil a customer's needs. In the context of internet banking, this refers to customers' beliefs that the bank has such skills or competences to provide bank services through the internet in a proper and convenient way. Integrity means that a trustor's perception that a trusted party adheres to agreements, tells the truth and fulfils promises (Mayer et al., 1995). In the internet banking domain, the extent to which the banks are trustful in their dealings with their customers, adhere to agreements and keep their commitments and promises affects the degree to which the banks are judged to have integrity. Finally, benevolence refers to the extent to which a trusted party is considered to want to do good to the trustor, aside from an egocentric profit motive (Mayer et al., 1995). A benevolent bank will not be perceived to act opportunistically with its customers.

The customers' perception of the bank's ability, integrity and benevolence to provide internet banking plays a crucial role with regard to positive expectations of internet banking. This is because these attributes help to reduce customers transaction specific uncertainty associated with the bank and its behaviour in the internet banking channel. For example, beliefs in the ability of the bank will guarantee customers that the bank has power, such as skills or competences to fulfil their needs and deliver the internet banking services properly. Moreover, customers' belief in the integrity and benevolence of the bank will embody the assurance that the bank will be trustful and will adhere to the agreements in dealings with its customers and will not behave opportunistically with the customers.

Mayer et al. (1995) suggest that trust for a trustee is a function of the trustee's perceived ability, benevolence and integrity. Moreover, a review of trust literature in e-finance has revealed that trustworthiness directly influences customers trust (Lee & Turban, 2001; Cheung & Lee, 2006; Teo & Liu, 2007). In particular, it is suggested that ability (competence), integrity and benevolence of a financial provider significantly influences customer trust (Chen & Dhillon, 2003; Lee & Turban, 2001). This leads the researcher to propose that bank trustworthiness will directly influence customers' trust to use internet banking services, because it will guarantee that the bank has the ability, integrity and benevolence to deliver its services through the internet in a proper, effective and convenient way, and also without any opportunistic behaviour.

Perceived Structural Assurance of a Bank's Website (institution-based trust): McKnight et al. (2002) declare that structural assurance, in the internet domain, refers to the belief that a website possesses protective legal (e.g. third party assurances, privacy and security policy) and technology structures (e.g. firewall and encryption) that assures the website vendor's facility can be used in a safe and secure manner. In the context of electronic finance, such as internet banking, structural assurance is extremely important, because it will reduce uncertainty related to the system, such as technology errors or security gaps. This will assure customers that internet banking is safe, secure and protected from invasion of privacy and financial loss. McKnight & Chervany (2001) state that electronic financial providers with a high structural assurance level have customers who will be more likely to be willing to trust them because of the secure feeling that this structural assurance engenders. Furthermore, Cheung & Lee (2006) found that the external environment (similar to structural assurance) significantly influenced consumer trust in internet shopping. Consequently, in this study, it is proposed that perceived high structural assurance in the bank's website has a direct effect on the customers' trust to engage in internet banking; when customers feel that they are protected by law and technological safeguards, they will be willing to trust the bank website to conduct their bank services.

3.5.2. The Relationships between the Antecedents of Trust

Customers' perception of structural assurance of the bank's website is likely to be influenced by perceived trustworthiness of their bank as an internet banking provider for one reason. Perceiving that the individuals who are involved in a situation are trustworthy makes a person believes that the situation is tied by safeguards. For example, customers can better believe that

the electronic financial provider's website has procedures, such as a protective law that inhibits opportunistic behaviour to be performed by the financial provider, if the customers believe in the provider's benevolence. Perceived trustworthiness of a bank as an internet banking provider means that the bank has an ability to apply strong technological safeguards, has the integrity to adhere to agreements and fulfil its promises and will not behave opportunistically. All these increase customers' perception of structural assurance of the bank's website.

3.5.3. Consequences of Trust

Risk is a vital element of e-finance due to the distant and impersonal nature of the online environment and the implicit uncertainty of using an open global infrastructure for transactions (Pavlou, 2003). Therefore, the element of risk plays a central role in customer behaviour studies particularly, along with trust, in the context of e-finance (Gefen et al., 2002). Trust is essentially needed only in uncertain situations, since trust effectively means to assume risks and become vulnerable to trusted parties (Hosmer, 1995). If there is no risk and actions can be taken with complete certainty, no trust will be needed (Yousafzai et al., 2003). Thus, there is a relationship between trust and risk, as trust plays an important role in reducing the risk of falling victim to opportunistic behaviour (Ganesan, 1994; Fukuyama, 1995). The role of trust in reducing the risk of opportunistic behaviour has been discussed in different disciplines, such as in inter-organisational exchange (Doney & Cannon, 1997) and in channel relationships (Geyskens et al., 1998).

In spite of the agreement on the importance of risk to understanding trust (March & Shapira, 1987; Giffin, 1967) there is still confusion in the relationship between them. This is caused by a disagreement about the direction of the causality between trust and risk. Mayer et al. (1995) state that 'it is unclear whether risk is an antecedent to trust, is trust, or is an outcome of trust' (p. 711). They implied causality between these variables; however, they were not clear about the direction of that causality. In examining the published research related to trust and perceived risk, Gefen et al. (2002) summarised three common directions of the causality between trust and perceived risk: (1) the relationship between trust and behaviour is moderated by risk, (2) risk is a consequence of trust, and (3) trust and risk independently influence behaviour. This chapter will adopt the second direction which suggests that high levels of trust will reduce customers' perception of risk. As highlighted before, a number of risks are caused by two types of uncertainties: system-dependent uncertainty or transaction-specific uncertainty (Grabner-Krauter & Kaluscha, 2003). Low levels of these perceived uncertainties related to their bank's behaviour and its infrastructures applied on its website means high levels of customer trust in internet banking. In turn, this leads to a reduction in customers' perception of risk, as the reasons (uncertainties) that cause feelings of risk will disappear. In online literature, Jarvenpaa et al. (1999) suggest that customer's trust in an internet store leads to low perceived risk of buying from the store. Another study conducted by Teo & Liu (2007) showed that customer trust in e-commerce negatively influences perceived risk.

In turn, it is suggested that perceived risk will reduce consumers' intentions to engage in internet banking services. For example, customers are unlikely to conduct internet banking services with a

bank thought to behave opportunistically. The direct influence of perceived risk on intention to use internet banking is explained by the notion of perceived behavioural control in the theory of planned behaviour (Ajzen, 1991). It is suggested that high perceived risk will lower customers' perception of behavioural control, and the extent to which this comes about will negatively affect their intention to use internet banking. Previous research has also confirmed that perceived risk and intention are related. For example, Lee (2009a) found that perceived risk significantly influences customers' intention to trade online. Another study conducted in the context of e-commerce by Pavlou (2003) found that perceived risk was strongly related to intentions to transact.

Many researchers have agreed that trust is associated with positive attitudes (Jarvenpaa et al., 1999; and Teo & Liu, 2007). The theory of reasoned action suggests that positive attitudes influence behavioural intentions. Consequently, trust in an internet vendor is viewed as a salient behavioural belief that has an effect on behavioural intentions for online transactions through affecting positive customer attitudes (Pavlou, 2003). Several researchers have suggested the affecting role of trust in the intention to adopt online activities (Jarvenpaa et al., 1999; 2000; Pavlou, 2003; Torkzadeh & Dhillon, 2002; Kim et al., 2009).

Chapter 3 examined the notion and meaning of the trust concept based on reviewing various theories of trust and then developed a model of trust that provides a framework for trust in internet banking. The model includes multi-dimensions of customer trust based on: interpersonal trust (perceived trustworthiness of the bank to provide internet banking) and institution based

trust (structural assurance of the bank's website). It has been argued that consumer trust for internet banking can be developed by focusing on each of these dimensions. The model also clarified the relationship between trust, perceived risk and intention. It is important to note that the model does not attempt to include every possibility of trust antecedents. It concentrated only on incorporating the most significant antecedents, derived from the two theoretical perspectives of trust based on previous research. Moreover, this model will be combined with the conceptual model for internet banking acceptance developed in Chapter 5. Finally, this model will help researchers and practitioners to understand how customer trust can thrive and the consequences on internet banking adoption. Such understanding of these will increase the acceptance of internet banking among customers. The next chapter reviews previous studies conducted in the context of internet banking, and then identifies the main issues with these studies.

4. Internet Banking Research

Internet banking has been studied from different perspectives. Some researchers have investigated the acceptance and use of internet banking, whereas others have described the advantages of internet banking or measured the satisfaction and quality of online banking services. The aim of this chapter is to review previous studies conducted in the context of internet banking and then identify the main limitations with these studies. This chapter is divided into five sections. In sections 4.1 & 2, previous studies which have investigated factors that influence non-adopters and users of internet banking will be reviewed respectively. Section 4.3 reviews previous research that has compared users and non-users of internet banking. Section 4.4 sheds light on another perspective of research which measures the satisfaction and quality of internet banking services. Finally, the main limitations related to previous studies that focused on internet banking users are highlighted.

4.1 Factors Influencing non-adopters of Internet Banking

There are a number of studies that identify the factors influencing non-adopters of internet banking. In Oman, Al-Sabbagh & Molla (2004) found Trust and face-to-face personal banking preference as major inhibitors of internet banking adoption. In Singapore, Gerrard et al. (2006) identified eight factors that explain why customers do not use internet banking. The two most frequently mentioned factors were the lack of perceived need and risk perception associated with internet banking. Another six less frequently mentioned factors were: lack of knowledge of the

service, inertia, inaccessibility, the lack of human touch, pricing and IT fatigue. In Greece, Mavri & Ioannou (2006) estimated the probability of an individual using or not using internet banking services. The scope of their study was to determine the crucial factors that affect an individual's decision to use or not to use internet banking services. They identified as the most significant factors the individual's age, the difficulties of using the Internet, the fear of changes in the banking sector due to technological development and the lack of information concerning products and services provided to customers through electronic delivery channels. They also found that factors such as the speed of transactions or the cost of using the Internet had little impact on an individual's final decision.

Research has also indicated customers' concerns relating to the issues of privacy and security as the determining factors for non-use of innovative financial services (Black et al., 2002; Lewis, 1991; Howcroft et al., 2002; Tan & Teo, 2000; Craner et al., 1999; Westin & Maurici, 1998). For example, Sathye (1999) conducted a study amongst Australian customers and found security and privacy to be the main obstacles to the adoption of internet banking services. Researchers have also suggested the attributes of innovation to be the main factors towards the adoption or non-adoption of innovative financial services. For instance, Rugimbana and Iversen (1994) studied the usage of retail banking innovation in Australia by taking into account demographic and perceptual variables and suggested that perceived risk and the perceived complexity associated with the innovation were negatively related to the adoption of ATMs and telephone based banking services (Lockett & Littler, 1997).

In addition, some researchers have suggested both functional and psychological factors associated with innovative financial services channels and communications related factors to be the main causes for the non-adoption of internet banking services (Kuisma et al., 2007). Furthermore, research has also indicated a positive relationship between attitude and intention to use internet banking (Chau & Hu, 2001; Cheng et al., 2006; Davis, 1989; Karahanna et al., 1999). For example, Cheng et al. (2006) developed their theoretical model on the basis of the TAM and added the additional construct of web security to study customers' internet banking adoption in the context of Hong Kong. Cheng et al. found support for the extended technology acceptance model in predicting customer's attitude towards internet banking adoption. Researchers have also highlighted the important factor of risk which causes non-adoption behaviour towards internet banking (Yiu et al., 2007). Yiu et al (2007) also applied the TAM with the addition of two constructs namely; personal innovativeness and perceived risk. Their results confirmed that these factors have a positive relationship with the decision to adopt internet banking services. Similarly, Kuisma et al's. (2007) study amongst Finish customers found that consumers feel financial risks to be another concern for the non use of online banking services. These studies suggest risk to be an important factor for the adoption decision of innovative financial services.

Studies have also shown computer literacy to be an important factor for the decision to adopt innovative technology-based banking services (Yiu et al., 2007). So the element of risk associated with the internet based banking channel appears to be an important factor for the non-adoption of online banking services channels (Black et al., 2001; Singh, 2004; Lee et al., 2005; Gerrard et al., 2006; Polasik & Wisniewski, 2009). Polasik and Wisniewski's (2009) study amongst Polish customers indicated a link between the decision to open an online account and

perceived level of security of the web transactions to be an important factor regarding the behavioural intention to adopt internet banking services.

Scholars have also suggested that demographic and personal factors may also inhibit the adoption of the internet banking channel. For example, some customers may also not like the idea of conducting online banking due to their low educational level or unavailability of enough information about this channel (Nielsen, 2002; Pikkarainen et al., 2004; Lassar et al., 2005; Lee et al., 2005; Gerrard et al., 2006). Furthermore, Ndubisi and Sinti (2006) also suggested attitudinal factors to be significant for the adoption of internet banking in the context of Malaysia. These previous studies related to the factors for the adoption of internet banking have produced mixed results. For example, Tan and Teo's (2000) study in the context of Singapore indicated risk to be the key factor for the decision to adopt internet banking. However, Ndubisi et al. (2004) suggested risk to be a marginal factor towards the acceptance of internet banking services among Malaysian customers.

Several researchers have applied or extended one or more of the technology acceptance models in order to model behavioural intentions with respect to internet banking adoption services. In Malaysian Borneo, Guriting & Ndubisi (2006) extended the TAM framework to include user computer experience and computer self-efficacy. They found that both perceived usefulness and perceived ease of use were strong determinants of behavioural intention to adopt internet banking. Moreover, computer self-efficacy and prior computer experience influenced directly perceived usefulness and perceived ease of use. In Singapore, Tan & Teo (2000) applied the theory of planned behaviour, the diffusion of innovation theory and additional elements, namely

perceived risk and confidence. The results revealed that relative advantages, compatibility, trialability, risk and confidence influence the intention to adopt internet banking. Zolait & Sulaiman (2008) also incorporated the innovation attributes introduced by Rogers' theory into theory of reasoned action and added two additional factors, the mass media and the word-of-mouth communication to examine internet banking adoption in Yemen. The results support the argument that attitude, relative advantage/compatibility, observability, ease of use and mass media interaction are the key determinants of behavioural intention to use internet banking.

Recent research has tried to further the understanding of non-adopters of internet banking by segmenting them into a number of categories in order to indentify the specific factors affecting each category. Lee et al. (2005) divided non-adopters into persistent non-adopters and prospective adopters. They found that prospective adopters are likely to be heavier users of ATMs, phone banking and computers for work. Moreover, convenience is an important factor when choosing internet banking with regards to prospective adopters. The results revealed that further segmenting the non-adopters category showed meaningful differences between prospective adopters and persistent non-adopters. Laukkanen et al. (2008) also identified three groups of non-adopters of internet banking based on their resistance to internet banking, namely postponers, opponents and rejectors, and found significant differences between these groups. The rejectors were much more intense and diverse than among opponents and postponers; the rejectors showed high resistance regarding risk, image, tradition, usage and value barriers. The results also indicated that psychological dimensions are more important sources of resistance to internet banking than usage and value, which are constructs regarding ease of use and usefulness

determining acceptance in the traditional technology acceptance model. Table 4.1 summaries the main important factors influencing non-adopters of internet banking identified by previous studies.

Table 4.1: The main important factors influencing non-adopters of internet banking identified by previous studies

Study	Factors Influencing Non-Adopters of Internet Banking										
	EI	Awareness of Internet Banking services	Usefulness	Compatibility	Trialability	Ease of Use	Computer Self-Efficacy	Behavioural Control	Individual Characteristics	Accessibility	Subjective Norm
Sathye (1999)	√	√	√								
Tan & Teo (2000)	√		√	√	√						
Wang et al. (2003)			√			√	√				
Pikkarainen et al. (2004)			√								
Jaruwachirat-hanakul & Fink (2005)			√					√	√		
Lassar et al. (2005)									√		
Abu Shanab (2005)	√						√		√		√
Nor (2005)	√		√	√	√	√	√	√			√
Guriting & Ndubisi (2006)			√			√	√		√		
Ndubisi & Sinti (2006)				√	√						
Gerrard et al. (2006)	√									√	

Table 4.1: The main important factors influencing non-adopters of internet banking identified by previous studies (Continued)

Study	Factors Influencing Non-Adopters of Internet Banking										
	EI	Awareness of Internet Banking services	Usefulness	Compatibility	Trialability	Ease of Use	Computer Self-Efficacy	Behavioural Control	Individual Characteristics	Accessibility	Subjective Norm
Al-Hajri (2008			√			√					
Nor et al. (2008)											√
Alam et al. (2009)	√	√								√	

Source: This research

NOTE: EI = Environmental Uncertainty (Includes: Trust, Risk and security concerns).

4.2 Factors Influencing Users of Internet Banking

Internet banking users have also been studied by a number of researchers. Jahangir & Begum (2008) identified four factors that influence internet banking users in Bangladesh. These factors are: perceived usefulness, ease of use, security and privacy and customer attitude, which are significantly and positively related to e-banking adoption. In the same way, in Turkey, Polatoglu & Ekin (2001) found that relative advantages, observability, trialability, complexity, compatibility, perceived risk, type of group, type of decision and marketing effort influenced the diffusion on internet banking. The authors conclude that those customers who use internet banking for the longest time or who use more of its services find internet banking to be very reliable. Chen et al. (2006) extended the TAM to include perceived web security in order to capture the factors that influence internet banking users in Hong Kong. The results revealed that the intention to use internet banking was determined by perceived usefulness and perceived web security. The results also indicated the indirect affect of perceived ease of use on the intention through perceived usefulness. Similarly, Pikkarainen et al. (2004) utilised the traditional TAM and suggested that perceived ease of use, perceived usefulness along with privacy and security were the important factors related to the acceptance of internet banking in Finland. The belief about usefulness of internet banking, according to prior internet banking services acceptance related studies (e.g., Hu et al., 1999b; Lai and Li, 2005; Luarn and Lin, 2005; Porter & Donthu, 2006), influences customers' attitudes towards the acceptance of internet banking. In addition, Lee (2009) reports that intention to adopt internet banking is adversely affected mainly by the concerns of privacy and security risks and is positively affected by perceived usefulness and benefits of internet banking acceptance. Furthermore, Lewis et al. (2010) also indicated that compatibility, perceived usefulness and risk are key factors for the adoption of mobile banking

adoption. They further suggested that trust and credibility of the service channel provider are key elements in reducing the overall perceived risk of internet banking acceptance. Extant research has also indicated that the customer's perception of the innovation and its attributes greatly impact the adoption decision towards internet banking (Liao et al., 1999; Lean et al., 2009; Lin, 2010; Papies & Clement, 2008). For example, Lin (2010) used innovation diffusion theory and trust to investigate mobile banking adoption decisions amongst Taiwanese customers. Lin suggested that perceived relative advantage, ease of use, compatibility, competency and integrity of the channel significantly influence the decision to adopt online banking services.

Researchers have also suggested convenience and efficiency of internet banking channels as main factors behind adoption decisions (Bruno, 2003). Online banking services users do not have to go to the local branch, wait in the queue, or wait for the opening hours of the bank (Lassar et al., 2005). Lassar et al. (2005) integrated the TAM with the adoption of innovation framework and found a positive relationship between internet-associated innovativeness and web banking in the context of the United States. However, they found that general innovativeness is negatively related with the decision to adopt online banking services. Studies also show that better access to information, speed of transactions and sense of complete control over the account to be some of the main reasons for the customers to adopt the innovative financial services channels (Black et al., 2001; Karjaluoto, 2002).

Previous research has indicated perceived usefulness of the online banking channels to be significant reasons for the adoption of internet banking services (Huang et al., 2005; Lee, 2009; Cheng et al., 2006; Tan et al., 2010; Chong et al., 2010). Chong et al's. (2010) study further

indicated that ease of use is not significant for the adoption of internet banking, contrary to earlier research utilizing the TAM. In addition, recent studies have also suggested high internet banking penetration and branch density to be significant factors for the adoption of online banking services (Xue et al., 2011).

In order to catch more factors that influence internet banking users, a number of researchers have adopted more than one of technology acceptance models in their studies. For example, Yaghoubi & Bahmani (2010) investigated which factors affect the adoption of Online banking in Iran by developing a theoretical model based on the technology acceptance model (TAM) with theory of planned behaviour (TPB). Their results supported the integrated TAM and TPB models and confirmed its robustness in predicting customers' intention of adoption of internet banking. The results revealed that the intention to use internet banking was positively affected mainly by perceived behavioural control and perceived usefulness. Along the same line, Ok & Shon (2006) encompassed two models that predict individuals' intention towards the use of internet banking in Korea: theory of reasoned action (TRA) and theory of planned behaviour (TPB). Their results revealed that internet banking users' attitude and their perceived behavioural control played a vital role in affecting the behavioural intention of internet banking. However, intention was not formed by users' subjective norm in both TRA and TPB. They found that both TRA and TPB predicted behavioural intention to use the internet banking quite well, with TPB having a slight empirical advantage. In Hong Kong, Yiu et al. (2007) adopted the Technology Acceptance Model, personal innovativeness theory and an additional element of perceived risk. They found that perceived usefulness, perceived ease of use, perceived risk and personal innovativeness in information technology have direct relationships with the adoption of Internet Banking.

Previous research related to internet banking indicates that the trust issue plays the main role in the use of financial services offered online. For example, in Korea, Suh & Han (2002) investigated the effect of the trust issue on consumers' adoption of banking online. They incorporated the trust construct into the TAM and found that trust was a significant determinant of the intention to adopt internet banking. The results also revealed that trust, perceived usefulness and perceived ease of use significantly influence attitudes. In another study conducted in Estonia, Eriksson et al. (2005) modified the TAM and added the trust construct to study technology acceptance in internet banking. The study found that trust positively affects perceived usefulness and ease of use. Furthermore, Flavian et al. (2006) found that greater trustworthiness, perceived by customers who use the traditional branch office, is positively related to higher levels of acceptance of the online services offered by the same bank on the internet. In addition, Dimitriadis and Kyrezis (2008) found that trust in the service channel and reputation of the bank determined the customer's behaviour towards the adoption of internet banking related distribution channels. In a similar vein, Luo et al. (2010), indicated that trust and perceived risks as key determining factors towards the customer's decision to adopt internet banking.

Recently, a few of online researchers have started to pay more intention on how trust can be developed in the context of internet banking. Yousafzai et al. (2007) developed and validated a multi-dimensional model of trust for internet banking users. They found that trust and perceived risk were direct antecedents of intention and trust is a multi-dimensional construct. Their results suggested three antecedents of trust: 1) a belief that the bank is reliable (perceived trustworthiness), 2) a belief that there are safety mechanisms built into the website (perceived

security), and 3) a belief that transaction information will not be used without customer's consent (perceived privacy). Another study conducted in Australia by Grabner-Kräuter & Faullant (2008) confirmed the influence of internet trust on risk perception and consumer attitudes towards internet banking. With regards to the antecedents of trust, they found that propensity to trust and familiarity with the internet increase internet trust.

Finally, researchers have also studied the influence of demographic variables among users of internet banking. Studies have shown that experience with the internet and demographic variables to be important factors in the decision to adopt internet banking services in developed economies (Polasik & Wisniewski, 2009). In the same way, Yousafzai (2005) indicated that demographic variables moderate the relationship of perceived usefulness with intention such that the relationship was stronger for male and young, and the relationship between perceived ease of use and intention was significant for female and older. Table 4.2 summaries the main important factors influencing users of internet banking identified by previous studies.

Table 4.2: The main important factors influencing Users of internet banking identified by previous studies

Study	Factors Influencing Users of Internet Banking						
	Usefulness	Ease of Use	Risk	Trust	Attitude	Security and Privacy	Individual Characteristics
Polatoglu & Ekin (2001)	√		√				√
Suh & Han (2002)	√	√		√			
Singh (2004)		√					
Laforet & Li (2005)							√
Yousafzai (2005)	√	√	√	√		√	√
Eriksson et al. (2005)	√	√		√			
Ramayah et al. (2006)	√						√
Cheng et al. (2006)	√	√				√	
Awamleh & Fernandes (2006)	√		√				
Jahangir & Begum (2008)	√	√			√	√	
Lee (2009c)	√		√		√	√	

Source: This research

4.3 Comparison between Users and Non-Users of Internet Banking

Literature reviews regarding internet banking have compared users and non-users of internet banking. Awamleh & Fernandes (2006) studied internet banking diffusion among educated consumers in the United Arab Emirates in order to identify the factors affecting the intention to adopt or to continue the use of internet banking. They found that there were significant differences between users and non-users of internet banking. Internet banking users were influenced by relative usefulness, perceived risk, computer efficacy and image, while non-users were influenced by only relative usefulness and result demonstrability. Ozdemir et al. (2008) also indicated significant differences between adopters and non-adopters of internet banking in Turkey. The results suggested that the adopters perceive internet banking as more user-friendly, more useful and less risky compared to the non-adopters. Ozdemir et al.'s research found adopters of internet banking had higher incomes and longer working hours compared to non-adopters. Along the same lines, Rotchanakitumnuai & Speece (2003) indicated that, in Thailand, internet banking users have more confidence that the system is reliable, while non-users are much more service conscious and do not trust financial transactions via the internet. Moreover, they found that non-users also have more negative management attitudes toward adoption and are more willing to claim lack of resources. They also highlighted that Legal support is also another major barrier to adopt internet banking. In South Africa, Singh (2004) identified that the main factors that inhibited customers using banking online were: security, the lack of knowledge, time consuming and more costly. The results also revealed that potential customers who were not internet banking users wanted guaranteed safety and loyalty rewards.

Customer characteristic differences also exist between users and non-users of internet banking services. Akinci et al. (2004) found that internet banking users are more likely to be middle-aged, male, more technology-oriented and convenience-minded consumers, while non-internet banking users tend to be younger, older, more oriented to traditional channels and hesitant customers. They also found that educated customers are more willing to adopt internet banking because they are likely to be computer literate and are used to dealing on the internet.

In summary, it is obvious from the previous studies that there are significant differences between users and non-users of internet banking. Both users and non-users of internet banking are influenced by a number of different factors. However, among these studies, there are some joint factors such as perceived usefulness and perceived ease of use which influence both users and non-users of internet banking, but their influences on each type of subject (users and non-users) are varied. For example, Yousafzai (2005) found that perceived usefulness directly influences behavioural intentions towards internet banking among users of that channel, and perceived ease of use influence the behavioural intention indirectly through perceived usefulness. However, with regard to non-users of internet banking, Guriting & Ndubisi (2006) indicated that both perceived usefulness and perceived ease of use directly influence behavioural intention to accept internet banking.

4.4 Satisfaction and Quality of Internet Banking Services

Another line of research related to internet banking is to measure the satisfaction and quality of online banking services. Research has identified factors that determine service quality of internet

banking. Jayawardhena (2004) examined service quality in the internet banking context and found five major dimensions that can be measured to assess service quality of the websites. These dimensions are: website interface, access, trust, attention and credibility. However, Sohail & Shaikh (2008) identified only three factors that affect Saudi users' evaluation of service quality of internet banking services, namely 'efficiency and security', 'fulfilment/reliability' and 'responsiveness'.

With respect to satisfaction of internet banking services, Polatoglu & Ekin (2001) found that early adopters and customers who use most of the services available on internet banking websites were more satisfied than other groups in terms of the reliability dimension, which includes reliability, security and privacy of internet banking. Chung & Paynter (2002) suggested four factors that influence consumers' satisfaction with internet banking, namely security, download time, response time and transactions free of technical problems. In another study conducted in Finland, Pikkarainen et al. (2006) tested and validated the end-user computing satisfaction (EUCS) model to investigate internet banking users' satisfaction with the service. The study indicated a strong relationship between content, ease of use and accuracy and overall satisfaction of internet banking. The results also revealed that women were more satisfied with internet banking than men and users with higher incomes seemed to be less satisfied.

This perspective of research is not within the frame of the present study's design and therefore it will not be investigated in this study. This is because the present study only focuses in extending the knowledge of the factors influencing intentions towards the use of internet banking among

customers who have already accepted this channel, but who have not fully utilized its capabilities.

4.5 Limitation of Internet Banking Users' Research

A close review of the literature to date shows that there are three major limitations with regards to previous studies that focus on internet banking users. These limitations are related to three issues, namely the type of subjects that have been involved, the theoretical models that have been applied and finally the issue of trust and risk in internet banking environment. All these limitations will be addressed in the present study. The following sub-sections explain these issues in more detail.

4.5.1 The Type of Subjects involved

Most researchers have drawn their recommendations about the determinants of internet banking behaviour based on one or both types of sample size: users or/and non-users of internet banking. Karahanna et al. (1999), claim that there are differences of beliefs and attitudes between users and non-users of information systems (see Section 4.3, p: 131). Lee et al. (2005) also state that describing all non-adopters of internet banking as a homogeneous population may be inaccurate and inappropriate. They conducted an empirical study and found that further segmenting the non-adopter category revealed meaningful differences between persistent non-adopters and prospective adopters. The authors conclude that those two categories should not be lumped together in the diffusion of internet banking. This is suggested to be similar with adopters of the internet banking category. There may also be differences of beliefs and attitudes among internet

banking users, who either heavily or rarely conduct the services available online. As mentioned in Chapter 1, Section 1.2, p: 3, most of the banks' websites are accessed by huge numbers of customers in the USA, however only a minority of customers have made online financial transactions (Mearian, 2001). Moreover, recent private reports revealed by some Saudi banks have shown that though the high number of Saudi customers have registered for their internet banking service as users, most of them rarely use this channel and only a few of them have fully utilized its capabilities (Saudi Arabian Monetary Agency, 2009). This indicates that there are a high number of dormant users of internet banking who need to be investigated. However, the majority of the previous studies which involved internet banking users in their sample size described all those adopters as a homogenous population and drew their recommendations about the factors that determine the acceptance of internet banking. This might be one of the reasons for different factors identified amongst these studies (see Section 4.2, p: 125). This might lead to a generalisation of some factors that are not accurate and appropriate for both groups., Therefore, in order to avoid this limitation and fill this gap, the present study segments the internet banking user category into two populations, heavy users and dormant users of internet banking and it focuses only on dormant users who have not fully utilised internet banking services yet or who rarely use this channel.

4.5.2 The Theoretical Models Applied

Another issue in the previous research is the theoretical models that have been applied to understand customers' behaviour related to the acceptance of internet banking. There are several theoretical models that have been widely applied to understand individuals' adoption and usage

of new technology, such as the IDT, the TRA, the TPB, the TAM and the TTF. Each of these models has a diversity of variables that can be measured and therefore explain different proportions of variance. For example, the TRA does not have certain beliefs, such as ease of use or usefulness. However, these beliefs are included in the TAM.

As mentioned in Section 4.2, several researchers have adopted more than one attitude/behaviour model in their studies in order to identify more factors that influence internet banking users. For example, Ok and Shon (2006) encompassed two models, namely the TRA and TPB. Moreover, Yaghoubi and Bahmani (2010) developed a theoretical model based on the TAM and TPB. Yiu et al. (2007) also adopted the TAM and personal innovativeness theory. Howover, while these studies have tried to capture variables from different theoretical models, such as the TAM and TRA that determine individuals' acceptance of a new technology based on their beliefs and attitudes towards that technology, they may not adequately understand or explain deeply the acceptance of internet banking-based tasks. In other words, the researchers have ignored some variables related to the TTF model, such as task-technology fit that focus on a rational approach in order to decide to accept or reject a new technology. A number of researchers, such as D′Ambra and Rice (2001); Hoffman and Novak (1996); Koufaris (2002) claimed that one of the weaknesses of attitude/behaviour models, such as the TAM, IDT or TRA is that they do not adequately understand or explain IT utilization based tasks. Goodhue and Thompson (1995) claimed that the lack of task focus in evaluating IT and its acceptance, use and performance contributes to mixed results in IT evaluations. Several studies have highlighted the importance of task-technology fit to understand or explain users' utilization of new technologies in various

contexts (Dishaw & Strong 1999; Klopping & McKinney (2004). Goodhue (1992) points out that a higher degree of fit between a task and tool that is used to conduct that task leads to expectations by users of beneficial consequences of use.

Attitude/behaviour models (such as TAM or TRA) and the TTF model focus on different aspects of user acceptance of new technologies. The attitude/behaviour models suggest that the individual's acceptance of a new technology is largely determined by their beliefs and attitudes toward using that technology. However, the TTF model focuses on the ability of IT to support a task and match the individual's task requirements with the available IT functionality (Wu et al., 2007). Goodhue (1995) stated that the TTF model takes a rational approach, regarding the decision to accept new technologies, by suggesting that individuals choose to use a new technology that provides advantages for them, such as improved job performance, but does not consider their attitudes towards accepting that technology. Dishaw and Strong (1999) stated that combining these two aspects is likely to provide a better explanation of IT acceptance than either attitudes or a fit model could provide separately. Previous research indicated that a combination of an attitude/behaviour model (such as TAM) and TTF into one model explains significantly more of the variance in technology acceptance than either the attitude/behaviour model or TTF alone (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Wu et al., 2007). Therefore, it is important to extend the understanding of internet banking acceptance by expanding attitude/behaviour models to include some variables that explicitly show the role of fit between the functionality of internet banking websites and the requirements of performance of internet banking services.

4.5.3 The Issue of Perceived Trust and Perceived Risk

The technology acceptance models have been developed in an environment where the trust issue is not fundamentally important, thus these models do not include this issue. However, the open nature of the World Wide Web as a transaction infrastructure and its global constitution has made the trust issue a vital element of e-business (Hoffman et al., 1999). Therefore, internet banking researchers have started to shed light on the trust issue and its impact on internet banking acceptance. There are a number of researchers who examined trust in the internet banking context (e.g. Suh & Han, 2002; Abu Shanab, 2005; Nor, 2007). Nevertheless, most of these studies have not paid sufficient attention as to how trust can be formed by identifying its antecedents that will help the researchers to understand the factors that influence customers' trust of internet banking. Such understanding of customers' trust should help researchers and practitioners to develop strategies in order to build or improve such trust, and eventually this will increase the number of customers who use internet banking.

Although a few studies have identified some antecedents of trust in the internet banking domain, they have overlooked other important antecedents, which are proven to have a strong effect on trust in different contexts or included some unimportant factors. For example, Al-Sajjan (2009) ignored one important perspective of trust, which is institution-based trust. It is considered that institution-based trust (structural assurance) may be a very important theory of trust in the internet banking field (see Chapter 3 Section 3.5.1, p: 108). On the other hand, some researchers, such as Nor (2005) adopted dispositional trust as one of the antecedents of perceived trust, ignoring a number of researchers who argue that personality traits are less predictive of specific

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behaviour, such as related to e-commerce behaviour as mentioned in Chapter 3, Section 3.2, p: 93.

It is noticed from the previous studies conducted in the internet banking field that there is a disagreement regarding the factors that shape customer trust in the e-finance domain. The root of divergence arises from the conceptualisation of trust. Researchers have developed a narrow or wide conceptualisation of trust based on a variety of one or more trust theories, such as personality and interpersonal theories. This has led most of them to include some antecedents of trust that might not be important or may ignore some factors that could be important in the context of e-finance. Moreover, the researchers do not explain why some perspectives of trust have been excluded from their studies. Therefore, to overcome these problems, it was very important to review the various theories of trust that are derived from different disciplines in order to decide which of these theories are more relevant to the internet banking field and explain which of these are not. This has smoothed the way to understanding the meaning of trust and eventually identified the dimensions and antecedents which are important to form customer trust in internet banking. These issues were explicitly addressed in Chapter 3.

With regards to perceived risk, Yousafzai et al. (2003) state that if there is no risk and actions can be taken with complete certainty, no trust will be needed. There were a number of researchers such as Tan & Teo (2000) and Laforet & Li (2005) who found perceived risk was a major factor of internet banking acceptance, However, most internet banking studies did not examine the relationship between trust and risk, even though many studies in different contexts highlight the importance of perceived risk to understand trust (March & Shapira, 1987; Giffin, 1967).

Therefore, there is still a lack of a model of e-trust that can encompass most significant antecedents of trust that play an important role in forming customers' trust and also examines the relationship between trust and risk in the context of internet banking. This limitation was highly expressed in Chapter 3.

Chapter 4 shed light on the previous studies relating to internet banking and highlighted the major limitations with these studies. The literature review presented in Chapters 2 to 4 lays the foundations for the next chapter, which are the development of a conceptual framework and hypotheses for internet banking acceptance.

5. Conceptual Development

Chapters 2 to 4 discussed empirical studies and theories in order to pave the way to develop a conceptual framework and hypotheses for internet banking acceptance. The aim of this chapter is to develop a model of internet banking acceptance following the TAM. The model developed in this study is based on the TAM, however due to some of the existing weaknesses of the TAM that have been mentioned in Chapter 2, Section 2.6.7, p: 75, the model will be augmented by additional componenets, namely the TTF and trust model developed in Chapter 3. The chapter is divided into two sections. Section 1 provides a rationale for choosing the TAM, and its extention by the TTF and trust models. The conceptual model is explained in Section 2.

5.1 Rationale for Choosing TAM and its elaborating to include TTFand Trust Models

The internet banking model developed in the present study is initially based on the TAM for the following reasons. Firstly, in contrast with the previously mentioned theories, IDT, TRA and TPB (presented in Chapter 2), Davis (1986) developed the TAM and suggested specific components of beliefs related to IT usage. Certainly, several researchers have found that the TAM's ability to explain behavioural intention towards the use of information system is better than other models, such as the IDT, TRA and TPB (Davis et al., 1989; Mathieson, 1991; Gentry and Calantone, 2002; Bosnjak et al., 2006; Lai et al., 2010). For this reason, the TAM has been widely used to explain intentions towards the use of internet, internet shopping and internet banking. Secondly, Ozdemir & Trott (2009) state that the TAM provides a practical utility for

service developers. The TAM differs from other adoption theories by providing directions to where service development efforts should be focused, as the two beliefs, ease of use and usefulness are factors over which system designers have some degree of control (Taylor & Todd, 1995).

However, based on the the weaknesses of the TAM that have been observed, there are arguments that TAM should be expanded. A weakness of attitude/behaviour models, such as the TAM is that they do not not adequately understand or explain IT utilization based tasks (D′Ambra & Rice 2001; Hoffman & Novak 1996; Koufaris 2002). Goodhue and Thompson (1995) claimed that the lack of task focus in evaluating IT and its acceptance, use and performance contributes to mixed results in IT evaluations. The concept of usefulness in the TAM includes the task, that is to say usefulness means useful for something. However, more explicit inclusion of task characteristics may help to provide a better model of IT utilization (Dishaw & Strong, 1999). As a result, in order to overcome this limitation, the TAM will be extended to include the TTF model. Numerous empirical studies have shown that the TAM and TTF are capable models that examine the factors influencing customers' acceptance of new technologies (see Chapter 2, Sections 2.6 and 2.7, p: 54 and 77 respectively). The rationale behind elaborating the TAM to include the TTF is that these models focus on different aspects of user acceptance of new technologies. The TAM suggests that the individual's acceptance of a new technology is largely determined by their beliefs and attitudes toward using that technology. However, the TTF focuses on the ability of IT to support a task and match the individual's task requirements with the available IT functionality (Wu et al., 2007). The TTF takes a rational view regarding the decision to accept new

technologies by suggesting that individuals choose to use a new technology that provides advantages for them, such as improved job performance, but does not consider their attitudes toward accepting that technology (Goodhue, 1995). Dishaw and Strong (1999) stated that combining these two aspects is likely to provide a better explanation of IT acceptance than either attitudes or a fit model could provide separately. In the context of internet banking, it is suggested that both aspects together with beliefs and attitudes towards internet banking and a rational approach to determine expected consequences from performing internet banking services are likely to influence customers' choices to accept internet banking. Thus, augmenting the TAM to include the TTF model is likely to provide a better explanation of internet banking acceptance than either one of these models could provide separately. Moreover, there are some factors related to environmental uncertainity, namely perceived trust and perceived risk which have been missed in technology acceptance models, such as the TAM. Torkzadeh and Dhillon (2002) stated that trust has been identified as a critical factor for the success of e-commerce. This is because the open and global nature of the internet as a transaction infrastructure where uncertainty arises and risk in online transactions makes trust a vital element of e-commerce (Hoffman et al., 1999). There are a number of researchers who have found that trust directly or indirectly affects consumers' intentions to engage in online activities (Pavlou, 2003; Kim & Ahn, 2005; Teo & Liu, 2007; Hahn & Kim, 2009; Kim et al., 2009) (for more details on the importance of trust in electronic finance see Chapter 3, Section 3.1, p: 90). Consequently, to overcome this limitation, the TAM will be expanded to include the trust model developed in Chapter 3.

5.2 Conceptual model for Internet Banking Acceptance

The conceptual model developed in the present study expanded the TAM to include TTF. Moreover, since trust and perceived risk are essential constructs when uncertainty exists (see Chapter 3), these beliefs are also included in the proposed internet banking acceptance model. Therefore, the conceptual model for internet banking acceptance (Figure 5.1) explains the intention towards the actual use of internet banking by postulating six direct determinants, which are: perceived usefulness, perceived ease of use, perceived trust, perceived risk, service visibility and system reliability. The conceptual model is explained in more detail in the following sub-sections.
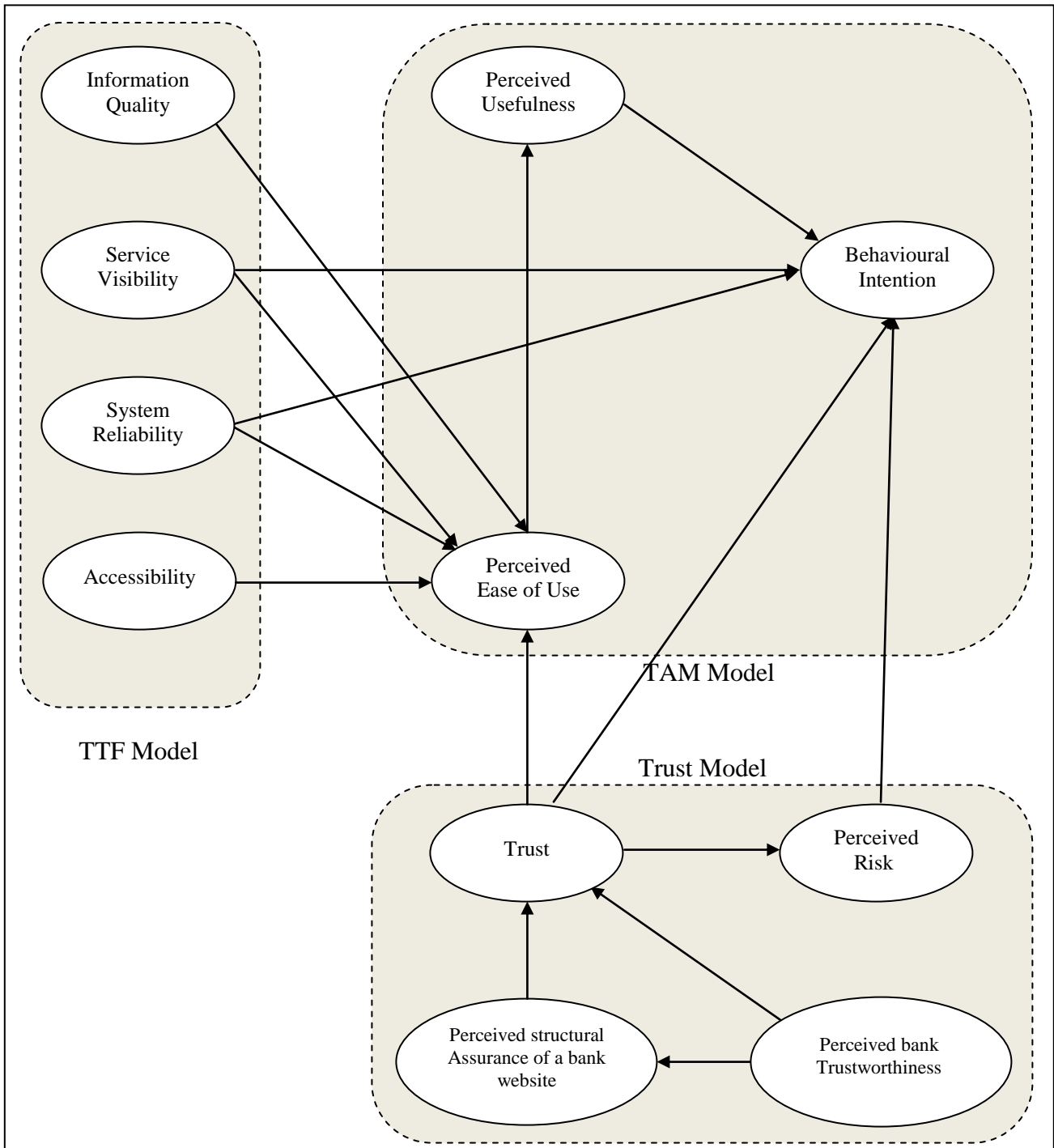
Figure 5.1 Conceptual Model for Internet Banking Acceptance

5.2.1 Attitudes and Actual use Constructs

The original theoretical conceptualization of the TAM is similar to the TRA as it includes the attitude construct. However, as mentioned in Chapter 2 (Section 2.6.1, p: 58), Davis et al. (1989), based on a longitudinal study, found that the power of the TAM remains equally good and is more parsimonious without including the attitude construct. Subsequently, several researchers including Venkatesh, (2000); Hong et al. (2002) and Hwang (2005) have applied the TAM without the attitude construct and found that the explanatory power of their models remained good. Therefore, the attitude construct is not included in the conceptual model. Along the same lines, behavioural intention to use internet banking is used as the dependent variable in the conceptual model of the current study instead of actual use for two reasons as mentioned in Chapter 2, Section 2.6.3, p: 60. The first reason is that a number of researchers have suggested that individuals' actual behaviour can be explained by their intentions for the behaviour (Fishbein & Ajzen, 1975; Davis, 1989). The positive relationship between behavioral intentions and actual use is extensively described by the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1991). Research following TRA and TAM consistently showed a high correlation between intentions and actual use (Davis et al., 1989; Bernadette, 1996; Chen et al., 2002; Gumussoy & Calisir, 2009). As a result Cheng et al. (2006) claim that it is theoretically justifiable to apply behavioural intention as an ultimate dependent variable to examine the acceptance of internet banking. Luckily, because both theoretical and empirical support exists for the strong correlation between intention to engage in a behavior and the actual behaviour, most studies conducted in internet, internet shopping and internet banking have used behavioural intention as a dependent variable instead of actual use to explain the behaviour towards these technologies (Nor, 2005; Vijayasarathy, 2004; Al-Qeisi, 2009). Another reason is

that the current study focuses only on the intentions of bank customers who are dormant users of internet banking. This means that they are not heavy users of internet banking. Thus, applying the behavioural intention as the dependent variable instead of actual use is considered to be appropriate.

5.2.2 Perceived Ease of Use and Perceived Usefulness

The TAM suggests that two variables, perceived usefulness and perceived ease of use affect the acceptance of a new technology. As defined in Chapter 2 (Section 2.6, p: 54), perceived usefulness refers to customers' beliefs that using a technology will enhance their job performance and perceived ease of use refers to customers' beliefs that using a technology will be free of effort (Davis, 1989). Applying these beliefs to the internet banking domain shows that internet banking services offer several advantages for customers, such as conducting bank services at any time and from any location. These advantages will build customers' perception towards internet banking as a useful channel, consequently the customers will be likely to have positive intentions to use that channel. Moreover, when internet banking services are easily used and do not require any effort, customers will be more likely to accept this channel. Gerrard et al. (2006) found that perceived usefulness and perceived ease of use were strong factors that influence behavioural intention to accept internet banking in Malaysia / Borneo. However, in Hong Kong, Cheng et al. (2006) found that only perceived usefulness affects customers' intention to use internet banking and perceived ease of use indirectly influences the intention through perceived usefulness. Previous research that applied the TAM in different applications presented conflicting and contradictory results about the relationship between perceived usefulness and perceived ease of use and also between the two variables and behavioural intention (see Chapter 2, Sections 2.6 and

2.6.2, p: 54 and 59 respectively). Fusilier & Durlabhji (2005) state that perceived ease of use is a strong predictor of intention for those who perceive the internet as less useful. Davis (1989) indicated that perceived usefulness and perceived ease of use jointly influence individuals' intentions in the early stages of learning and behaviour. However, with time and experience the intentions are directly influenced by perceived usefulness and perceived ease of use affects intentions only indirectly through perceived usefulness. Since there are conflicting and contradictory results regarding the relationship between perceived usefulness and perceived ease of use and also between beliefs and intention to use, the present study will examine all these relationships as suggested by the original TAM. This will lead to the following hypotheses:

H1: Perceived usefulness of internet banking will positively influence intention to use internet banking services.

H2: Perceived ease of use of internet banking will positively influence intention to use internet banking services.

H3: Perceived ease of use of internet banking will positively influence perceived usefulness of internet banking.

5.2.3 Trust and Perceived Risk

Chapter 3, Section 3.5.3, p: 113 discussed the consequences of trust. It highlighted the role that trust and perceived risk play in accepting internet banking. It is proposed that customer trust will influence perceived risk of conducting internet banking services. Moreover, customer trust and

perceived risk directly affect intention to use internet banking. This leads to the following hypotheses:

H4: Higher levels of customer trust in internet banking will reduce perceived risk of that channel.

H5: Higher levels of perceived risk in internet banking will reduce the intention to use internet banking.

H6: Trust in internet banking will positively influence the intention to use internet banking.

5.2.4 Perceived Bank Trustworthiness

Mayer et al. (1995) state that one approach to understand why a given party has a greater or lesser amount of trust for another party is to consider attributes of the trustee. Several researchers, including Johnson-George & Swap (1982), highlight that trustee characteristics and actions lead a trustor to trust that person. Perceived trustworthiness of a trusted party arises from a number of desirable attributes of a trustor that the trustee has. Ability, integrity and benevolence were defined as the main elements of perceived bank trustworthiness (see Chapter 3, Section 3.5.1, p: 108). In the present study, it is proposed that perceived trustworthiness of a bank will directly affect customers' willingness to place trust in conducting internet banking services. This is because it will indicate that the bank has ability, integrity and benevolence to deliver its services through the internet in a proper, effective and convenient way, and also without any opportunistic behaviour from the bank. This leads to the following hypothesis:

H7: Perceived trustworthiness of a bank as an internet banking provider will positively influence customer willingness to place trust in internet banking.

Moreover, as mentioned in Chapter 3, Section 3.5.2., p: 112, customers' perception of structural assurance of the bank's website is likely to be influenced by perceived trustworthiness of their bank as an internet banking provider. This is because when customers perceive high trustworthiness of their bank as an internet banking provider, they will likely feel that their bank has an ability to apply strong technological safeguards, has the integrity to adhere to agreements and fulfil its promises and will not behave opportunistically. All these increase customers' perception of structural assurance of the bank's website. This leads to the following hypothesis:

H8: Perceived trustworthiness of a bank as internet banking provider will positively influence customer perception of structural assurance of an internet banking website.

5.2.5 Perceived Structural Assurance of an Internet Banking Website

In the context of internet banking, structural assurance refers to the belief that a website possesses protective legal (e.g. third party assurances, privacy and security policy) and technological structures (e.g. firewall and encryption) that assure the web vendor facility can be used in a safe and secure manner (McKnight et al., 2002). Chapter 3 (Sections 3.5.1, p: 108) discussed the importance of perceived structural assurance of a bank's website in relation to customer trust. The present study proposes that perceived high structural assurance of an internet banking website will have a positive direct effect on customers willingness to place trust in internet. This leads to the following hypothesis:

H9: Perceived high structural assurance of an internet banking website will positively influence customer willingness to place trust in internet banking.

5.2.6 Integrated Trust with One of the TAM Beliefs

As mentioned previously in Chapter 4, the open and global nature of the internet as a transaction infrastructure where uncertainty and risk arise in online transactions makes trust a vital element of e-commerce (Hoffman et al., 1999). Integrating trust with the TAM beliefs is theoretically and empirically supported (Chircu et al., 2000; Pavlou, 2003; Gefen et al., 2003b). Trust is considered to be one of the main factors that influences customers' perception of online transactions as easy to use. Trust should increase customers' perceived ease of use of the interaction through the website. Chircu et al. (2000) argue that trust reduces perceived need for customers to understand, monitor and control the situation. Trust helps to facilitate transactions and makes it easy for them to be conducted (Chircu et al., 2000). In inter-organisational relationships, Ring & Van de Ven (1994) declare that when parties rely on trust, they will incur lower transactions cost, time and effort to negotiate, reach agreements and execute a cooperative relationship. Similarly, in the context of internet banking, it is suggested that when customers have a high level of trust, their need to monitor the bank's actions and check every detail in their internet banking website may be reduced, and they will perceive that conducting bank services will be much easier. Conversely, when customers do not trust internet banking, they may pay more attention to all aspects of the internet banking services process. This means that the time and effort required in order to conduct internet banking services will increase. This discussion leads to the following hypothesis:

H10: Trust in internet banking will positively influence perceived ease of use of that channel.

5.2.7 Integrated TTF Dimensions with TAM Constructs

Chapter 2 (Section 2.7, p: 77) indicates that there are several types of the TTF model that include different downstream and upstream factors. On the downstream side, TTF models may include factors that are influenced by fit, such as attitude toward tools, intention to use, tool utilization and performance. However, on the upstream side variables, the models may have factors that influence fit (e.g. technology characteristics, task characteristics and individual characteristics). The basic fit model comprises two variables, task-technology fit as an independent variable and an outcomes measure, e.g. utilization (actual use), intention to use or performance as a dependent variable (Dishaw & Strong, 1998a). Goodhue (1995) states that utilization or intention to use, as dependent variables of the fit models, are appropriate only when use is voluntary, such as in the context of internet banking (see Chapter 2, Section 2.7.1, p: 80). In the present study, the basic model of fit, which consists of two constructs, task-technology fit and intention to use, is suggested to be sufficient for testing whether increasing fit between the functionality of a bank's website and the requirements of conducting internet banking services will increase the intention to use internet banking.

As mentioned in Chapter 2 (Section 2.7.3, p: 81) all the studies have agreed on the effectiveness of an integrated TTF model with TAM. However, most of these studies presented different and conflicting results regarding the influence of the TTF model on the TAM's constructs. There are possibly three main reasons for this. First, all these studies were conducted in different domains and each domain had different perceptions held about it. Second, each of these studies adapted

different dimensions in order to measure the task-technology fit, based on previous studies. For example, Klopping & McKinney (2004) adapted some TTF model dimensions from Goodhue's research (1995), while the measures for task-technology fit in Wu et al.'s study (2007) were based on Goodhue (1998). This means that they did not shed further light on the dimensions of task-technology fit, only adopting some elements based on a few dimensions suggested by Goodhue & Thompson (1995) and Goodhue (1998) and ignoring some other important dimensions suggested by them. Therefore, the differences of TTF model dimensions adapted might also cause the differences and conflicts of results among the studies that combine TAM and TTF models. This is because the TTF model construct directly includes aspects of both tools and tasks and thus the dimensions of TTF developed by Goodhue & Thompson (1995) and Goodhue (1998) cover these aspects. Moreover, perceived usefulness and perceived ease of use indirectly have some aspects of tasks and tools. It appears from previous research conducted with the TAM which found that the influences of perceived usefulness and perceived ease of use on intentions are varied (e.g. Davis, 1989; Davis et al., 1989). As a result, it is suggested that the influence of the TTF's dimensions will also be varied on the TAM's constructs, because each of these dimensions covers different aspects of the fit, tool functionality and tasks. This leads to the third reason for conflicting results related to the influence of the TTF on the TAM's constructs. All the researchers who have elaborated the TAM to include the TTF model have dealt with TTF as a single construct in their models, ignoring the varied influence of the dimensions of TTF on the TAM constructs. As a result, they might not have fully measured the influence of task-technology fit on the TAM variables properly. To overcome the gaps found in the previous research, the present study provides a deeper understanding of the influence of task-technology fit on accepting internet banking in Saudi Arabia. It looks at the TTF as a multi-construct. It

divides the TTF construct into four facets based on four dimensions in order to clarify which facets are more important in this field.

As highlighted in Chapter 2 (Section 2.7.2, p: 81), several researchers have tried to identify dimensions of task-technology fit (Goodhue 1995; 1998; Goodhue and Thompson, 1995). Goodhue and Thompson (1995) identified eight dimensions of TTF, which are (1) data quality; (2) locatability of data; (3) authorization to access data; (4) data compatibility; (5) training and ease of use; (6) production timeliness, (7) systems reliability; and (8) IS relationship with users. Later Goodhue (1998) also conducted an extensive test and found 12 dimensions of TTF. These dimensions are: 1) level of detail, 2) accuracy, 3) compatibility, 4) locatability, 5) accessibility, 6) meaning, 7) assistance, 8) ease of use, 9) systems reliability, 10) currency, 11) presentation, and 12) confusion. It is noticed from these two studies that most TTF dimensions are similar across the studies. In the first study by Goodhue and Thompson (1995), they tried to reduce the number of dimensions by grouping some factors that are considered to be related to each other into fewer dimensions. For example, they grouped currency, right data and right level of detail into one dimension, namely data quality. In another example, they defined locatability of data to include locatability and meaning. However, Goodhue (1998) looked at every factor as a discrete dimension. In the present study, the dimensions of TTF are adopted from Goodhue (1998) and follow Goodhue and Thompson (1995) by grouping some factors into a small number of TTF dimensions. Thus, there are four constructs of task-technology fit based on four dimensions identified, which are considered to be more compatible in the context of internet banking. These constructs are: 1) information quality, 2) services visibility, 3) system reliability, and 4) accessibility. All these dimensions are defined below based on Goodhue (1998).

Information quality: Includes three factors: 1) right level of detail (the stored information is maintained at the right level of detail); 2) accuracy (correctness of the information available online); and 3) currency (the information available in internet banking websites is current enough to meet customers' needs).

Services visibility: Indicates to what extent internet banking services are able to be seen or located with clear and obvious form. This dimension consists of four factors: 1) locatability (internet banking users can easily locate a required service on this channel); 2) meaning (each banking service available online has a clear information definition); 3) presentation (the services available on the internet banking website are presented in an understandable form); and confusion (banking services are in so many different forms and it is hard to know how to use them).

System reliability: Refers to dependability on an internet banking system that is free from problems and crashes and available when customers want to use it. It also refers to ease of getting help from the bank when customers face a problem with internet banking.

Accessibility: Indicates the ease of access to a desired service on internet banking websites.
Two dimensions of TTF are not included in the present study, namely compatibility and ease of use. Compatibility refers to information being consistent when it comes from two or more different sources. In the context of internet banking, all the information available online comes from one source which is the bank. Therefore, there is no need to make comparisons of the information. This dimension is considered to be more appropriate in e-commerce activities where

customers deal with some websites that have information from different sources, such as Amazon. Another excluding dimension is ease of use that was previously explicit in the TAM.

In the present study, two facets of TTF are suggested to directly influence Saudi customers' behavioral intentions to use internet banking. These facets are: services visibility and system reliability. There is both theoretical and empirical support for these relationships. Theoretically, these facets of TTF are considered to have a strong association with Saudi customers' behavioural intentions to use internet banking. This is because a good fit between the functionality of a bank's website and the requirements of performing banking services available on the website may be interpreted by Saudi customers as high behavioural intention to use internet banking. When internet banking users find that banking services available in the internet banking website can be seen or located with clear and obvious form, the internet banking system is not subject to unexpected down times or frequent denial of service and is available when they need it and ease of getting help from the bank when they face a problem with internet banking, all these increase Saudi customers' intentions to use internet banking. From an empirical view, several researchers, in different domains found that the task-technology fit, which included some of these facets adopted in the current research, directly influences actual use or behavioural intention to use (Dishaw & Strong, 1999; Benslimane et al., 2003; Klopping & McKinney, 2004). This discussion leads to the following hypotheses:

H11: Service visibility in the internet banking website will positively influence intention to use internet banking services.

H12: System reliability will positively influence intention to use internet banking services.

It is important to note that two facets of the TTF model, information quality and accessibility are not considered to have a direct influence on behavioural intention to use internet banking in the present study. One justification for this is that it is suggested that these two constructs are more related to the TAM's beliefs, such as perceived ease of use than behavioural intention. For example, when information on the internet banking website is maintained at the right level of detail and accurate and current enough to meet customers' needs, the system will be perceived as being more easy to use. The information quality helps to add value for the user, for instance the quality of information may make the interaction with the internet banking website clear and understandable. Furthermore, with regard to accessibility, this construct indicates ease of access to a desired banking service on the internet banking website. Therefore, accessibility is about the ease of access in that banking channel. This means that the construct is more related to perceived ease of use. The theoretical justification for the relationships between the facets of TTF and perceived ease of use will be explained later in this chapter. Another justification for not including direct paths between these two facets of TTF and behavioural intention is to develop a parsimonious, yet comprehensive model for internet banking acceptance. This can be done by reducing unimportant paths between constructs.

Previous research argues that the TTF is also related to the TAM's beliefs, perceived ease of use and perceived usefulness. It is noted that there are agreements regarding the significant influence of the TTF on perceived ease of use among most researchers (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Wu et al., 2007). However, disagreement is brought to light when dealing with the relationship between the TTF and perceived usefulness. Several researchers empirically found that there is no significant influence of TTF on perceived usefulness (Dishaw & Strong,

1999; Wu et al., 2007), on the other hand, others found that the TTF positively influences perceived usefulness (Klopping & McKinney, 2004; Chang, 2008). Thus, in order to overcome the disagreement among previous research, the present study suggests that the four facets of TTF indirectly influence perceived usefulness through perceived ease of use. This means that these four facets will directly influence perceived ease of use. The reason behind suggesting direct paths between all the facets of TTF and perceived ease of use is that each facet of TTF is considered to have varied influence on perceived ease of use of internet banking. Thus, it is important to clarify which of these facets are more important in this field.

The degree of fit between tasks (performing bank services) and the system (functionality of internet banking website) influences customers' perceived ease of use of the interaction through the internet banking website for two reasons. First, customer perception of ease of use towards internet banking is influenced by their knowledge that they have regarding that technology. Dishaw & Strong (1999) state that knowledge may come from a rational approach and as mentioned earlier in this chapter, the TTF takes a rational approach regarding acceptance of a new technology. This means that when customers evaluate the degree of fit between the task and the system in an internet banking website their knowledge regarding internet banking will be formed, and eventually, will influence their perception of ease of use about the technology. Second, the TTF's constructs directly include aspects of both tools and tasks. The construct of perceived ease of use, which is included in the TAM indirectly has also some aspects of tools and tasks. Thus, there may be a relationship between the TTF's constructs and perceived ease of use. Based on previous discussions, the present study suggests that the high degree of fit between the functionality of internet banking and internet banking tasks (performing banking services) has a

positive effect on customers' perceived ease of use towards internet banking. As a result, it is hypothesized that:

H13: Information quality in the internet banking website will positively influence perceived ease of use of internet banking services.

H14: Service visibility in the internet banking website will positively influence perceived ease of use of internet banking services.

H15: System reliability will positively influence perceived ease of use of internet banking services.

H16: Accessibility will positively influence perceived ease of use of internet banking services.

Chapter 5 developed an internet banking acceptance model based on the literature review presented in Chapters 2 to 4. Six perceptions are proposed as influencing the intention to use internet banking. These perceptions are: perceived usefulness, perceived ease of use, perceived risk, perceived trust, service visibility and system reliability. It is very important to note that the model developed in the present study is a general model, which means that it could be applied to determine behavioural intentions of non-adopters and/or adopters of internet banking. However, it will be applied only to the specific case of dormant users of internet banking in order to model behavioural intentions of this group. The following chapter will discuss the methodology of the present research.

6. Methodology

This chapter provides an overview of the philosophical assumptions related to the position of this study and describes the methodology used to collect and analyse the data in order to explore the hypotheses associated with the proposed conceptual model in Chapter 5.

The word methodology refers to the general technique researchers use in order to investigate a subject. In accordance with Hussey and Hussey (1997) the term methodology is concerned with the reasons for collecting data, kinds of data, sources of data, time of collecting data, processes and tools for collecting data and the analysis of data. The research methodology is important for any research. Clark et al. (1984) point out that the research methodology underlines the types of questions that can be addressed and the nature of the evidence that can be generated. There are important topics of methodology which need to be considered before deciding the data collection method and analysis techniques. Saunders et al. (2007) highlight that thoughts underlying choices of data collection techniques and analysis procedures belong in the centre of the research 'onion'. They argue that before coming to this central point there are important layers of the onion that need to be explored. Therefore, this chapter discusses four major layers of the research methodology, namely research philosophy, research design, research strategy and research method. The final section of the chapter describes ethical issues related to the present study.

6.1 Research Philosophy

Research philosophy consists of important assumptions in relation to the way in which researchers view the world. It is concerned with knowledge and the nature of reality in a field of study. Each research approach is based on hidden philosophical assumptions that determine which methodology is the most appropriate. Guba & Lincoln (1994) state that questions of research methods are of secondary importance to the question of which philosophical approach is appropriate to the research. Saunders et al. (2007) have also outlined the importance of these assumptions in designing a research project by highlighting that 'these assumptions will underpin your research strategy and the methods you choose as a part of that strategy' (P: 101). Based on the above, this section determines which philosophical approach is most applicable to the position of the present study.

There are two major elements of thinking about research philosophy: ontology and epistemology and each of these consist of important differences that affect the way in which a researcher thinks about the research process (Saunders et al., 2007). Ontology concerns the nature of reality. On the other hand, epistemology concerns what is regarded as or constitutes acceptable knowledge in a field of a study (Bryman, 2001). It sheds light on the origin, nature and scope of knowledge and how we know what we know. Healy and Perry (2000) point out that epistemology is the relationship between the reality and a researcher, while ontology is the reality that a researcher wants to study. Consequently, epistemology is a theory of 'knowing', whilst ontology is a theory of 'being'.

The central question in ontology is whether social entities can and should be considered social constructions built up from the perceptions and actions of social actors, or whether they can and should be considered objective entities that have a reality external to social actors (Bryman, 2001; Bryman & Bell, 2007). Ontology is therefore widely divided into two conflicting aspects: objectivism and subjectivism (constructivism). Objectivism is a position where features of the social environment have an existence that is independent of social actors (Saunders et al., 2007; Bryman & Bell, 2007). It means that these features exist independently of the individuals who created them or observe them (Gall et al., 2003). Therefore, the nature of reality is viewed as a complex association of causal relations between events that can be described as relationships between variables, and the causes of human behaviour are considered to be external to the individual (Blaikie, 1993). On the other hand, the subjectivist perspective asserts that social reality is created from the perceptions and consequently actions of social actors (Bryman, 2001). In this perspective, it is important to explore the subjective meanings that motivate the actions of social actors in order for a researcher to be able to understand these actions (Saunders et al., 2007). Thus, social subjectivism views reality as being socially constructed.

As mentioned previously, epistemology is another way of thinking about research philosophy. The main issue here is the question of whether the natural and social sciences should share the same methods (Bryman, 2001). According to Saunders et al. (2007) 'the answer to that question points the way to the acceptability of the knowledge developed from the research process' (p. 108). There are differing views of answering this question among researchers. Some researchers adopt a positivist position that advocates the use of natural sciences methods to the study of

social sciences. Blaikie (1993) states that despite the differences in subject matter of the natural and social sciences, the same method or logic of explanation can be used. It is argued that these differences are not seen to be a problem because the phenomena of human subjectivity and volition do not provide any obstacles to treat social conduct as an object like natural world objects (Giddens, 1974). Researchers who adopt this assumption therefore choose working with an observable social reality and that the end product of such research can be law-like generalisations similar to those produced by the physical and natural scientists (Remenyi et al., 1998, p. 32). The positivist position regards the social world as having a fixed nature, characterised by patterns of cause and effect which are capable of being described and predicted (Burrell & Morgan, 1979). Another important component of the positivist perspective is that physical and social reality is independent of those who observe it. This means that researchers neither influence nor are influenced by the subjects of their research. Thus, positivist researchers may use a highly structured methodology in order to attempt to control for bias. The emphasis here is the use of a quantitative approach to develop knowledge through empirical testing of theories, by collecting numerical data on observable behaviours of samples and then subjecting these data to numerical analysis so as to discover regularities in the constituent elements of the natural and social world and in the relationship between them (Orlikowski & Baroudi, 1991; Gall et al., 2003).

In contrast, other researchers adopt the interpretivist view, arguing that there are fundamental differences in subject matter between the natural and social sciences (Blaikie, 1993). Therefore, the natural sciences methods are not applicable for use in the study of social sciences. It is

argued that natural phenomena require researchers to develop theories in order to describe and explain them, and from those theories the researchers choose which are relevant to the problem under investigation (Blaikie, 1993). On the other hand, the study of social phenomena requires a researcher to understand the social world that is constructed by individuals involved in the research (Blaikie, 1993). In interpretivism, the relative nature of the social world means that understanding can only be achieved by exploring people's perspectives directly involved in the situation investigated (Burrell & Morgan, 1979). It emphasises exploring the meanings that participants generate as a part of the phenomena being investigated (Orlikowski & Baroudi, 1991). This means that researchers should enter the social world to view phenomena in their research subjects and understand the world from their point of view (Saunders et al., 2007). Interpretive research rejects the assumption that reality can be independent from the researcher. It recognises that researchers can bring their own beliefs and values to their research, which may influence their interpretations. In this position, researchers typically use a qualitative form of inquiry which enables them to listen to the participants and to rely on their voices and interpretations of this reality (Creswell, 1994).

In the present study, the ontological position is that there exists, both an objective physical world that has a concrete existence independent of individual observers and a social world that is being constructed, shaped and influenced by human experience, knowledge and desires. Moreover, this research adopts the view that it is possible to capture reality, but only to a limited extent, and no researcher can ever obtain a comprehensive understanding of a studied phenomenon. In this study, there is agreement that all types of research involve some degree of subjectivity

(Hammersley, 1992). Thus, the world can be studied to a certain extent and generalisations can be made with a degree of probability.

The epistemological position of the present study is situated between positivist and interpretivist paradigms. The present study can be considered as normative. It is not concerned with knowledge creation for its own stake, but as an instrumental means of contribution to a better understanding of customer behaviour towards internet banking use. The epistemological stance in the present study, distinguishes between physical reality (positivist) and human cognition (interpretivist). In the positivist tradition, as mentioned before, the researcher is seen as independent from the researched object and does not influence the object of the study. On the other hand, the interpretive position is that the researcher is often an important factor in any study process as he or she defines the perspective and the scope of the research. This research adopts the approach that a researcher can develop concepts and models in order to understand the reality. Researchers are often a part of what is being studied and they define the perspective and the scope of the study. This ontological assumption has direct implications for the question of what to study and how. The positivist view is that the object of study is defined by objective criteria, rather than human interests and needs, but it is difficult to be in complete agreement with this view, as knowledge, in general, is driven and influenced by social interests. This study recognizes the notion that the process of scientific inquiry is an iterative process, comprising both inductive and deductive approaches and often dependent on the level of advancement of our understanding in a particular scientific field. The present study seeks to understand the phenomenon of creating value for customers and banks by understanding the factors that influence the intention toward

the use of internet banking. Therefore, it investigates certain elements that can be said to have an objective, external reality and also tries to question the prevalent social constructions of the reality.

6.2 Research Design

A research design is defined as the plan of the study which is used as a guide to collect and analyse data (Churchill, 1999). Therefore, it is a way to conduct research that usually contains a specification of the elements that need to be examined and procedures that should be used. This section discusses the research design of this study based on the philosophical assumptions highlighted in the previous section.

The first part of the research design outlines whether the research should use the deductive theory (theory → observations/findings), the inductive theory (observations/findings → theory) or the abductive theory. The deductive theory means that a researcher will develop a theory or hypotheses that are subjected to empirical scrutiny and design a research strategy to test and then confirm or reject the theory or hypotheses, as Figure 6.1 indicates. Robson (2002) suggests five stages through which deductive theory progresses: 1) deducing a theory and hypotheses, 2) expressing the hypotheses in operational terms (it is important to indicate how the variables are to be measured), 3) testing the hypotheses by involving one or more of the research strategies, 4) confirming the theory or indicating the need for its modification, 5) if there any hypotheses rejected, modify the theory in the light of the findings. On other hand, the inductive theory is an

alternative way to conduct research. In the inductive theory, a researcher will collect data and develop a theory as a result of the researcher's data analysis (Saunders et al., 2007).

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│              1. Theory                   │
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│            3. Data collection            │
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│              4. Findings                 │
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│     5. Hypotheses confirmed or rejected  │
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│           6. Revision of theory          │
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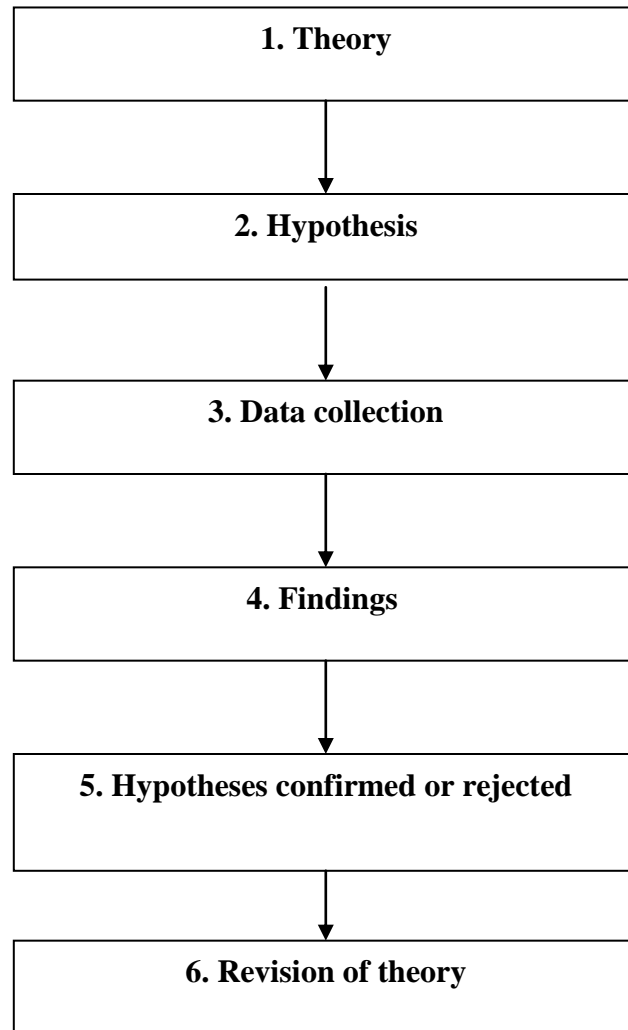
Figure 6.1: The Process of Deduction Theory (Bryman, 2001)

There are a number of differences between deductive and inductive theories. As mentioned previously, the deductive design moves from theory to data, whilst the inductive design moves from data to theory. Another difference is that most studies that adopt the deductive theory are

associated more with a quantitative research approach, whilst other studies that adopt the inductive theory are associated more with a qualitative research approach. Table 6.1 highlights the major differences between these theories. However, these theories rarely occur in isolation. In fact, most research involves both methods at the same time (see e.g. Glaser 1992: p.18).

Table 6.1: Major Differences between Deductive and Inductive Theories

Deduction emphasises	Induction emphasises
Scientific principles	Gaining an understanding of the meanings humans attach to events
Moving from theory to data	A close understanding of the research context
The need to explain causal relationships between variables	The collection of qualitative data
The collection of quantitative data	A more flexible structure to permit changes of research emphasis as the research progresses
The application of controls to ensure validity of data	A realisation that the researcher is part of the research process
The operationalisation of concepts to ensure clarity of definition	Less concern with the need to generalise
A highly structured approach	
Researcher independence of what is being researched	
The necessity to select samples of sufficient size in order to generalise conclusions	

Source: adopted from Saunders et al., 2007, p: 120

This present study adopts a mixed option which is known as abductive theory. Thagard & Shelley (1997) define this theory as reasoning in which explanatory hypotheses are formed and evaluated

(see Figure 6.2). Abductive theory starts with a guiding principle that the researcher has found in previous literature (Fischer, 2000). This guiding principle can be either a fuzzy intuitive concept or a developed theoretical model. Abductive theory is the only logical operation that introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis. The reason behind selecting the abductive theory is that although the study of customer behaviour towards the use of internet banking is a little researched field in Saudi Arabia, and does not have its own theories or framework, there are several theories, such as TAM and TTF, developed to explain the acceptance of new technology, such as the acceptance of new computer programs. This means that these theories are appropriate and can be used as a guiding principle in the context of internet banking; internet banking is a new technology and also it is related to the use of the computer from where these theories developed. The nature of the research questions indicates that abductive theory allows the researcher to develop an appropriate conceptual model for internet banking acceptance.
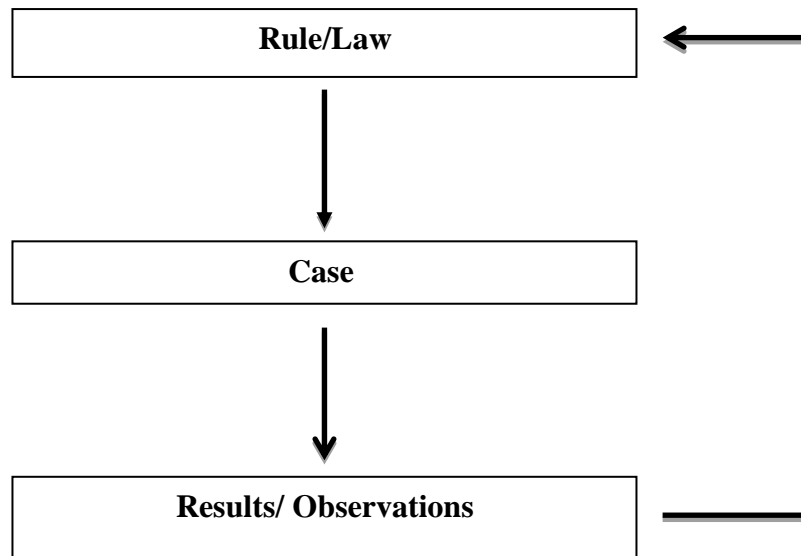
Figure 6.2: The Process of Abduction Theory (Fischer, 2000)

The second part of the research design sheds light on the classification of the research purpose, whether it is an exploratory, descriptive or explanatory approach. Saunders et al. (2007) discuss three different purposes that are most often used in the research methods' literature, namely exploratory, descriptive and explanatory research. Exploratory research aims to ask questions to find out what is happening (Robson, 1993). It is concerned with discovering ideas and insights, and is suitable for any problem about which little is known (Churchill, 1999). Selltiz (1959) states the following purposes for exploratory research: 1) formulating a problem for more precise investigation; 2) establishing priorities for further research; 3) collecting information about the practical problems of carrying out research on particular conjectural statements and finally 4) increasing the analyst's familiarity with the problem and clarifying concepts.

Descriptive research aims to provide an accurate profile of a situation or phenomenon being studied (Robson, 1993). Therefore, descriptive research is chosen when the purpose of the study is to estimate the proportion of people in a specified population who behave in a certain way, to describe the characteristics of certain groups, or to make specific predictions (Churchill, 1999; Robson, 1993; Saunders et al., 2007). The final classification of research purpose is the explanatory approach which aims to study a phenomenon or a problem in order to explain the relationships between variables (Saunders et al., 2007). It is designed to provide evidence to explain such cause and effect relationships (Kinnear & Taylor, 1996). The explanatory approach is appropriate when the objectives of the research include: 1) determining which variables are the cause of the phenomena being studied and 2) understanding the nature of functional relationships between the variables (causes) and the phenomena being studied (effects) (Kinnear & Taylor, 1996; Robson, 1993).

Based on the previous discussion, the present study follows the explanatory approach for three reasons. First, the hypotheses developed in the previous chapters fit most closely with the description of the explanatory approach. This is because these hypotheses are developed based on suggested causal relationships between the variables, such as between perceived risk and intention to use internet banking. Saunders et al. (2007) suggest that researchers who establish causal relationships between variables may adopt an explanatory approach. The second reason is that technology acceptance models, such as the TAM and TTF model have been applied and validated in a number of causal-type studies. Finally, the primary objective of the present study is to identify the factors that influence the use of internet banking among Saudi customers. This

addresses typical causal relationships between the variables. Consequently, a change in one variable will cause a change in another variable. For example a change in customers' trust of internet banking is considered to create a change in their intentions to use internet banking.

6.3 Research Strategy

The nature of the research strategy is driven by the decisions involved in selecting the research designs based on the ontological and epistemological position of the current research as outlined in the previous sections. It is also determined by the features of the social environment that are studied and by the research questions.

There are two research strategies, which are used widely in business and management research to differentiate both data collection techniques and data analysis procedures, namely qualitative and quantitative research strategies (Saunders et al., 2007). According to McDaniel & Gates (2002), these research strategies follow different ways of conducting social research, and therefore, each of these strategies may be most appropriate for different types of research questions.

Qualitative research is defined as a research strategy that focuses on words rather than quantification in the collection and analysis of data (Bryman, 2001). It is an investigation that provides meaningful insight by delving more deeply into social phenomena (Van Maanen, 1979). In this strategy, the emphasis is to view events, actions, norms and values from the perspective of the participants, enabling the researcher to understand the situation being studied (Bryman,

1992). Van Maanen (1979) states that this method is usually used when there is no established theoretical basis, and where little is known about the topic. There are different types of qualitative research mechanisms, such as focus groups and in-depth interviews, which adopt an interpretive approach to data, study 'things' within their context and consider the subjective meanings that people bring to their situation (De Vaus, 2001).

By contrast, quantitative research is constructed as a research strategy that focuses on quantification in the collection and analysis of data (Bryman & Bell, 2007). It is a type of planned collection of data in order to describe or predict a social phenomenon as a guide to action or to analyse the relationship between the variables (Oppenheim, 1992). This strategy has been characterised by some researchers as 'thin', but also 'hard and 'generalisable' (McClintock et al., 1979). According to Nettleton & Taylor (1990), quantitative research aims to explain social phenomena in terms of a cause and effect relationship and to measure events by objective criteria. Researchers who use this strategy should rely on the use of standardised data collection instruments, such as questionnaire survey, or structured interviews in order to use statistical techniques to help in the interpretation of data (De Vaus, 2001).

There are several differences between qualitative and quantitative research (see Table 6.2). Quantitative research involves a large sample, drawn from a wide population. It also allows findings and conclusions to be generalised more widely. Moreover, quantitative research predominantly emphasizes a deductive approach to the relationship between theory and research, in which the emphasis is placed on the testing of theories (Bryman, 2001; Bryman & Bell, 2007).

In terms of epistemological and ontological assumptions, quantitative research advocates the application of the methods of the natural sciences and of positivism in particular, and a position that social phenomena exist independently of the individuals who created them or observe them (Bryman, 2001; Bryman & Bell, 2007).

Table 6.2: Differences between Qualitative and Quantitative Research Strategy

Criteria	Qualitative research	Quantitative research
Type of question	Probing	Limited probing
Sample size	Small	Large
Hardware	Tape recorders, projection devices, video recorders, pictures, and discussion guides	Questionnaires, computers and printouts
Degree of reliability	Low	High
Types of research	Exploratory	Descriptive or explanatory
Nature of the problem	Variables unknown, context important, may lack theory base for study.	Previously studied so the body of literature exists, variables are known and theories exist
Principal orientation to the role of theory in relation to research	Inductive: generation of theory	Deductive: testing of theory

Table 6.2: Differences between Qualitative and Quantitative Research Strategy (Continued)

Criteria	Qualitative research	Quantitative research
Epistemological orientation	Interpretivism	Natural science model, in particular positivism
Ontological orientation	Subjectivism	Objectivism

Source: Creswell, 1994; McDaniel & Gates, 2002; Bryman & Bell, 2007

Both research strategies, as indicated, have different characteristics and ways of dealing with social research. Therefore, the decision on whether to employ qualitative or quantitative research strategies or both should be guided, as mentioned before, by the decisions involved in selecting the research design based on the ontological and epistemological positions of the current research. It is also driven by the nature of the topic under consideration and by the research questions. Based on the discussion in the previous sections, the methodological position of the present research rests on the use of the two strategies, quantitative and qualitative (with more emphasis on the quantitative strategy) for two reasons. Firstly, the philosophical assumptions of the present study and the research design adopted are characteristics of both quantitative and qualitative research. Secondly, Cupchik (2001) claims that the quantitative and qualitative approaches offer complementary views of the social world; this implies that richness can enhance precision because the in-depth account encompasses more information, while a focus on precision can lead to a clarification of basic concepts. Furthermore, the adoption of two methods in this thesis is in line with frequent recommendations to use multiple, complementary methods to increase the validity and reliability of research findings (Tan & Teo 2000; Tigre & Dedrick, 2004). According to Denzin & Lincoln (2005, p. 5), 'The use of multiple methods, or triangulation,

reflects an attempt to secure an in-depth understanding of the phenomenon in question'. The next section will include a detailed discussion of the research instrument implemented to collect the final data of the present study with regard to the main methodological strategy applied in this thesis (quantitative strategy). The discussion of the research instrument related to the preliminary methodological strategy adopted in this study (qualitative strategy) is presented in the following paragraphs.

A focus group discussion adopted in the present study is one of the instruments for collecting qualitative data in the social sciences. A focus group can be defined as a 'formally constituted, structured group which is brought together to address a specific issue within a fixed time frame, and in accordance with clearly spelt out rules and procedure' (Ogunbameru, 2003, p. 1). Krueger (1988) defines a focus group as 'a carefully planned discussion designed to obtain perceptions on a defined area of interest' (p. 18). There are several advantages of using a focus group discussion technique. As cited in Rabiee (2004), one of the distinct features of focus group discussions is its group dynamics, hence the type and range of data, which are generated through the social interaction of the group may often be deeper and richer than those obtained from one to one interview. Basch (1987) highlights that using focus groups is a technique to gain insights about perceptions, attitudes, problems and fears - and the language used to talk about all these. Moreover, focus group discussions allow researchers to obtain large amounts of data in a relatively short time span, and the researchers may use the findings to precede quantitative procedures. Ogunbameru (2003) states that focus group discussions help researchers to generate ideas for narrowing the scope of their research, yield hypotheses for field testing and selecting

appropriate wording for questions or create new items for questionnaires. On the other hand, focus group discussions may also be applied to explore and illuminate results of quantitative research or to have greater understanding about the reason for certain trends (Khan & Manderson, 1992). Ogunbameru (2003) summarised five characteristics of focus group discussions:

1- *Focus group discussions involve people:* this method involves 4-12 people and this size is conditioned by two factors: it must be small enough in order for everyone to have the opportunity to share insights and yet large enough to provide diversity of perceptions.

2- *Participants should be homogenous:* it is preferred to conduct this technique with participants who are similar to each other on the relevant variables.

3- *Focus group discussions are a data collection procedure:* the method is used to determine the perceptions, feelings and manner of thinking of participants about services, products or opportunities. Focus group discussions are not intended to develop consensus or reach an agreeable plan.

4- *Focus group discussions make use of qualitative data:* this method helps the researcher to obtain insights into the attitudes, perceptions and opinions of participants. So the researcher in a focus group discussion is present only to moderate, listen, observe and analyse using an interactive process.

5- *Focus groups have a focused discussion:* in this method, the researcher should predetermine and sequence the topics of discussions based on an analysis of the situation. The analysis includes an in-depth study of the event, experience or topic to describe the context and the components of the experience.

The present study followed several steps in conducting focus group discussions based on the recommendation of The Health Communication Unit (THCU), the Centre of Health Promotion, University of Toronto (2002). These steps are briefly explained in the following:

1- *Clarify purpose of the focus group discussions:* This step clarifies the rational for conducting focus group discussions and the population of interest. In the present study, focus group discussions were primarily used before collecting the final data for two main aims: (a) to ensure that the conceptual model developed in the present study captures the main factors that influence dormant users of internet banking, and (b) to assist the researcher, in the present study, to inform the actual content of the questionnaire survey used in the final data collection process, its wording and item development. Morgan (1993) states that focus group participants can provide examples from their own experiences and perspectives that can shape a researcher's measurement decisions. Regarding the population of interest, this study focuses only on dormant users of internet banking in Saudi Arabia, therefore, the participants in the focus group discussions had to be so. The selection of dormant users was based on participants' own classification of their behaviour with regards internet banking Moreover, since the population of the

present study was Saudi bank customers and the minimum age for individuals to have bank services, such as bank accounts and internet banking services in Saudi Arabia is 18, the minimum age of the population was 18.

2- *Decide on methods and procedures* - This step includes the decisions regarding the number of groups required and the size of the groups. In the present study, two focus group discussions with six participants for each group were considered to be enough. These decisions were made based on the type of information being sought, the budget available, timing considerations and the feedback received from two academic researchers at Birmingham Business School.

3- *Write the moderator's guide* - The moderator's guide for the discussion, which is to be carried out during the focus group discussion, involves deciding on all topics to be discussed and organising them into a logical format for discussion. This step is very important in order to ensure that the moderator is able to collect the desired information from the participants. In this research, the questions in the moderator's guide flowed from general, easy and non-threatening questions to more specific, focused and valuable questions. The guide was divided into four sections, namely the preamble, ice breaking, main discussion and closure. The moderator's guide was reviewed by two academic researchers at Birmingham Business School (see Appendix 1 for the moderator's guide for focus group discussions).

4- *Recruiting participants* - As mentioned before, six participants were required for each group. This means in total twelve participants were required. Due to time and budget restrictions, and some difficulties in obtaining a list of all dormant users of internet banking in Saudi Arabia, a convenience sampling technique was applied. The participants were chosen from the Saudi Students club in Birmingham, UK. A listing was provided to the researcher which included the names and contacts of Saudi students and their families, and from the list, twelve participants were selected randomly. So that focus groups consisted of dormant users only in the present study, the researcher employed a multiple-choice question to filter for potential participants. Respondents were asked to select their two most frequent methods of conducting banking transactions from a choice of four channels. Those who selected internet banking as one of their most frequent methods for conducting transactions were excluded. This meant that the identification of dormant users was self-determined.

5- *Focus group data analysis* - Data analysis consists of objectively reviewing the transcripts and identifying the main points or themes which answer the original evaluation questions. This step is very important because it organizes and summarises the data collected so that it can be interpreted. In the present study, the focus group discussions were recorded in two ways: by a tape recorder and with written notes taken by the moderator. There are several approaches to analyse focus group discussion data. One of these is Krueger's (1994) framework analysis. Rabiee (2004) states that the main advantage of the Krueger (1994) approach is that it provides a clear series of steps, which may help researchers to manage the large amount and complex nature of qualitative data much more easily. The present study

adopted Rabiee's (2004) approach, which combines Krueger's (1994) framework analysis with some key stages of 'framework analysis' described by Ritchie & Spencer (1994). Based on that, there were five key sates followed to the analysis of the focus group discussions data. The first stage was familiarisation with the data, which was achieved by listening to tapes, reading the transcripts several times and reading the moderator's notes. This helped the researcher to become immersed in the details and to get a sense of the discussion as a whole before breaking it into parts. During this process, major themes started to emerge. The next stages included identifying a thematic framework. This was done by writing memos in the margin of the text in the form of short phrases, ideas or concepts arising from the texts and beginning to develop categories. The next stage, indexing, consisted of sifting the data, highlighting and sorting out quotes and making comparisons both within and between the participants. The fourth stage was charting, which involved lifting the quotes from their original contexts and re-arranging them based on the factors as identified in the conceptual model and based on the new factors as emerged from the discusions. The main aim of this stage was to reduce the data by comparing and contrasting the data and cutting and pasting similar quotes together. The final stage of analysis was mapping and interpreting. One of the researcher's tasks in this stage was not only to make sense of the individual quotes, but also to be imaginative and analytical enough to see the relationship between quotes, and the links between the data as a whole. Krueger (1994), cited in Rabiee (2004), provides seven elements of interpreting coded data, namely words, context, internal consistency, frequency and extensiveness of comments, specifying of comments, intensity of comments, big ideas (see Krueger, 1994 for more detail). In this research, all these elements were paid intention in interpreting the coded data

Based on the focus group discussions analysis, there were several main points and themes raised during the focus group discussions (see Appendix 2). The following paragraphs, which are structured along with the codes developed through the discussions analysis, present the main results related to the factors influencing dormant users of internet banking.

Factors related to the TAM: Most of the participants highlighted several advantages related to the use of internet banking. One of the major advantages identified was that using internet banking saves time. Another advantage was that internet banking allows managing bank accounts from anywhere. Representative of these views are two quotes from the participants:

'We will save our time, if we conduct our banking services from home using the internet instead of going to the branch or using ATMs'.

'We can now conduct and manage our banking services from our homes or offices'.

All the participants strongly expressed that they have accepted internet banking as a banking channel due to its advantages: *'When I knew about the advantages of this banking channel, I went to my bank and registered in this channel as a user'.*

All the above mentioned is embedded in the TAM, particularly in the perception of usefulness. The participants also expressed their views regarding the perception of ease of use. The perception of ease of use, involoved when conducting banking services through the internet, was varied among the participants. Some claimed that they expended some effort in order to conduct most banking services for the first time. Others said that internet banking is not that difficult to use and most services are easy to conduct. However, there was partial agreement among the

participants that some banking services, related to investiments or loans, required mental effort when conducted for the first time using the internet and some of them phoned their bank for assistance. All the participants agreed that they would use the internet banking channel for most of their banking needs in future, if their banks develop their website in a way which they like.

Factors related to the Trust Model: Different levels of risk could be observed, amongst the participants, related to the use of internet banking. The participants divided into two groups; one group had a higher perception of risk and the second only had some concern of risk related to the use of this channel. It was found that the first group had used this channel only to conduct a few banking services, such as checking personal details or reviewing account balances. However, the second group who only had some concerns of risk, conducted more banking services through the internet. All the participants had some concerns of uncertainty caused by hackers who could compromise the transaction process in internet banking, such as stealing money from their accounts or stealing credit card information. The following statement highlights this issue:

'We believe that banks must also be concerned about problems caused by hackers and invest extensively in security infrastructure'.

With regard to legal structures applied by banks, one of the pariticpants claimed that 1000 SR had been taken from his account, as a result of his bank's mistake, when he was using his bank website and he waited four weeks in order to get his money back. He said that: *'I asked my bank several times to get my money back, and they always asked me to wait, until I complained to the central bank'.* Three of the participants commented on this situation by saying: *'Because Saudi*

banks are monitored by the central bank; they must adhere to the agreements that have been made with their customers'.

There was total agreement among the participants that banks' terms and conditions, regarding the use of internet banking, must protect them from problems when using internet banking websites.

The importance of banks' attributes, related to internet banking, was raised by most of the participants. All their discussions were related to three important characteristics, which have been included in the conceptual model developed in the present study, namely: ability, integrity and benevolence. For example, a number of participants believed that their bank must be an expert at providing banking services through the internet banking channel. They claimed that this will help them to be willing to fully use internet banking services.

Finally, the participants were asked about the role of trust in the use of internet banking services, and they answered by expressing that this plays a vital role in their intention towards the use of internet banking. Some of them mentioned that if they have high levels of trust in this channel, it will be the favourite banking channel for them.

Factors related to the TTF Model: The task-technology fit constructs in the internet banking context refers to the degree to which the functionality of internet banking websites assists internet banking users in conducting their banking services. With regards to information quality in the internet banking websites, the participants claimed that thier banking websites provide full information related to some banking services, such as utility bill payments or transferring funds

between accounts. Howover, some said that other banking services do not have the right level of detail. Some participants stated that: *'if we want to apply for personal loans or to obtain credit cards online, we must call the bank to get more information, because the website does not include full details about these kinds of services'.* Moreover, five participants raised the issue of correctness and currency of the information available online. These participants highlighted that their bank account balances are sometimes not correct as they are shown at ATMs or at the branch. They claimed that sometimes they pay utility bills through ATMs and they get receipts with a new balance available on their accounts, however when they check their accounts through the internet after a few hours, they find that their bank has still not charged them with this transaction. The participants agreed that their bank took some time in order to update their account information on the internet banking website.

Another construct of the TTF model also discussed by the participants was service visibility. Firstly, most banking services are found to be easy to use, however some of them still require time and effort in order to be found. Secondly, there is still a need for mental effort and time to be spent to understand some information related to the prosess of conductiong some banking services. Thirdly, all the participants wanted banking services to be presented in ways they like. Finally, most of the participants had been confused with the process of conducting some bank services.

Regarding system reliability, all the participants expressed the following problem: sometimes they want to conduct a bank transaction through the website, but there is denial of service from the system. One participant stated that: *'I have stopped using internet banking, because I spent*

more than forty minutes trying to transfer some money from my account to my friend's account and I could not due to denial from the system...so I decided to use phone banking and I spent five minutes to do that'.

A very important issue which the participants raised, relating to the system reliability construct, was that when problems occur while making transactions via the internet, the problem cannot be immediately resolved by phoning the bank. Internet banking users must go to the bank to solve such problems, which is time consuming. Another issue related to this construct is that most of the participants did not totally believe that their bank will help them when they faced fraud on the internet banking website.

Finally, regarding accessibility - the ease of access to a desired service on internet banking websites - all the participants considered that banks should allow them full access to conduct any banking services without phoning their bank first for beneficiary identification. Some of the participants stated that: *'It is a waste of time...everytime when we want to conduct some specific banking services, such as transferring money to another bank account, we must call our bank to allow us to complete this transaction'.*

Additional Factors Raised: In addition to the factors included in the conceptual model developed in the present study, the following two issues were raised during the discussions. Four participants raised their concern regarding internet connection problems and its quality. They highlighted that: *'Sometimes we cannot gain access to our internet banking or conduct some banking services due to bad internet connection'.* Another factor, which was also mentioned by

some participants, was that a reasonable level of computer skills is needed for customers to use internet banking. Three participants claimed that low levels of computer skills may strongly influence customers use of computers in order to conduct banking services via the internet. They also believed that most of the older and less educted bank customers do not have these skills.

Internet connection problems and computer skills cannot be influenced by banks, therefore these two factors will not be included in the conceptual model developed in the present study. It is very important to note that the conceptual model developed in the present study only includes factors over which banks have a full degree of control.

In conclusion, the key results, mentioned above, revealed that all the main points and themes raised during the focus group discussions have been already included directly or indirectly into the conceptual definition of the constructs adopted in the present study. This indicated that the main factors that affect dormant users of internet banking in Saudi Arabia were included in the present study. In other words, the conceptual model developed in this study captures the important factors that influence dormant users of internet banking.

However, with regards to the actual content of the questionnaire survey, the results revealed that the dimensions of 6 constructs, namely perceived structural assurance of the internet banking website, perceived bank trustworthiness, information quality, service visibility, system reliability and accessibility were not covered sufficiently. This indicted that some items were missing and

had to be included in the questionnaire. Based on the results, eight items were added. These items were:

- I feel assured that legal structures, such as the bank's terms and conditions regarding the use of internet banking, protect me from problems when using internet banking websites.

- I believe that my bank generally is an expert in providing internet banking services.

- On the internet banking website, my account(s) information is always as correct as at bank branch records.

- On the internet banking website, my account(s) information is up to date.

- On the internet banking website, banking services are in general presented in a way I like them.

- On the internet banking website, I never get confused with the process of conducting a bank transaction.

- On the internet banking website, I believe that my bank will help me when I face fraud.

- On the internet banking website, specific transactions that require a phone call for completion (such as beneficiary identification) are not time consuming.

Table 6.3 presents the new items developed based on the issues raised from the focus group discussions. Moreover, some items have been modified in order to fit more with the context of internet banking and to be clear among Saudi bank customers.

Finally, as mentioned before, for the selection of participants for the focus groups used in this study, the Saudi Student Club of Birmingham was used as the sampling frame. Although this club has an updated list of all the students and their families coming from Saudi Arabia, it may not be representative of all dormant users of internet banking in Saudi Arabia due to the very fact they are students and they have chosen to study abroad. Therefore, it is very important to highlight that this sampling frame may not provide a high desired level of confidence and accuracy.

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Table 6.3: New Items developed from the Focus Group Discussions

Construct	New Points Raised	New item
Perceived structural assurance of the internet banking website	The importance of a bank's terms and conditions regarding the use of internet banking.	I feel assured that legal structures, such as the bank's terms and conditions, regarding the use of internet banking protects me from problems when using internet banking websites.
Perceived bank trustworthiness	The bank must be an expert at providing banking services through the internet banking channel.	I believe that my bank generally is an expert at providing internet banking services.
Information quality	The issue of correctness of the information related to account balances compared with other banking channels.	On the internet banking website, my account(s) information is always as correct as at the bank branch records.
	The issue of currency of the information related to account balances available on the internet banking website.	On the internet banking website, my account(s) information is up to date.
Service visibility	Banking services should be presented in a way customers like them.	On the internet banking website, banking services are in general presented in a way I like them.
	I get confused with the process of conducting some bank services.	On the internet banking website, I never get confused with the process of conducting a bank transaction.
System reliability	I believe that the bank will help their customers when they face fraud on the internet banking website.	On the internet banking website, I believe that my bank will help me when I face fraud.
Accessibility	Phoning the bank for beneficiary identification to complete any banking transaction is a waste of time.	On the internet banking website, specific transactions that require a phone call for completion (such as beneficiary identification) are not time consuming.

Source: This research

6.4 Research Method

Ghauri et al. (1995) state that research method refers to the systematic, focused and orderly collection of data in order to obtain information to solve or answer the research problems or questions. Thus, if the findings are to be accepted, research methodology should follow only defined and logical rules and procedures (Nachmias & Nachmias, 1996). This section describes the research method that was followed to collect the final data for the present study. It includes descriptions of the research instrument, sampling procedure, data collection procedures and results and data analysis methods.

6.4.1 Research Instrument

The research instrument is a tool which is designed to gather information on a topic of interest from research subjects. There are three basic instruments for collecting quantitative data in the social sciences, namely survey, observation and experimentation (Kinnear & Taylor, 1996; Churchill, 1999). The survey involving questionnaires or interviews is one of the most widely used research instruments for data collection within social sciences (Bennett, 1983). It is defined as the 'attempt to collect data from members of the population in order to determine the current status of that population with respect to one or more variables' (Gay, 1992, p. 219). This type of instrument is usually used with the objective of measuring knowledge, awareness, opinions and behaviour (Zikmund, 2003). Neuman (2003) argues that it is appropriate for research questions about self-reported beliefs or behaviour.

In the present study, a questionnaire survey was employed as an instrument for data collection for several reasons. First, a questionnaire survey was suitable for the type of data that the researcher gathered as the major part of the study is concerned with the respondent's perceptions of internet banking and how theses perceptions influence their use of internet banking. Second, Saunders et al. (2000) point out that questionnaires can be employed to examine and explain relationships between variables, in particular cause-and-effect relationships. There were additional reasons to use a questionnaire survey, including the need for a large sample, the need for covering a wide geographic area across Saudi Arabia and the fact that the cost of a questionnaire survey is much cheaper than that of interview survey.

6.4.1.1 Questionnaire Development Process

The researcher developed the questionnaire used in the present study, based on the procedures recommended by Churchill (1999). Figure 6.3 shows the processes that were used to develop the questionnaire. These processes are explained in the following sub-sections.

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┌─────────────────────────────┐
│ Specify what information will be │
│           sought             │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│     Determine the type of    │
│  questionnaire and methods of │
│        administration        │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│   Develop questionnaire items │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│   Determine form of response to │
│         each question        │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│    Determine wording of each  │
│           question           │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│      Determine sequence for   │
│         questionnaire        │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Determine physical characteristics │
│        of questionnaire      │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│   Translation of questionnaire │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Pre-test questionnaire and revise if │
│           necessary          │
└─────────────────────────────┘
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Figure 6.3: Processes of Questionnaire Development (Source: based on Churchill, 1999)

6.4.1.1.1 Specify what Information will be sought

It is very important for a researcher to specify the information that he or she wants to obtain in order to construct an effective questionnaire. In the present study, the researcher collected information on the variables specified in the conceptual model (see Figure 5.1, p: 128). In particular, the questionnaire was designed to investigate the hypotheses that were created in Chapter 5.

6.4.1.1.2 Type of Questionnaire and Methods of Administration

After determining the basic information that will be sought, researchers need to make decisions about the structure to be used in the questionnaire and how it will be administered, such as post, email, telephone or hand (Churchill, 1999). Each type of questionnaire has a different method of administration. For example, an unstructured questionnaire with open-ended questions is not recommended to be administered by post, particularly if it has probing questions (Churchill, 1999). Based on the research design and the research strategy, the researcher used a structured questionnaire consisting of only closed-ended questions and administered by hand in the bank branches. The form of administration was influenced by three factors. Firstly, the researcher could not find a Saudi bank willing to post the questionnaire to their customers or place it on their websites. They also declined to provide the researcher any information regarding their customers, such as their addresses or contact numbers to enable the researcher to contact them directly. Secondly, only one bank, namely Al Rajih agreed to help the researcher to distribute the questionnaire by hand in their branches. Thirdly, the design of the present study required a sample of the bank's customers who have adopted internet banking, but who have still not used it

heavily (dormant users). This means that they still use other channels intensively, such as bank branches or ATMs to do banking transactions which could be done through the internet banking website. The researcher considered the option of using an internet survey, as it is much cheaper than administering the questionnaire by hand, however, this option was not adopted, because at that time of data collection a huge number of email frauds had been sent to Saudi internet banking users, and the researcher thought that this would hinder the recipients from opening the questionnaire email.

6.4.1.1.3 Developing Questionnaire Items

The initial pool of the questionnaire items was developed from the review of literature related to the acceptance of new technology and trust in electronic commerce (Davis 1989; Pavlou 2003; Davis et al., 1989; Venkatesh & Davis, 2000; Goodhue & Thompson, 1995; Goodhue, 1998; Jarvenpaa et al., 2000; Gefen, 2002; McKnight et al., 2002). The researcher adapted a number of items from the previous studies with some modifications added to fit the context of internet banking. The remaining items were developed based on the proposed definition of some variables. Anastasi (1986) states that the researcher should follow the conceptual definition of the constructs to select those items and should only select the items that best fit the definition. Thus, some items were considered to be unclear or too wide or narrow in focus were deleted and instead of those items, new items were developed. The researcher also created new items where it was felt that the dimensions of the variable were not covered sufficiently. Subsequently, two focus group discussions with Saudi internet banking users were conducted to identify any missing items that might be included. Appendix 3 illustrates the comparisons between the

original and adapted measurement items that were used in the final scales. The set of items was then sent to academic researchers at Birmingham Business School, the College of Business and Economics in the University of Al-Gasseem and managers in the electronic banking department of Al Rajhi bank. They were asked to evaluate each item in terms of its applicability to the construct being measured and its clarity, and to suggest any modifications. Appendix 4 shows the questionnaire consultation sent to the researchers and managers. The extensive literature review, focus groups discussion and feedback received from the researchers and managers were regarded as a useful means to improve the content validity of the items (for definition of content validity see Section 6.4.4.3, p: 219). Table 6.4 shows the items of the study's variables refined after the two focus group discussions and experts panel.

Table 6.4: The Operationalization of the Study's Variables

Variable	Item
Perceived usefulness	I believe that using Internet banking enables me to conduct banking transactions more quickly.
	I believe that using Internet banking enables me to conduct banking transactions anytime.
	I believe that using Internet banking makes it easier for me to conduct banking transactions
	I believe that using Internet banking enables me to manage my bank account (s) more effectively.
	I believe that Internet banking is very useful in conducting my banking transactions.

Table 6.4: The Operationalization of the Study's Variables (Continued)

Variable	Item
Perceived Ease of Use	I believe that it was easy for me to learn how to use Internet banking to conduct banking transactions.
	I believe that conducting banking transactions through the Internet banking website does not require a lot of mental effort.
	I believe that the interaction with the Internet banking website is clear and understandable.
	I believe that it was easy for me to become skilful at using Internet banking.
	I believe that Internet banking is very easy to use.
Behavioural Intention	In the near future, I intend to continue using Internet banking for doing some of my banking transactions.
	In the future, I intend to use Internet banking for most of my banking transactions.
	In the future, I will continue using Internet banking for performing some of my banking transactions.
	In the future, I will use Internet banking to conduct most of my banking transactions.
Perceived Risk	The decision towards the use of Internet banking to conduct banking transactions is: A significant risk → A significant opportunity
	The decision towards the use of Internet banking to conduct banking transactions is: High potential for loss → High potential for gain
	The decision towards the use of Internet banking to conduct banking transactions is: A very negative situation → A Very positive situation
Perceived trust	My bank is trusted as an Internet banking provider.
	I rely on the Internet banking as a trusted medium of financial transactions.
	Overall, I trust Internet banking to perform my banking transactions.

Table 6.4: The Operationalization of the Study's Variables (continued)

Variable	Item
Perceived structural assurance of the Internet banking website	I feel assured that legal structures, such as the bank's terms and conditions regarding the use of Internet banking protect me from problems when using the Internet banking website.
	I feel assured that technological structures, such as firewall and encryption on the Internet banking website make it safe for me to conduct banking transaction there.
	I feel that internet banking web site has enough safeguards to make me feel comfortable using it for my baking transactions.
	I feel that the Internet banking web site, in general is a robust and safe environment in which to perform banking transactions.
Perceived Bank Trustworthiness	I believe that my bank is competent in providing excellent Internet banking services.
	I believe that my bank has the capability to meet its Internet banking customers needs.
	I believe that my bank knows how to provide excellent Internet banking services.
	I believe that my bank generally is an expert at providing Internet banking services.
	I believe that my bank is honest with its Internet banking customers.
	I believe that my bank is trustful in its dealing with my Internet banking transactions.
	I believe that my bank keeps promises they make to their Internet banking customers.
	I believe that my bank is acting in my best interest.
	I believe that my bank would be ready and willing to do its best to assist and support me with using its internet banking.
	I believe that my bank generally has a kind intention towards their Internet banking users.

Table 6.4: The Operationalization of the Study's Variables (continued)

Variable		Item
Task-Technology Fit (TTF)	Information quality	On the Internet banking web site, detailed information is maintained sufficiently by the bank.
		On the Internet banking web site, my bank maintains the information at the right level of detail for my bank purposes.
		On the Internet banking web site, the information related to banking services is accurate enough for my bank needs.
		On the Internet banking web site, my account(s) information is always as correct as at bank branch records.
		On the internet banking web site, my account(s) information is up to date.
		On the Internet banking web site, the information is overall up to date enough for my bank needs.
	Service visibility	On the Internet banking web site, it is very easy for me to locate a banking service, even if I have not conducted that service before.
		On the Internet banking web site, it is very easy for me to find out what banking services my bank provides.
		On the Internet banking web site, the exact meaning of each banking service is obvious.
		On the internet banking web site, each individual process of performing a banking service has obvious information.
		On the Internet banking web site, banking services are displayed in a clear form.
		On the Internet banking web site, banking services are in general presented in a way I like it.
		On the Internet banking web site, banking services are in few different forms that make it very easy for me to know how to use them.
		On the Internet banking web site, I never get confused with the process of conducting a bank transaction.
	System reliability	On the internet banking web site, conducting banking transactions are subject to frequent denial from the system.
		On the Internet banking web site, I can rely on the system to be "up" and available when I need it.
		On the Internet banking web site, I believe that if I required assistance in accessing a banking service, my bank would assist me on that.
		On the Internet banking web site, my bank will assist me when I have a problem in finding or using a required service.
		On the Internet banking web site, I believe that my bank will help me when I face a fraud.

Table 6.4: The Operationalization of the Study's Variables (continued)

Variable		Item
Task-Technology Fit (TTF) (continued)	Accessibility	On the Internet banking website, I can get a desired banking service quickly and easily whenever I want.
		On the Internet banking website, my bank provides me seven days and 24 hours access to banking services.
		On the Internet banking, it is easy for me to get access to any banking service that I need to conduct.
		On the internet banking website, specific transactions that require a phone call for completion (such as beneficiary identification) are not time consuming.

6.4.1.1.4 Form of Response to each Question

Close-ended questions were found to be the most useful for the present study. The main reasons for this lie in their simplicity of administration and ease of tabulation and analysis (Churchill, 1999). In order to have a greater uniformity of response type, a seven-point Likert scale was applied to all items in the first three sections of the questionnaire. In the last section, the questions were designed to provide 'tick' responses. The respondents were asked to choose the answer that most closely corresponded to their position on the subject.

6.4.1.1.5 Determine Wording of each Question

Wording of a question is a critical task, because, for instance, an ambiguous word can cause the respondents to refuse to answer the question or to answer incorrectly due to misunderstanding.

Churchill (1999) points out that a number of researchers encounter vocabulary problems, because they are more highly educated than other typical respondent of the questionnaire. Therefore, the researcher paid attention to this potential problem and pre-tested the questionnaire before the final survey in order to detect any ambiguous words, abbreviation and questions (for pre-test of the questionnaire see Section 6.4.1.1.9, p: 204). Moreover, the researcher defined internet banking on the beginning of the questionnaire in order to ensure that there is no confusion between internet banking and other electronic banking, such as ATM and phone banking.

6.4.1.1.6 Determine Sequence for Questionnaire

Once decisions had been made regarding the type of response required and the appropriate wording for each question, the researcher had to put these questions into the questionnaire. Churchill (1999) states that researchers should recognise that the order in which the questions are presented can be significant to the success of the research effort. There are a number of researchers (Luck et al., 1982; Malhotra, 1996; Churchill, 1999) who highlight that the first few questions should be simple, interesting and non-threatening in any way to the respondents, and clearly related to the stated topics, as these kinds of questions help to create respondent motivation. Thus, they suggest that demographic or personal profile questions, which are regarded as sensitive, should be asked at the end rather than the beginning of the questionnaire. The present study followed the guidelines mentioned above. The questionnaire was structured into four sections. The first section measures the respondents' general beliefs related to the use of internet banking. The second section deals with the respondents' beliefs regarding trust, its antecedents and its consequences with respect to internet banking. The third section investigates

the degree to which the functionality of the internet banking website assists internet banking users in conducting banking transactions. The questions related to the personal profile of the respondents were placed in the final section of the questionnaire. In this section, there was one question (Number 2), which was a filter question to ensure that the respondents were appropriate for the study. Those respondents who have chosen internet banking as one of the most frequent ways of making banking transactions were excluded from the analysis, because the design of the present study, as mentioned before, required bank customers who are dormant users of internet banking.

6.4.1.1.7 Determine Physical Characteristics of Questionnaire

The physical appearance of the questionnaire can affect not only the accuracy of the information that is obtained, but also the respondents' cooperation or willingness to participate in the study (Churchill, 1999). For example, if the questionnaire looks disorganised or sloppy, the respondents are unlikely to cooperate because they may think that the study is not important; it is vital to make the questionnaire reflect the importance of the study. Thus, the researcher endeavoured to achieve a good physical appearance to the questionnaire, which reflected the credibility and importance of this study. In the first pilot test of the questionnaire, the participants were asked to comment on the questionnaire size, layout, font size and formats and question wording and sequencing. In the final study, the questionnaire was produced on high quality paper. A cover letter from the researcher was also enclosed with the questionnaire. The letter explained the purpose of the study and its importance, and sought the cooperation of the respondent (Oppenheim, 1992; Churchill, 1999). It also assured the respondents that their answers would be

held in total confidence and stressed that the study was supervised by Birmingham Business School.

6.4.1.1.8 Translation of Questionnaire

The use of the native language is very important in order for the respondents to understand and complete the questionnaire. The questionnaire was therefore translated into the Arabic language, the common language of all respondents, using the back-translation technique suggested by Bulmer & Warwick (1993). They propose that (1) the questionnaire is translated from the original language to the local language, (2) it is then translated independently back by another translator from the local language into the original language, and (3) the result is compared with the original version to identify and correct any errors in translation. Based on Bulmer & Warwick's (1993) recommendation, the questionnaire was carefully translated into Arabic by a member of staff from the Arabic literature department at the University of Al-Gasseem. After that, satisfactory back transaction was carried out by another translator from the College of Business and Economics, the University of Al-Gasseem, who is fluent in both the English and Arabic languages. This English version was then compared with the original English version of the questionnaire to check the validity of the translation process. Finally, as an additional step, the final draft version was reviewed by two academic colleagues at the department of management of the University of Al-Gasseem. After this some items were customised using common Saudi expressions to enhance overall understanding.

6.4.1.1.9 Pre-test Questionnaire and Revision

Saunders et al. (2007) point out that the aim of the pilot test is to refine the questionnaire so that the respondents will not encounter any difficulties in answering the questions. Moreover, it will enable the researcher to obtain some assessment of the questionnaire's validity and reliability (Saunders et al., 2007). Churchill (1999) emphasises the importance of pre-test when he states that 'the pre-test is the most inexpensive insurance the researcher can buy to assure the success of the questionnaire and the research project' (p. 366). In the present study, the researcher conducted two pilot tests of the questionnaire. In the first pilot test, the questionnaire was distributed to a convenience sample of 20 users of internet banking who were Saudi postgraduate students in Birmingham and Aston universities. The respondents were asked first to complete the questionnaire, and then comment on its length, wording, sequence and instructions. This pilot test revealed that the respondents, on average spent about 11-15 minutes to complete the questionnaire. The researcher received valuable comments on the questionnaire. One of the major modifications that came out of this test was that the scales for parts 1, 2 and 3 of the questionnaire were reduced from 7 to 5 points. The feedback given by respondents was that Saudi people tend to be confused and cannot cope well with a seven-point Likert scale for two reasons. Firstly, this is because most research conducted in Saudi Arabia adopted a five-point Likert scale. Therefore, it is expected that once people there get used one kind of scale is hard for them to deal with other Likert scales. This leads to the second reason which is that a five-point Likert scale is considered to be easier to follow, because every scale point has an obvious label. However, with a seven-point Likert scale, there are some points in the scale which are not labelled. As a result,

this may cause confuse for Saudi people and they may not be able to place their point of view on that scale.

In addition, the researcher conducted another pilot test in order to assess the reliability, comprehensiveness and appropriateness of the questionnaire's items (for definition of reliability see Section 6.4.4.3, p: 219). The researcher checked again for any difficulties that the respondents might face in completing the questionnaire. Due to time and budget constraints and some difficulties in obtaining a list of all dormant users of internet banking in Saudi Arabia, a convenience sampling technique was applied. A sample of 60 counter bank customers, who were assumed to be similar to the final respondents, was chosen from the Al Rajhi Bank in the Al Gasseem region in the Kingdom of Saudi Arabia. A listing was made of all the Al Rajhi Bank branches in the Al Gasseem region and from the list, one branch was selected by simple random sampling. The researcher then used a convenience sampling to obtain 60 respondents by choosing for survey every third customer who entered that branch. The Al Gasseem region was chosen as the researcher lives there. 42 usable questionnaires were received and used in the analysis. To test the reliability, Cronbach's alpha was calculated for each scale in order to examine its internal consistency. Table 6.5 shows the results from the reliability test. All of the scales had very high alpha scores, ranging from .79 to .97. This means that all the scales are above the generally accepted lower limit of .70, and therefore have high levels of internal consistency.

Table 6.5: Reliability Coefficient for Scale Variables Used in this Study

Variable		Number of items	Alpha coefficient
Perceived usefulness		5	.89
Perceived Ease of Use		5	.79
Behavioural Intention		4	.97
Perceived Risk		3	.86
Perceived Trust		3	.91
Perceived structural assurance of the Internet banking website		4	.89
Perceived Bank Trustworthiness		10	.92
Task-technology fit	Information Quality	6	.91
	Services Visibility	8	.93
	System reliability	5	.94
	Accessibility	4	.95
Total		57	

Source: This research

After the questionnaire had been refined and validated through the two pilot tests, a final version was then obtained. The questionnaire in both languages, English and Arabic, is attached in Appendix 5and 6 respectively.

6.4.2 Sampling Procedure

Once the researcher identified the problem that needed to be investigated, and developed an appropriate research philosophy, research design, research strategy and research method which

includes the data collection instrument, the next step in the research process is the determination of the sample from which information is to be collected. All survey research is concerned with making inferences about a population on the basis of information obtained from a sample. Sampling procedure becomes an essential part of the total research process. The way in which samples are taken will determine the accuracy of the survey research results and their generalisibility. Sekaran (2000), states that sampling is the process of selecting an adequate number of subjects from a population. By studying and understanding the characteristics of these subjects, the research will be able to generalise the results to the whole population.

In selecting a sample of the population for the present study, the researcher first defined the population and identified the sample frame, then determined the sample size, and finally selected the appropriate sampling method.

6.4.2.1 Population

The first step in the concept of sampling is to define the population of interest. Bryman & Bell (2007) point out that population refers to the entire element from which the sample is to be selected. It is defined as the whole cases that match to some designated specifications (Churchill, 1999). In defining the target population the researcher must be accurate in specifying what elements should be included and what elements should be excluded. There are several steps in defining the population under study. A researcher must decide whether the population consists of individuals, households, institutions or other category, the geographic boundaries and other

additional criteria that are often placed on the elements. In the present study, the population was defined as all Saudi individuals who fulfil the three criteria:

1. **Geography:** The population of this study was defined as all Saudi counter bank customers, regardless of whether male or female, and the survey population was defined as those who live in five cities across the Kingdom of Saudi Arabia. The cities being Riyadh, Jeddah, Dammam, Abha and Buraydah. There are two reasons for limiting the study to these cities. Firstly, these cities are the biggest Saudi cities and about 70% of the total population of Saudi Arabia lives in them (Ministry of Economic and Planning, 2008). The second reason was to save time and cost, as well as to enhance the efficiency of the administration of the questionnaire.

2. **Age of individual:** Since the population of the present study was Saudi bank customers and the minimum age for individuals to have bank services, such as bank accounts and internet banking services in Saudi Arabia is 18, the minimum age of the population was 18.

3. **Individual variables:** The population of this study included only counter bank customers who are dormant users of internet banking. In the present study, the dormant users of internet banking, as mentioned in Chapter 1, Section 1.2, p: 3, are defined as 'bank customers who have already registered as users of internet banking channels, but who still

use other banking channels such as branch banking, ATM or phone banking as the most frequent ways of conducting their banking services'.

6.4.2.2 Sampling Frame

The second step in selecting the sample of the population is identifying the sampling frame. Bryman & Bell (2007) state that the sampling frame refers to the listing of all units in the population from which the actual sample will be selected. In Saudi Arabia, the number of dormant users of internet banking is not available as no Saudi banks will disclose this kind of information, due to the competition among Saudi banks. However, in the present study, the sampling frame includes only Saudi counter customers of the Al Rajhi Bank branches in Saudi Arabia who are dormant users of internet banking. The choice of the Al Rajhi Bank for sampling purposes was based on the size and the acceptance of the bank to facilitate the process of collecting the data. Al Rajhi Bank is one of the biggest banks in the Kingdom of Saudi Arabia. It has the largest number of customers, staff, branches and ATMs among other Saudi banks (Saudi Arabian Monetary Agency, 2009). In addition, the reason for limiting the study to only one bank was to reduce the variance of responses that might affect the final results, because it was assumed that there are differences that exist between all Saudi banks in terms of their internet bank websites, such as in designing their websites that may affect responses.

6.4.2.3 Determination of Sample Size

The determination of the appropriate sample size is a very important part of any research. This decision is not a straightforward one. It depends on several considerations, such as cost, time, the availability of resources and statistical accuracy. There are a number of ways to determine the sample size (Churchill, 1999). The first is to set an arbitrary size within the constraints of the research budget and time, and to measure the precision of the sample at the analysis stage if a probability sampling technique is used. The second is to calculate the optimal sample size by using statistical principles. In the context of this study, using statistical procedures to determine appropriate size of the sample poses some difficulties, since some estimation of the population variance is required. Finally, a researcher can determine the sample size by using what other researchers have used for similar studies in the past.

Alrasheed (2000) states that determining sample size for consumer research in developing countries, such as Saudi Arabia is more likely to be done arbitrarily, which depends on the judgement of the researcher. Therefore, given the limited research time, budget and manpower, the researcher determined the appropriate sample size based on what other previous researchers used for similar studies and based also on the researcher's judgement.

In the context of internet banking, a number of previous researchers used sample sizes between 125 and 400. Bryman & Bell (2007) argue that increasing sample size will increase the likely precision of the sample, which means that as sample sizes increase, sampling error will also

decrease. Taking into account the financial and time constraints, the sample size used with previous studies and after a comprehensive discussion with some researchers in the marketing research department of the Al Rajhi Bank and the marketing group of Al-Gasseem Business and Economics College, a total sample size of 400 respondents was thought to be adequate for the nature and scope of this study. Several researchers who administered the questionnaire by hand in the Kingdom of Saudi Arabia obtained response rates between 40% and 65%. Based on this and assuming a minimum response rate of 40%, the final questionnaire was distributed to 1000 counter customers of 10 branches of the Al Rajhi Bank in five cities.

6.4.2.4 Sample Selection Method

There are two major methods for selecting a sample of the population, probability and non-probability sampling. In probability sampling, a sample is selected using random selection so that each unit being selected from the population is known and usually equal for all units (Bryman, 2001). Bryman & Bell (2007) suggest that a researcher is likely to obtain a representative sample when this method of selection from the population is employed because probability sampling aims at keeping sampling error to a minimum. Probability sampling is associated mostly with survey and can be selected by various techniques, such as simple random, systematic, stratified random, cluster and multi-stage sampling (Saunders et al., 2007). On the other hand, non-probability samples involve personal judgement somewhere in the selection process, which means the elements do not have an equal chance of being selected as subjects (Bryman & Bell, 2007). Therefore, there is no way of ensuring that the sample that has been chosen is

representative of the population (Churchill, 1999). In this method, the sample can be selected by several techniques, such as convenience, judgement and quota samples.

In the present research, it was found that it might be more desirable for the nature and the purpose of the research to apply two methods of sampling, probability sampling and and non-probability sampling. The following explains the two stages of choosing the sample in this study.

Stage One: For each city, a listing was made of all Al Rajhi Bank branches. From the list, two branches were selected by simple random sampling.

Stage Two: From each branch that had been selected, convenience sampling was used to draw one hundred respondents, by choosing to survey every fourth customer who entered the branch. In this stage, the researcher applied this sampling technique because there was no available list of all dormant users of internet banking in Saudi Arabia and so sampling was undertaken using a crude approximation to the target population.

6.4.3 Data Collection Procedure and Descriptive Results

Once the sample was selected, the final field survey was conducted over a period of 10 weeks, commencing in the first week of August 2008 until the second week of October 2008. As mentioned earlier, Al Rajhi Bank agreed to facilitate the distribution of the questionnaire among its customers in its branches that had been selected by the researcher. The bank asked its employees who work at customer service in the ten branches selected to help the researcher by

distributing the questionnaires. With their co-operation, a group of 5 research assistants was recruited who had previous experience with the central statistical office in the Ministry of Planning to also help to distribute the questionnaires in the branches. One thousand (1000) copies of the final questionnaire along with a cover letter from the researcher were distributed through the selected ten branches in five Saudi cities, Riyadh, Jeddah, Dammam, Abha and Buraydah. Each research assistant was responsible for covering only one city and distributing two hundred questionnaires through two branches selected (100 questionnaire per branch). The respondents were asked to fill in the questionnaire and drop the completed questionnaire at the designated branch's questionnaire collection box which was dedicated for this particular research survey.

At the end of the data collection stage, 430 completed questionnaires were received, giving a response rate of 43% of the original sample. 22 of the returned questionnaires were discarded since 9 subjects mentioned that they never used the internet for their banking transactions and 13 subjects selected internet banking as one of the most frequent ways of making banking transactions. All of these respondents were discarded because the design of the present research only required bank customers who are dormant users of internet banking. Eight subjects were also omitted since they left the final section of the questionnaire relating to personal profile blank. Therefore, the effective response rate was 40 %.

The personal profile of the respondents is displayed in Figure 6.4. A predominance of males, among internet banking users, is evident from the data (72.5% and females 27%). This bias can

be explained as it is a reflection of the current situation in Arab countries, particularly in Saudi Arabia where men are the visible figures in business, whether professionally or as household representatives. Therefore, they are likely to have more interaction with internet banking than females. The national gender ratio of Saudi internet users is 74% male to 26% female (Communications and Information Technology Commission, 2009), which is close to the gender ratio of the present study. Similarly, for age, the percentage of participants under 36 years is 77.2%, which is closely comparable to the national figure of 82% (Communications and Information Technology Commission, 2009). Thus the personal profile of the survey respondents closely reflects the profile of internet users in Saudi Arabia, indicating that the sample of the present study is representative of the Saudi internet user population. With regard to other demographic aspects of the respondents, the educational level of the subjects varied. The largest group were educated to undergraduate university level (55.7%), followed by secondary school education (18.2%), professional diploma (12%), masters degree or above (10.8%) and less than secondary school education (2.8%). The job distribution of the participants was, 35.7% were clerical staff, 19% were students, 18% were professionals, 9% were technical staff, 5.5% were housewives, and 1% were pensioners and 11.8% were other.
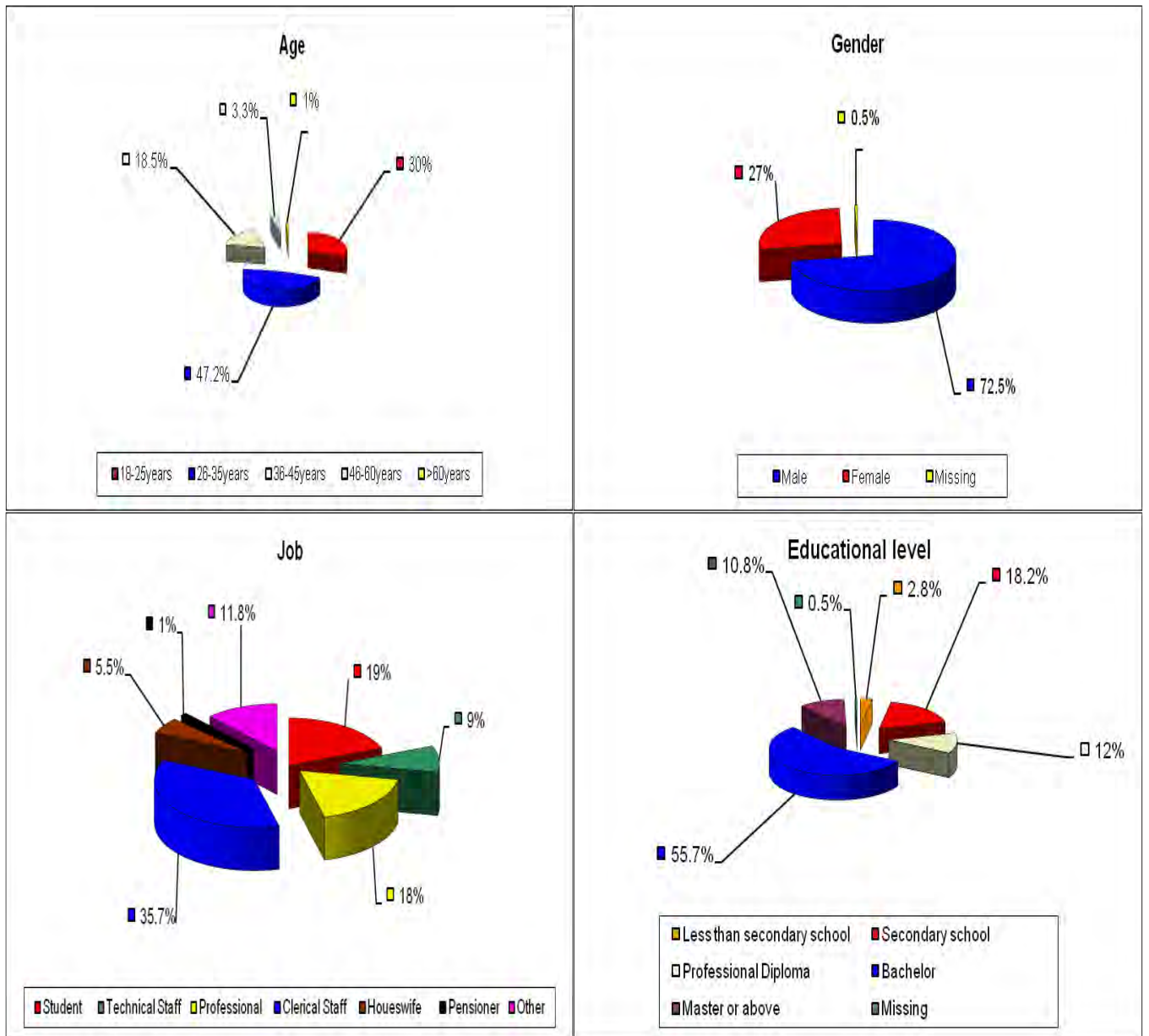
Figure 6.4: Demographic Profile of the Respondents (Source: This research)

Regarding the internet banking experience, it can be seen from Figure 6.5 below that the largest group of the respondents were using internet banking for more than two years (42%), followed by 34% for 1-2 years. and 24% of them were using that service for less than one year.
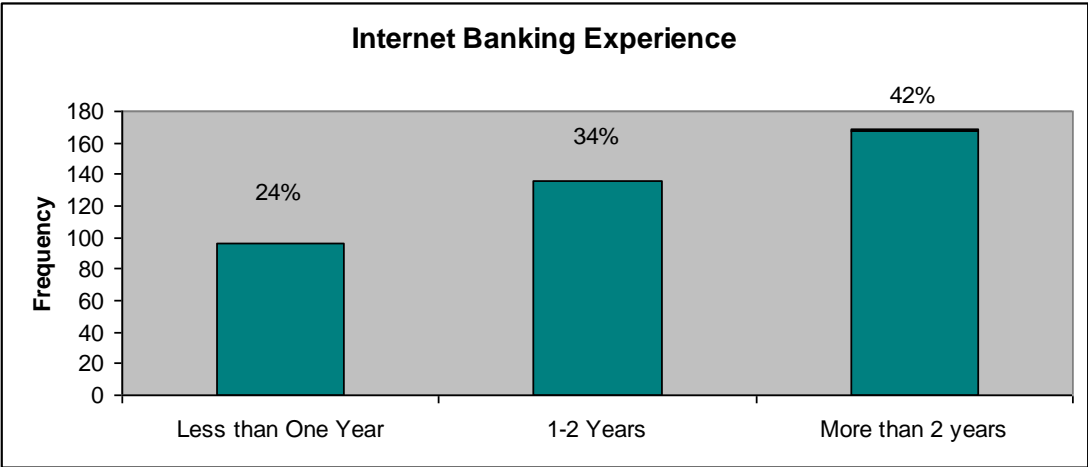
Figure 6.5: Internet Banking Experience of the Respondents (Source: This research)

Demographic variables with their frequency and percentages are displayed in the Appendix 7. The frequencies and percentages for the responses on the items related to the 11 constructs and their central tendency (mean) and dispersion (Standard deviation) are also presented in the Appendix 8.

6.4.4 Data Analysis Methods

Several procedures were conducted to test the study hypotheses. First, prior to conducting the actual statistical tests, the variables were examined for normality. Second, variables that were non-normal were transformed. Third, the reliability and validity of the measures were ascertained. Finally, structural equation modelling procedures were conducted to test the study's hypotheses. In the sub-sections that follow, each step will be described in detail.

6.4.4.1 Testing the Assumption of Normality

The most widely used estimation method in structural equation modelling, maximum likelihood estimation assumes that the variables are multivariate normal. Hair et al. (1998) refer to normality as the 'shape of the data distribution or an individual metric variable and its correspondence to the normal distribution, which is the benchmark for statistical methods' (p. 70). Normality consists of two types: univariate normality and multivariate normality. Univariate normality refers to the distribution of an individual variable and multivariate normality refers to the distribution of two or more variables (Kline, 2005).

In the present study, univariate normality was identified by assessing skewness and kurtosis of the study variables using the SPSS program. The skew and kurtosis of a distribution can be non-normal. Skew indicates that the shape of a unimodal distribution is not symmetrical about its mean (Kline, 2005). When most of the scores are below the mean, the distribution is positively skewed; when most of the scores are above the mean, the distribution is negatively skewed. The

sign of the standardized skew index denotes the direction of the skew. Computer simulation studies of estimation methods reveal that variables with absolute values of the skew index greater than 3 have distributions that are extremely skewed (Kline, 2005). For unimodal distributions that are symmetrical, the distribution is considered as having positive kurtosis if the tails are heavy and the peak is high. The distribution has negative kurtosis if the tails are thin and the peak is flat. There is limited consensus regarding the criterion for extreme kurtosis. A conservative rule of thumb, however, is that when the absolute value of the kurtosis index is greater than 10, the distribution is non-normal (Kline, 2005). To ascertain univariate normality of the variables, the skew and kurtosis values were requested. Variables whose skew index was greater than 3 were considered as non-normal; variables whose kurtosis index was greater than 10 were also deemed non-normal. Multivariate normality was also assessed via the SPSS program. According to Norusis (1990), when the points in a normal probability plot are clustered towards the line, the assumption of multivariate normality is fulfilled.

6.4.4.2 Transformation of Variables

One method of dealing with non-normality is by transforming the variables (Howell, 1989; Judd & McClelland, 1989; Kline, 2005). Through the process of transformation, the original scores are converted via specific mathematical operations so that the resulting distributions become normal. The following are transformations that are typically used to correct for positive skewness: square root, logarithmic, and inverse functions. These transformations can also be used to correct problems with negative skewness, as long as the original scores are subtracted from the highest score plus 1 prior to the transformation (Howell, 1989; Kline, 2005). To correct for positive

kurtosis, original scores can be transformed using odd-root and sine functions (Howell, 1989; Kline, 2005). Odd-power polynomials can be used to correct for negative kurtosis (Howell, 1989; Kline, 2005). The procedures followed in the present study are that the sign of the skew and kurtosis indices were checked first. Thereafter, the non-normal variables were transformed using a square root operation. The skew and kurtosis indices were then examined to check if the transformed variables were normally distributed.

6.4.4.3 Reliability and Validity

When discussing the validity and reliability of a questionnaire, several researchers refer to reliability, content validity and construct validity (Straub, 1989; Boudreau et al., 2001). Reliability refers to the degree that an instrument is free from random measurement error (Kline, 2005). Since there are different sources of random error, there are several estimates of reliability. The most commonly reported estimate of reliability is Cronbach's coefficient alpha; this estimate of reliability assesses the consistency of responses across items within a single subscale or scale (Anastasi & Urbina, 1997). Other estimates of reliability are test-retest reliability, which measures reliability across time, and inter-rater reliability, which measures reliability across raters or judges (Anastasi & Urbina, 1997). Reliability coefficients around .90 are considered "excellent," coefficients around .80 are deemed "very good," while coefficients around .70 are "adequate" (Kline, 2005).

In the present study reliability of the constructs was assessed through three techniques, namely Cronbach's alpha, the composite reliability (means that a set of latent constructs are consistent in their measurement), and construct reliability assessed by estimating the average variance extracted, which reflects the overall amount of variance in the indicators accounted for by the latent constructs. Constructs are deemed reliable when Cronbach's alpha is at least .70 (Nunnally & Bernstein, 1994), the composite reliability exceeds the criterion of .70 (Hair, et al., 1988), and the average variance extracted is above .50 (Bagozzi, 1994). The results for reliability of the measures are presented in Chapter 7 (Section 7.3, Table 7.6, p. 250).

Content validity is a qualitative assessment of whether the questions or items in a scale capture the real nature of the construct as it is in the real world (Gefen, 2002). In other words, it refers to the extent to which the measurement questions or items in the questionnaire provide adequate coverage of the construct under investigation (Saunders et al., 2007). Judgement of what is 'adequate coverage' can be established through careful definition of the research through the literature reviewed, and through expert judges (Cook & Campbell, 1979; Cronbach, 1971; Saunders et al., 2007). Section 6.4.1.1.3 (p: 195) explains the process the researcher used to ensure content validity.

Construct validity is concerned with the extent to which a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts (or constructs) that are being measured (Carmines & Zeller, 1979, p. 23). More simply, it examines if a scale

measures what it intends to measure (Garver & Mentzer, 1999). Construct validity is the most valuable but most difficult type of validity to establish (Litwin, 1995; Churchill, 1999). Carmines & Zeller (1979) outline three distinct steps involved in construct validity, namely (1) the relationships between the concepts must be theoretically specified, (2) the relationship between measures of concepts must be empirically examined, and (3) the empirical evidence must be interpreted in relation to how it clarifies the construct validity of the specific measure.

There are two sub-dimensions of construct validity which include convergent and discriminant (divergent) validity (Bagozzi, 1980; Litwin, 1995). Convergent validity is concerned with the extent to which a construct correlates to items designed to measure that construct (Garver & Mentzer, 1999). If all items measure the same construct, this means that the measures should be highly correlated, which provides evidence of their convergent validity (Churchill, 1999). Discriminant validity is also important to examine the construct validity of a measure. It refers to the extent to which the items used to measure a variable discriminate that variable from other items used with other variables (Garver & Mentzer, 1999). Churchill (1999) argues that discriminant validity requires that a measure does not correlate too highly with other measures from which that measure is considered to differ. If the correlations are too close, this means that the measure does not actually capture a distinct trait.

Construct validity is usually examined using a number of statistical analyses, such as exploratory factor analysis (EFA) or confirmatory factor analysis (CFA) (Goodhue, 1998). Exploratory factor

analysis allows the data to decide which items load on which factors, while CFA allows the researcher to specify the general structure of the loading and CFA tests the fit of that structure (Goodhue, 1998). In the present study, convergent and discriminant (divergent) validity were assessed by using CFA, because CFA procedures are commonly used when there is some background knowledge of the underlying latent variable structure (Byrne, 2001) and the focus is on how and the extent to which the observed variables are linked to their underlying latent factors. The procedures of assessing convergent and discriminant (divergent) validity will be discussed further in the next sub-section. The results of convergent and discriminant validity are presented in Chapter 7 (Section 7.3, Tables 7.7 and 7.8, p: 254 and 256 respectively).

6.4.4.4 Structural Equation Modelling

Structural equation modelling (SEM) or covariance structure analysis refers to a family of related procedures whose goals are to explain patterns of correlations among a set of variables and to account for the variance with the model proposed by the researcher (Kline, 2005). Structural equation modelling has been strongly recommended as the most effective analytical strategy by many authors (Hair et al., 2006; Byrne, 2001) because it is particularly useful in testing theories (the conceptual theory in the present study included) that consist of multiple equations involving dependence relationships (Hair et al., 2006). SEM also enables researchers to assess both measurement properties and examine the theoretical relationships in one technique. Therefore, SEM was used as the main data analysis technique in the present study.

SEM is generally used for one of three purposes (Joreskog & Sorbom, 1993): to confirm a model, to test alternative models, or to modify models that do not initially fit the data. Most researchers (the current researcher included) use SEM primarily for model modification purposes (Byrne, 2001). That is, researchers first test a proposed model; if the model does not fit the data well (which usually happens), researchers refine and modify the model's parameters. Modification is usually guided by conceptual and statistical criteria.

SEM is a priori and entails researchers creating models. Models consist of observed and latent variables; relationships between the variables are specified, based on findings from prior research. Structural or hybrid models (Kline, 2005) include both a measurement model and a structural model. The measurement model consists of indicator variables and the latent constructs that the indicators are hypothesized to measure. Measurement models are evaluated by CFA procedures, where the factors are assumed to co-vary with each other. The structural model specifies the relationships between the constructs.

One-step versus Two-step SEM approaches: In two-step SEM process, a measurement model will be examined and finalised before the analysis turns to the structural model. Once a satisfactory measurement model is obtained, the second step is to test the structural theory. On the other hand, the one-step approach provides only one test of fit and validity. This means that it does not separate the measurement model assessment from the structural model assessment (Hair et al., 2006). Hair et al. (2006) state that most of the researchers recommend separate testing of

the measurement model using a two-step approach as essential, because valid structural theory tests cannot be conducted with bad measures. A valid measurement model is very important to be obtained because with poor measures, researchers will not know what the constructs truly mean (Hair et al., 2006). As a result, the present study applied a two-step SEM approach.

*Estimation method***:** SEM programs include several estimation procedures. The most widely used procedure (and the default option for most of the programs) is maximum likelihood (ML) estimation. Other procedures, used when the variables are not multivariate normal, include generalized least squares and unweighted least squares estimation. Given that the assumptions of independence of observations, multivariate normality of the endogenous variables, and independence of the exogenous variables and its disturbances are fulfilled, ML estimation is often preferred (Kline, 2005).

*Model evaluation***:** Evaluation of a model's adequacy involves several criteria, some of which concern the model as a whole and some of which relate to the fit of the individual parameters (Byrne, 2001). Accordingly, in assessing the fit of the proposed model, criteria that bear on the adequacy of the model as a whole and the model's individual parameters are reported.

To assess overall model fit, or how well the model explains the data, the chi-square statistic and several indices were used to assess the fit of the measurement model. Because the chi-square statistic is influenced by sample size, the following indices were also reported: the normed Chi-square or the ratio of the chi-square to the degrees of freedom, Comparative Fit Index (CFI),

Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), Expected Cross-Validation Index (ECVI), and Akaike's Information Criterion (AIC). There is still some disagreement as to what constitutes an acceptable NCI value; while some suggest that values of three and below reflect good model fit, others suggest that values of two and below indicate good model fit (Hu & Bentler, 1998). A CFI or TLI value of .95 and above indicates good model fit (Hu & Bentler, 1999). RMSEA values less than .06 indicate good model fit; values less than .08 indicate reasonable fit; while values less than .10 indicate mediocre or poor fit (Brown & Cudeck, 1993). SRMR values less than .08 indicate good model fit (Hu & Bentler, 1998). The ECVI and AIC are information indices and are used for model comparison purposes. These two indices do not have cut-off criteria; generally, the lower the value, the better (i.e., more parsimonious) the model fit. Since these indices are used primarily for model comparison purposes, (although they will be reported in the fit indices tables, in Chapter 7) they will only be referred to in the model comparison in Chapter 7, Section 7.4, p: 257).

In addition to evaluating the model as a whole, the fit of the individual parameters are also reported. The magnitude (usually set at .05) and direction of the path coefficients are checked to see if the indicator variables load on to their respective latent constructs or if the coefficients are consistent with the hypotheses (Byrne, 2001).

In the present study, the proposed model was assessed, as mentioned before, using the two-step procedure. First, the measurement model was tested using CFA. All latent constructs were

allowed to co-vary. The fit of the measurement model was assessed using the Chi-square statistic, the normed Chi-square (NCI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), After adequate fit of the measurement model was established, the reliability and the convergent and discriminant validity of the constructs were then assessed. As mentioned before, three techniques, namely Cronbach's alpha, the composite reliability, construct reliability were tested in order to assess the reliability of the measures. With regards, to convergent validity, constructs have convergent validity when the standardized factor loadings are above .50 and are statistically significant and the squared multiple correlations are above .50. Moreover, as suggested by Kline (2005) and Fornell and Larcker (1981), discriminant validity was assessed by comparing the squared correlations (between the constructs) and the average variance extracted for a construct. Constructs have discriminant validity when the squared correlations are lower than the average variance extracted for a construct.

After adequate fit of the measurement model and the reliability and validity of the measures were all established, the fit of the structural model was assessed. The magnitude and direction of the path coefficients were examined; statistical significance was specified at the usual .05 criterion. The fit of the structural model was assessed using the Chi-square statistic, NCI, CFI, TLI, RMSEA and SRMR.

6.5 Ethical Issues

Ethics refers to the appropriateness of researchers' behaviour regarding the rights of those who become the subjects of their research or are affected by it (Saunders et al., 2007). Neuman (2003) defines ethics as what is or is not legal to do or what moral research procedures involve. Ethical concerns should be taken into consideration in all stages of the research process. It relates to questions about how researchers formulate and clarify their research topics, design their research and gain access, collect data, process and store their data, analysis data and write up their research finding in a moral and responsible way (Saunders et al., 2007). In the present study, the researcher took into account all ethical concerns involved in all the stages of the research process. For example, during the distribution of the questionnaire, the respondents were not asked in an unpleasant way to participate, but instead they were encouraged to respond (Zikmund, 2003). In addition, the participants' privacy and protection from misrepresentation was guaranteed (Zikmund, 2003) by explaining for them the purpose of the study and not asking for their names and addresses.

Chapter 6 described the position of the current research in relation to the philosophical assumptions. It also focused on the main parts of the research methodology namely, research design, research strategy and research method. Ethical issues related to the present study were highlighted in the final section. The next chapter presents the findings based on statistical analysis.

7. Statistical Analysis

This chapter presents the results of the data analysis using structural equation modelling (SEM), performed using LISREL version 8.8. The chapter is divided into five sections. In Section 1, the results of the data screening procedures are presented; this section includes the treatment of missing data, checking for outliers, and assessing normality. In Section 2 and 3, the results pertaining to the assessment of the measurement model and the reliability and validity of the measurement constructs are presented respectively using the confirmatory factor analysis method (CFA). In Section 4, the structural model will be evaluated and the hypotheses developed in Chapter 5 are examined. The findings are summarised in the final section.

7.1 Data Screening

The first step in data analysis involves data screening. Odom and Henson (2002) suggest that conducting a statistical analysis without careful inspection of the data may cause erroneous findings and conclusions. Data screening helps researchers detect potential data problems by identifying missing values, possible outliers and other data features (Odom & Henson, 2002). This section sheds light on the data screening results; issues of missing data, outliers, and normality are presented.

7.1.1 Missing Data

In any research, there may be missing data, either on independent variables including demographic variables or on dependent variables. Hair et al. (1998) highlight that there are two main problems caused by missing data. First, it reduces the statistical test's ability to detect a relationship in the dataset. The second problem is that it generates biased parameter estimates. Some researchers, including Cohen and Cohen (1983), claim that 5% or 10% of missing data on one variable is not considered to be large and any treatment may yield similar results (Hair et al, 1998).

There are several approaches to the treatment of missing data. The widely used technique is 'mean substitution'. Through this method, a missing value is replaced with the mean value of that variable based on all valid responses (Hair et al, 1998). The present study utilised mean substitution for treating the missing data in the 10 constructs. However, for the demographic variables, the missing data was not substituted and remained as is, as recommended by previous researchers. This is because demographic variables deal with personal information and should be respected.

7.1.2 Outlier Checks

Another issue of data screening is to check for outliers. Outliers are extreme data points that are distinctly different from other observations in the dataset (Kline, 2005) and may affect the results of statistical tests. In the present study, composites were created for the main study constructs. Behavioural intent was then regressed on all the other predictors;

Mahalanobis D^2 values were requested to determine which cases were outliers. Cases whose D^2 values were statistically significant at .001 were considered as outliers (Tabachnick & Fidell, 1989). The following cases had significance values less than .001 and were deleted from subsequent analyses: 16, 65, 66, 130, 155, 171, 173, 193, 221, and 222. Refer to Appendix A for the actual D^2 values and p-values.

7.1.3 Normality

As highlighted in Chapter 6 (Section 6.4.4.1, p: 217), data normality is an important assumption when using structural equation modelling. Hair et al. (1998) refer to normality as the 'shape of the data distribution or an individual metric variable and its correspondence to the normal distribution, which is the benchmark for statistical methods' (p: 70). Normality consists of two types: univariate normality and multivariate normality. Univariate normality refers to the distribution of an individual variable and multivariate normality refers to the distribution of two or more variables (Kline, 2005). According to Kline, multivariate normality can be assumed when the univariate distributions are normal and the distribution of any pair of variables is bivariate normal. Kline further points out that because it is impractical to examine all joint distributions, examining univariate distributions will usually allow one to detect instances of non-normality.

In the present study, univariate normality was identified by assessing skewness and kurtosis of the study variables using the SPSS program. The results of the normality checks for the study variables are shown in Table 7.1. Note that all items were scored such that a higher

mean score indicated an increase in the variable being measured (i.e. high scores indicated an increase in usefulness, ease of use, intentions, trust, bank trustworthiness, and structural assurance). Thus, items that were stated in the negative were coded in reverse to reflect this. According to Kline, skew indices above three indicate non-normality. Kurtosis values between 10 and 20 also indicate non-normality. The findings in Table 8.1 indicate that all but six of the variables (i.e. PBTI1, PBTI2, PBTB1, PBTB2, PBTB3 and TTFIQC2) had skew indices below three; all kurtosis indices were below 10. Because the variables were positively skewed, they were transformed using a square root transformation (as suggested by Judd & McClelland, 1989). The skew indices of the transformed variables were less than three (i.e. indices ranged from .28 to 1.96). Multivariate normality was assessed via the SPSS program. The normal probability plot revealed that the standardized residuals were distributed normally. As shown in Figure 7.1, the points were clustered towards the line – thus indicating multivariate normality.

Table 7.1: Univariate Normality Assessment for Study Variables (N = 390)

Variable	Mean	SD	Skew	Index	Kurt	Index
PU1	3.09	1.29	.20	1.59	-1.23	-4.96
PU2	3.20	1.23	.11	.86	-1.15	-4.62
PU3	3.11	1.24	.17	1.33	-1.10	-4.45
PU4	3.03	1.23	.27	2.15	-.95	-3.83
PU5	3.23	1.22	.03	.21	-1.04	-4.19
PEU1	3.14	1.24	.06	.50	-.99	-4.03
PEU2	2.92	1.13	.23	1.82	-.62	-2.53
PEU3	3.23	1.22	.03	.28	-1.06	-4.27
PEU4	3.15	1.23	.05	.43	-.99	-3.99
PEU5	2.92	1.12	.27	2.15	-.52	-2.12
BI1	3.21	1.18	-.08	-.65	-.85	-3.45
BI2	3.21	1.18	-.07	-.54	-.87	-3.53
BI3	3.17	1.17	.05	.37	-.89	-3.60
BI4	3.17	1.19	-.07	-.59	-.86	-3.48

Note. *SE* for skewness = .12; *SE* for kurtosis = .25.

Table 7.1: Normality Assessment for Study Variables (N = 390) (Continued)

Variable	Mean	SD	Skew	Index	Kurt	Index
PT1	2.82	1.16	.22	1.73	-.67	-2.73
PT2	2.77	1.17	.33	2.67	-.72	-2.94
PT3	2.86	1.16	.21	1.71	-.69	-2.82
PR1	2.80	1.14	.26	2.06	-.63	-2.58
PR2	2.81	1.17	.25	2.03	-.80	-3.26
PR3	2.88	1.27	.30	2.37	-.96	-3.86
PSIB1	3.21	1.21	.20	1.62	-1.06	-4.30
PSIB2	3.16	1.26	.26	2.05	-1.18	-4.76
PSIB3	2.98	1.11	.33	2.63	-.72	-2.93
PSIB4	2.97	1.11	.33	2.62	-.69	-2.82
PBTA1	2.99	1.10	.36	2.90	-.69	-2.82
PBTA2	2.96	1.10	.35	2.82	-.69	-2.82
PBTA3	2.94	1.13	.31	2.50	-.71	-2.84
PBTA4	2.96	1.11	.33	2.66	-.68	-2.72
PBTI1	2.95	1.09	.37	2.98	-.62	-2.48
PBTI2	2.89	1.11	.43	3.47	-.58	-2.32
PBTI3	2.92	1.09	.32	2.58	-.59	-2.36

Note. *SE* for skewness = .12; *SE* for kurtosis = .25.

Table 7.1: Normality Assessment for Study Variables (N = 390) (Continued)

Variable	Mean	SD	Skew	Index	Kurt	Index
PBTB1	2.92	1.08	.41	3.31	-.60	-2.40
PBTB2	2.94	1.13	.41	3.31	-.60	-2.40
PBTB3	2.94	1.13	.41	3.31	-.60	-2.40
TTFIQR1	2.84	1.09	.35	2.80	-.57	-2.28
TTFIQR2	2.84	1.08	.36	2.86	-.56	-2.24
TTFIQA1	2.78	1.08	.30	2.37	-.66	-2.68
TTFIQA2	2.76	1.76	.29	2.36	-.67	-2.71
TTFIQC1	2.83	1.09	.35	2.80	-.59	-2.36
TTFIQC2	2.84	1.10	.40	3.23	-.59	-2.36
TTFSVL1	2.82	1.09	.36	2.86	-.59	-2.36
TTFSVL2	2.80	1.08	.35	2.80	-.56	-2.36
TTFSVM1	2.78	1.09	.30	2.37	-.67	-2.71
TTFSVM2	3.12	1.06	-.13	1.05	-.61	-2.47
TTFSVP1	3.13	1.04	-.12	-.98	-.58	-2.32
TTFSVP2	3.10	1.06	-.12	-.98	-.60	-2.40

Note. *SE* for skewness = .12; *SE* for kurtosis = .25.

Table 7.1: Normality Assessment for Study Variables (N = 390) (Continued)

Variable	Mean	SD	Skew	Index	Kurt	Index
TTFSVC1	3.13	1.06	-.14	-1.09	-.63	-2.57
TTFSVC2	3.17	1.07	-.22	-1.77	-.69	-2.76
TTFSR1	3.04	1.04	.01	.08	-.62	-2.52
TTFSR2	3.05	1.05	.01	.11	-.64	-2.61
TTFSR3	3.03	1.04	.02	.17	-.60	-2.45
TTFSR4	3.02	1.04	.22	1.78	-.46	-1.90
TTFSR5	3.11	1.06	-.12	-.93	-.62	-2.54
TTFAC1	3.00	1.20	.22	1.75	-.93	-3.77
TTFAC2	3.02	1.20	.18	1.42	-.95	-3.85
TTFAC3	2.99	1.19	.23	1.81	-.92	-3.74
TTFAC4	2.98	1.20	.22	1.75	-.93	-3.74

Note. *SE* for skewness = .12; *SE* for kurtosis = .2
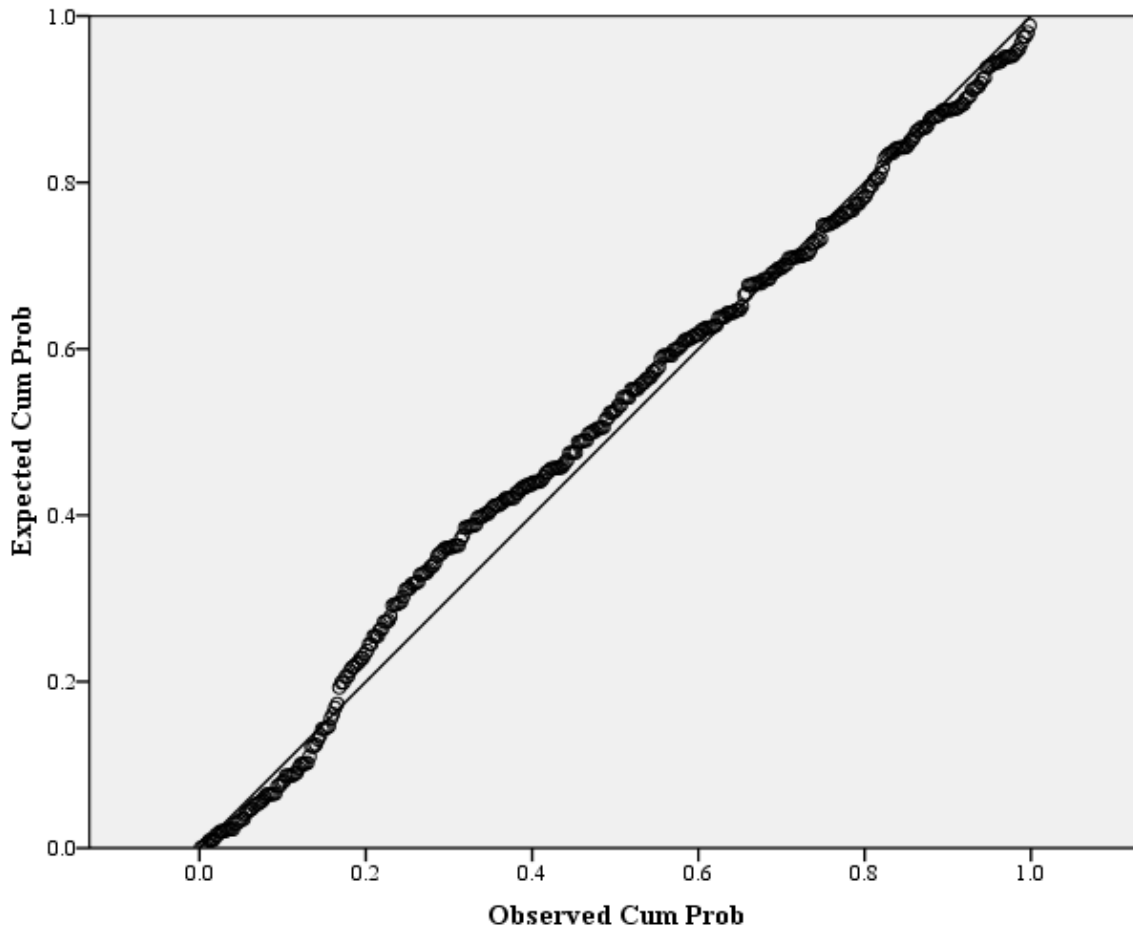
Figure7. 1: Normal P-P Plot of regression standardized residuals for the behavioural intention model.

7.2 Assessment of the Measurement Model

A confirmatory factor analysis (CFA) was conducted to assess the fit of the measurement model. The chi-square statistic and several indices were used to assess the fit of the measurement model. Because the chi-square statistic is influenced by sample size, the following indices were also reported: the Normed Chi-square Index (NCI) or the ratio of the chi-square to the degrees of freedom, Comparative Fit Index (CFI), Tucker-Lewis Index

(TLI), Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), Expected Cross-Validation Index (ECVI), and Akaike's Information Criterion (AIC).

There is still some disagreement as to what constitutes an acceptable NCI value; while some suggest that values of three and below reflect good model fit, others suggest that values of two and below indicate good model fit (Hu & Bentler, 1999). A CFI or TLI value of .95 and above indicates good model fit (Hu & Bentler, 1999). RMSEA values less than .06 indicate good model fit; values less than .08 indicate reasonable fit; while values less than .10 indicate mediocre or poor fit (Brown & Cudeck, 1993). SRMR values less than .08 indicate good model fit (Hu & Bentler, 1999). The ECVI and AIC are information indices and are used for model comparison purposes. These two indices do not have cut-off criteria; generally, the lower the value, the better (i.e., more parsimonious) the model fit. Since these indices are used primarily for model comparison purposes, (although they will be reported in the fit indices tables) they will only be referred to in the model comparison in section 7.4.

7.2.1 Proposed Model
A non-positive definite matrix resulted when the proposed model was tested. A non-positive definite matrices is one in which there is linear dependency between the variables (Kline, 2005). In the present study, one item had a perfect negative correlation with another item on the same scales (PBTB1 and PBTB2). To remove the linear dependency, PBTB1

was removed from the item pool. This action resolved the problem of linear dependency and resulted in a matrix that was positive definite.

7.2.2 Revised Measurement Model

The revised measurement model did not include the item that created a singular matrix. The fit indices for the revised measurement model are summarized in Table 7.2. This model did not fit the data well: CFI and TLI were below the acceptable criterion of .95, while the RMSEA and the SRMR were higher than the acceptable benchmark (Hu & Bentler, 1998).

Thus, the measurement model was modified based on three criteria, applied in the following order. First, only indicator variables with standardized factor loadings above.50 were retained (Hair, et al., 2006). Second, indicator variables with high modification indices (MI) were deleted, as the high MI was an indication that the variables were cross-loading onto other constructs (Byrne, 2001). Third, remaining items were deleted if the modification indices revealed substantial amounts of correlated errors between two items (Byrne, 2001). These criteria were employed so that each of the resulting items would have high and unequivocal loadings on a single latent construct, and the random measurement error for each item would be independent of the error for other items.

The item deletion criteria based on modification indices were applied in an iterative procedure, so that only one item at a time was deleted. Deleting multiple items based on the results on one analysis might produce misleading results, since the parameter estimated

and modification indices can be altered by the deletion of items (Bollen, 1989). Illustratively, if item X1 and X2 have the highest and second highest modification indices in a set of N items, it does not follow that X2 will have the highest modification index out of N-1 items following the deletion of item X1. In the set of N-1 items, another item might have a higher modification index than X2. Accordingly, the model was re-estimated following the deletion of each item, and the results.

The items that were deleted, and the reasons for their deletion, are documented in Table 7.3. For items that were removed due to modification indices, the magnitude of the modification index for the deleted item is shown. The justification for removing items that cross-loaded on more than one factor may be clearer if the magnitude of the secondary loading on an additional factor is considered. Each of the items that were removed due to large cross-loadings would have had a large loading on a second factor if the model were modified to allow for such secondary loadings. The standardized loadings on a secondary factor that would have resulted from allowing more than one factor loading ranged from .44 (PEU2) to .95 (TTFSR3).

The measurement model exhibited better fit as items were deleted. After deleting items with weak loadings, one item at a time, fit indices showed modest increases (NFI = 91; CFI = .92; RMSEA = .12). Fit indices in this range suggest that further work needs to be undertaken to improve the fit of the model (Hu & Bentler, 1998). The removal of items that loaded on two or more dimensions, one at a time, resulted in a marked increase in model fit

(NFI = .94; CFI = .95; RMSEA = .095). Increases in model fit are to be expected, because the present model follows a "pure-factor" approach, in which items are allowed to load on one factor, and all other potential loadings are constrained to zero. When items actually load on more than one factor, the "pure factor" constraint implies that loadings that are substantially greater than zero are constrained to be zero, which contributes to lack of fit. The level of fit obtained by removing items with split loadings did not quite meet the standards for model fit established by Hu and Bentler (1998).   The remaining items exhibited small modification indices, suggesting that further deletion of items would not contribute to model fit. By contrast, there were substantial modification indices for error correlations between items on the same dimension. When correlated errors were found between pairs of items, the member of the pair with the weaker factor loading was deleted. Because the correlated errors were found between items on the same dimension, the application of this rule removed correlated error in a way that also increases the homogeneity and consistency of the remaining items. Items with correlated errors were evaluated and deleted one at a time.   One item from the item pair with the largest modification index was removed first, and then the measurement model was tested with the remaining items. The deletion of two items with correlated error resulted in a model with adequate fit, as describe in the next section.

Table 7.2: Chi-square Statistic and Fit Indices for the Revised Measurement Model

Index	Value
Chi-square	22070.22
Degrees of freedom	1824
Sig.	.00
Normed chi-square	12.1
Tucker-Lewis index (TLI) (NNFI)	.86
Comparative fit index (CFI)	.87
Root mean squared error (RMSEA)	.15
Lower bound of 90 percent confidence interval	.15
Upper bound of 90 percent confidence interval	.15
Standardized root mean squared residual (SRMR)	.25
Expected cross-validation index (ECVI)	47.67
Akaike's information criterion (AIC)	155108.50

Table 7.3: Items Deleted from the Measurement Model and Reasons for Item Deletion

Item	Loading/MI *
Standardized loading below .50	Loading
TTFIQR2	.16
TTFIQA1	.32
TTFSVL1	.06
MI for loading onto another construct high	MI
TTFSR3	351
BI3	134
TTFSVL2	107
TTFSVM1	142
PEU2	107
MI for error covariance with another item high	
PBTI1-PBTI3 (DROPPED PBTI3)	339
PU2-PU5 (DROP PU2)	121

* Standardized factor loadings are displayed for items that were deleted due to low loadings;

Modification Indices are shown for items that loaded on multiple factors and for items with

correlated error terms.

7.2.3 Final Measurement Model

The statistics and fit indices for the revised measurement model are summarized in Table 7.4. The findings reveal that the final measurement model fit the data well: the normed chi-square was low at 2.63, the CFI and TLI were above the acceptable criterion of .95, the RMSEA and the SRMR were lower than the recommended threshold values (Hu & Bentler, 1998), indicating good model fit.

Table 7.4: Chi-square Statistics and Fit Indices for the Final Measurement Model

Index	Value
Chi-square	1710.14
Degrees of freedom	647
Sig.	.001
Normed chi-square	2.64
Tucker-Lewis index (TLI)	.98
Comparative fit index (CFI)	.98
Root mean squared error (RMSEA)	.066
Lower bound of 90 percent confidence interval	.062
Upper bound of 90 percent confidence interval	.069
Standardized root mean squared residual (SRMR)	.042
Expected cross-validation index (ECVI)	5.17
Akaike's information criterion (AIC)	1976

The standardized loadings of items on latent constructs is shown in Table 7.5. All item loadings were significant at $p < .001$. This table shows how the latent constructs of interest in this study were represented in the measurement model. The results show that each of the latent constructs was represented by three or more items that had strong and unequivocal loadings on the target construct that they were intended to measure.

Table 7.5: Standardized Item Loadings for the Final Measurement Model

Variable	Standardized Factor Loading	t-statistic
Perceived Usefulness		
PU1	.81	****
PU3	.73	13.77***
PU4	.80	17.05***
PU5	.82	19.44***
Perceived Ease of Use		
PEU1	.81	****
PEU3	.85	15.94***
PEU4	.78	14.82***
PEU5	.79	14.65***
Behavioural Intention		
BI1	.73	20.20***
BI2	.71	****
BI4	.72	18.55***
Perceived Trust		
PT1	.74	****
PT2	.78	22.62***
PT3	.75	19.77***

Table 7.5: Standardized Item Loadings for the Final Measurement Model (Continued)

Variable	Standardized Factor Loading	t-statistic
Perceived Risk		
PR1	.72	****
PR2	.72	10.45***
PR3	.71	9.25***
Perceived Structural Assurance		
PSIB1	.81	19.95***
PSIB2	.80	20.33***
PSIB3	.74	****
PSIB4	.72	17.45***
Perceived Bank Trustworthiness		
PBTA1	.75	13.87***
PBTA2	.80	15.09***
PBTA3	.72	13.28***
PBTA4	.71	13.03***
PBTI1	.74	13.67***
PBTI2	.71	13.08***
PBTB2	.74	13.63***
PBTB3	.71	****

Table 7.5: Standardized Item Loadings for the Final Measurement Model (Continued)

Variable	Standardized Factor Loading	t-statistics
TTF Information Quality		
TTFIQR1	.72	15.64***
TTFIQC1	.81	19.23***
TTFIQC2	.76	17.65***
TTFIQA2	.74	****
ITF Service Visibility		
TTTFSVM2	.71	20.49***
TTFSVP1	.72	20.68***
TTFSVP2	.84	26.72***
TTFSVC1	.74	21.98***
TTFSVC2	.72	****

Table 7.5: Standardized Item Loadings for the Final Measurement Model (Continued)

Variable	Standardized Factor Loading	t-statistics
TTF System Reliability		
TTFSR1	.84	26.72***
TTFSR2	.92	35.18***
TTFSR4	.84	****
TTFSR5	.71	20.77***
TTF Accessibility		
AC1	.74	****
AC2	.77	16.24***
AC3	.83	17.72***
AC4	.78	16.39***

Note *** $p < .001$; **** Variable fixed to scale latent construct

7.3 Reliability and Validity of Constructs

The reliability and validity of the latent constructs was examined in the final measurement model. Cronbach's alpha, the composite reliability, and the average variance extracted were used to measure the reliability of the constructs. Constructs are deemed reliable when Cronbach's alpha is at least .70 (Nunnally & Bernstein, 1994), the composite reliability exceeds the criterion of .70 (Hair, et al., 1988), and the average variance extracted is above .50 (Bagozzi, 1994). As revealed in Table 7.6, alphas ranged from .73 to .88. The composite reliabilities ranged from .76 to .90. The values of the average variance extracted ranged from .51 to .69. All constructs exceeded the criteria for reliability; thus, all were reliable.

Table 7.6: Reliability Indices for the Model Constructs (N = 390)

Construct	Cronbach's Alpha	Composite Reliability[1]	Average Variance Extracted[2]
Perceived usefulness (4)	.82	.87	.62
Perceived ease of use (4)	.80	.88	.65
Behavioural intention (3)	.74	.76	.52
Perceived trust (3)	.74	.80	.57
Perceived risk (3)	.73	.76	.51
Perceived structural assurance (4)	.76	.85	.59
Perceived bank trustworthiness (8)	.88	.90	.54
Task-technology fit			
Information quality (4)	.75	.84	.57
Service visibility (5)	.84	.86	.55
System Reliability (4)	.79	.89	.69
Accessibility (4)	.81	.86	.60

[1] Composite reliability = (square of summation of factor loadings)/[(square of summation of factor loadings) + (summation of error)].

[2] Average variance extracted = (summation of the square of factor loadings)/[(summation of the square of factor loadings) + (summation of error)].

Constructs have convergent validity when the standardized factor loadings are above .50 and are statistically significant and the squared multiple correlations are above .50. As

shown in Table 7.7, all the standardized factor loadings were above .50; similarly, all squared multiple correlations were above .50. Therefore, the constructs demonstrated convergent validity.

Discriminant validity was assessed, as suggested by Kline (2005) and Fornell & Larcker (1981), by comparing the squared correlations (between the constructs) and the average variance extracted for a construct. Constructs have discriminant validity when the squared correlations are lower than the average variance extracted for a construct. The squared correlations vis-à-vis the average variance extracted for each of the constructs is displayed in Table 7.8. All the squared correlations except for perceived bank trustworthiness were lower than the average variance extracted values. Accordingly, all constructs except perceived bank trustworthiness demonstrated discriminant validity. It can be seen from Table 7.8 that perceived bank trustworthinss does not have discriminant validity. This might be potentially a troublesome measure, especially in the light of the earlier requirement to remove two items (PBTB1 and PBTB2) from this scale due to linear dependency. The researcher, in the present study, decided to keep the items that caused low discriminant validity because deleting these items results in one dimension of perceived bank trustworthiness (namely benevolence) being represented by only one item, which might result in identification difficulties.

In summary, the requirements of reliability, convergent validity and discriminant validity were satisfied. The items represented the concepts underlying the latent constructs, in the sense that items had a unequivocal and high relationship with a single underlying construct that could be differentiated empirically from the other constructs in the model.

Table 7.7: Convergent Validity Results for the Final Measurement Model (N = 390)

Variable	Standardized Factor Loading[1]	Squared Multiple Correlation
Perceived Usefulness		
PU1	.81	.66
PU3	.73	.53
PU4	.80	.64
PU5	.82	.67
Perceived Ease of Use		
PEU1	.81	.66
PEU3	.85	.72
PEU4	.78	.61
PEU5	.79	.62
Behavioural Intention		
BI1	.73	.53
BI2	.71	.51
BI4	.72	.52
Perceived Trust		
PT1	.74	.55
PT2	.78	.61
PT3	.75	.56
Perceived Risk		
PR1	.72	.52
PR2	.72	.52
PR3	.71	.50

[1] Factor loadings were statistically significant at $p < .001$

Table 7.7: Convergent Validity Results for the Final Measurement Model (N = 390)
 (Continued)

Variable	Standardized Factor Loading[1]	Squared Multiple Correlation
Perceived Structural Assurance		
PSIB1	.81	.66
PSIB2	.80	.64
PSIB3	.74	.55
PSIB4	.72	.52
Perceived Bank Trustworthiness		
PBTA1	.75	.56
PBTA2	.80	.64
PBTA3	.72	.54
PBTA4	.71	.52
PBTI1	.74	.55
PBTI2	.71	.504
PBTB2	.74	.55
PBTB3	.71	.51
TTF Information Quality		
TTFIQR1	.72	.52
TTFIQC1	.81	.66
TTFIQC2	.76	.58
TTFIQA2	.74	.55
ITF Service Visibility		
TTTFSVM2	.71	.51
TTFSVP1	.72	.53
TTFSVP2	.84	.70
TTFSVC1	.74	.55
TTFSVC2	.72	.52

[1] Factor loadings were statistically significant at $p < .001$.

Table 7.7: Convergent Validity Results for the Final Measurement Model (N = 390)

(Continued)

Variable	Standardized Factor Loading[1]	Squared Multiple Correlation
TTF System Reliability		
TTFSR1	.84	.70
TTFSR2	.92	.85
TTFSR4	.84	.70
TTFSR5	.71	.504
TTF Accessibility		
AC1	.74	.55
AC2	.77	.59
AC3	.83	.69
AC4	.78	.61

[1] Factor loadings were statistically significant at $p < .001$.

Table 7.8: Discriminant Validity Results from Confirmatory Factor Analysis (N = 390)

Construct	1	2	3	4	5	6	7	8	9	10	11
1 Perceived Usefulness	.62										
2 Perceived Ease of Use	.32	.65									
3 Behavioural Intention	.05	.06	.52								
4 Perceived Trust	.28	.20	.03	.57							
5 Perceived Risk	.35	.40	.02	.36	.51						
6 Perceived Structural Assurance	.35	.23	.03	.20	.37	.59					
7 Perceived Bank Trustworthiness	.53	.35	.04	.30	.64	.64	.54				
8 TTF Information Quality	.14	.33	.19	.20	.11	.03	.17	.57			
9 TTF Service Visibility	.12	.08	.02	.17	.19	.19	.26	.09	.55		
10 TTF System Reliability	.20	.13	.01	.07	.26	.21	.31	.17	.11	.69	
11 TTF Accessibility	.38	.24	.00	.16	.27	.27	.41	.21	.12	.14	.60

Note. The values of the average variance extracted are on the diagonal; all other entries are the squared correlations

7.4 Structural Model Evaluation

Three alternative structural models, representing three competing theoretical perspectives, were compared. These models considered the incremental contributions of adding the TFF model to TAM, and then the contribution of adding Trust to the model selected in the preceding stage. Specifically, the following three competing models were tested:

Model 1: The TAM model shapes behavioural intentions in isolation. TFF constructs affect one another, but TFF constructs do not affect the TAM constructs. Similarly, the Trust constructs affect one another, but do not affect the TAM constructs. In this model, perceived ease of use is an exogenous variable predicting perceived usefulness and behavioural intentions directly, and perceived usefulness affect behavioural intentions. The task-technology fit constructs and the trust model constructs each form a system of variables that are unrelated to the technology acceptance model (TAM)

Model 2: Pathways from the TFF constructs to TAM constructs are added to Model 1. These paths are: service visibility→behavioural intentions, system reliability→behavioural intentions, information quality→perceived ease of use, service visibility→ perceived ease of use, system reliability→perceived ease of use, accessibility→perceived ease of use. No pathways from Trust constructs to TAM constructs are added. Model 1 is nested in Model 2, in the sense that Model 1 constrained the constructs of TFF to TAM pathways to zero. To evaluate Model 2, the fit of Model 1 and Model 2 is compared. The model (Model 1 or Model 2) which has significantly better in terms of fit, will be chosen for next stage.

Model 3: The pathways from Trust model constructs are added to the model selected

from previous stage. To evaluate Model 3, the fit of Model 3 was compared with the

preceding model (Model 1 or 2). The fit of those models will be examined in order to

determine which is best.

Each model represents a set of pathways that are justified by competing theoretical alternatives.

The comparison of fit indices assesses the contribution of each theoretical perspective to the

explanation of the data. This section will present the results of comparison between competing

models. The following section will present more detailed information concerning the model that

provided the best fit to the data.

The first stage of the analysis compared the fit of Model 1 (isolated TAM) and Model 2 (TAM

plus TFF). The addition of six TFF to TAM paths resulted in an improvement in fit from a X^2

value of 2246.57 (df = 685) for Model 1 to a value of 2095.23 (df = 679) for Model 2. Following

well accepted procedures for comparing the fit of nested models (Byrne, 1998; Bollen, 1989) the

significance of the improvement in fit can be tested by computing the difference in X^2 and

degrees of freedom between models. At six degrees of freedom, the difference of 150.34 in X^2

is statistically significant (p < .001), suggesting that constraining the TFF to TAM pathways to be

zero results in a significant detrioration in model fit. Model 2 also had lower RMSEA, SRMR,

ECVI, and AIC values than model 1. Accordingly, Model 2 (TFF plus TAM) will proceed to the

next stage of competitive model testing.

The next stage of the analysis compared the fit of Model 2 (TAM plus TFF) with Model 3 (TAM, TFF plus Trust model). The addition of three Trust pathways (perceived trust→behavioural intentions, perceived risk→behavioural intentions and perceived trust→perceived ease of use) increased model fit from a X^2 value of 2095.23 (df = 679) to 2085.89 (df = 676). The change in X^2 by 9.44 at 3 degrees of freedom is statistically significant (p < .05), suggesting that constraining the Trust to Model 2 pathways to be zero results in a significantly poorer model fit. Model 3 also had lower SRMR, ECVI, and AIC values than model 2. As a result, the conceptual model (Model 3) developed in the present study emerged as the one that provides the best fit to the data. More detailed information about the conceptual model (Model 3) is presented in the following section. A more comprehensive set of fit indices for each of the three models presented above is shown in Table 8.9. Models 1, 2, and 3 are represented in Figures 7.2 , 7.3 and 7.4, respectively. It is important to highlight that there was only a limited improvement in the conceptual model with the addition of trust developed in the present study. However, the researcher decided to continue including trust in order to test the trust-related hypotheses developed for this particular study.

Table 7.9: Fit Indices for Competing Theoretical Models

Index	Model 1	Model 2	Model 3
Chi-square	2246.57	2095.23	2082.28
Degrees of freedom	685	679	676
Sig.	.001	.001	.01
Normed chi-square	3.28	3.08	3.08
Tucker-Lewis index (TLI)	.97	.97	.97
Comparative fit index (CFI)	.97	.97	.97
Root mean squared error (RMSEA)	.077	.074	.074
Lower bound of 90 percent confidence interval	.074	.070	.070
Upper bound of 90 percent confidence interval	.081	.078	.078
Standardized root mean squared residual (SRMR)	.24	.15	.14
Expected cross-validation index (ECVI)	6.38	6.01	6.00
Akaike's information criterion (AIC)	2437	2297	2292
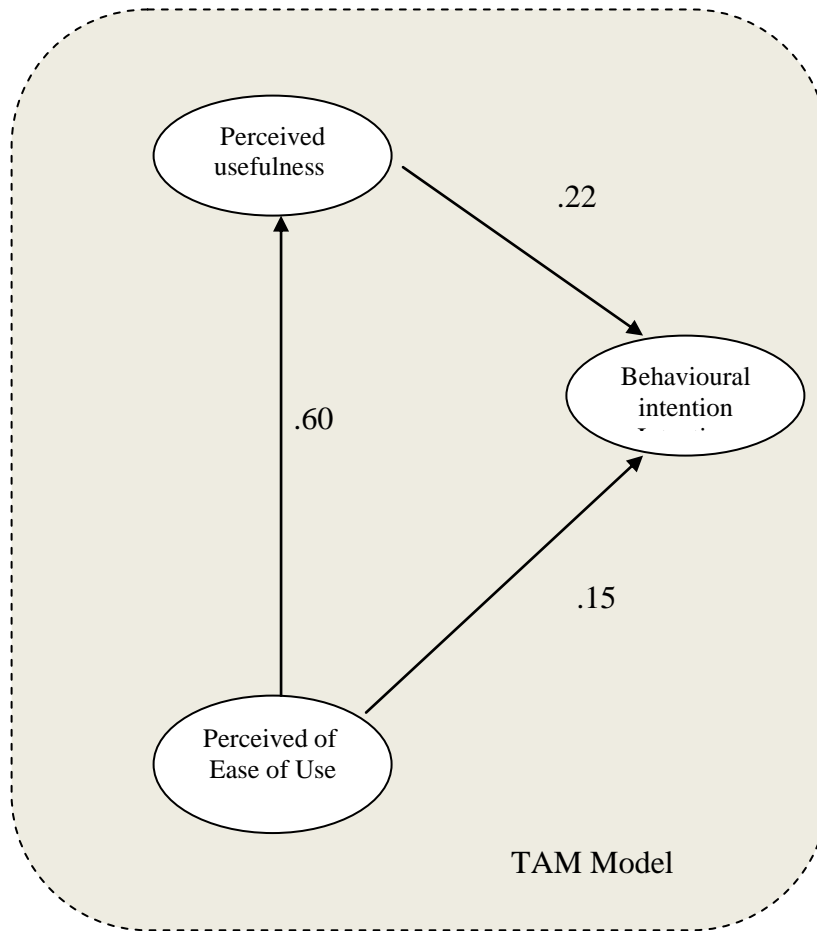
Figure 7.2: Model 1 (TAM)

.
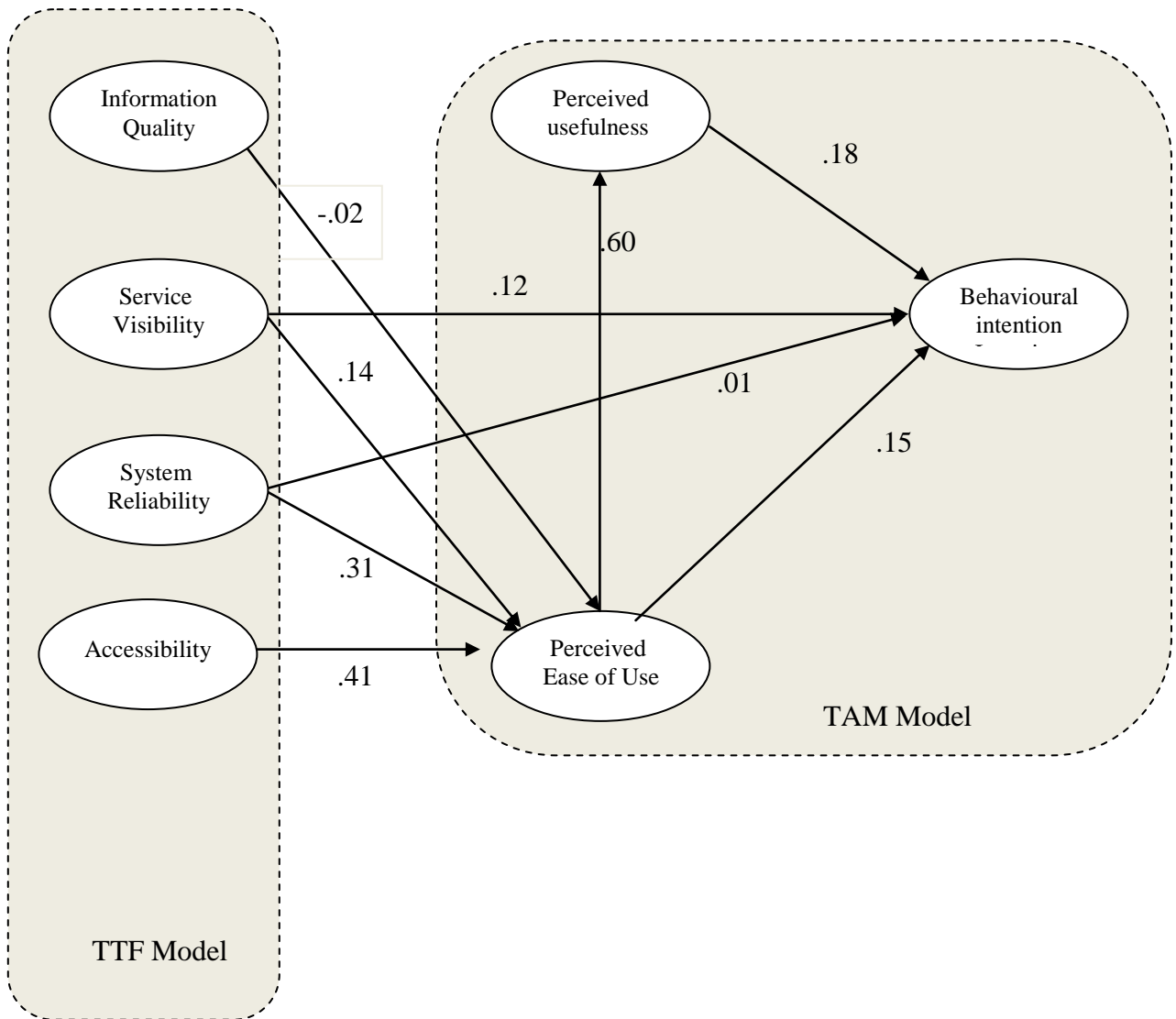
Figure 7.3: Model 2 (TAM Plus TTF Moel)

.
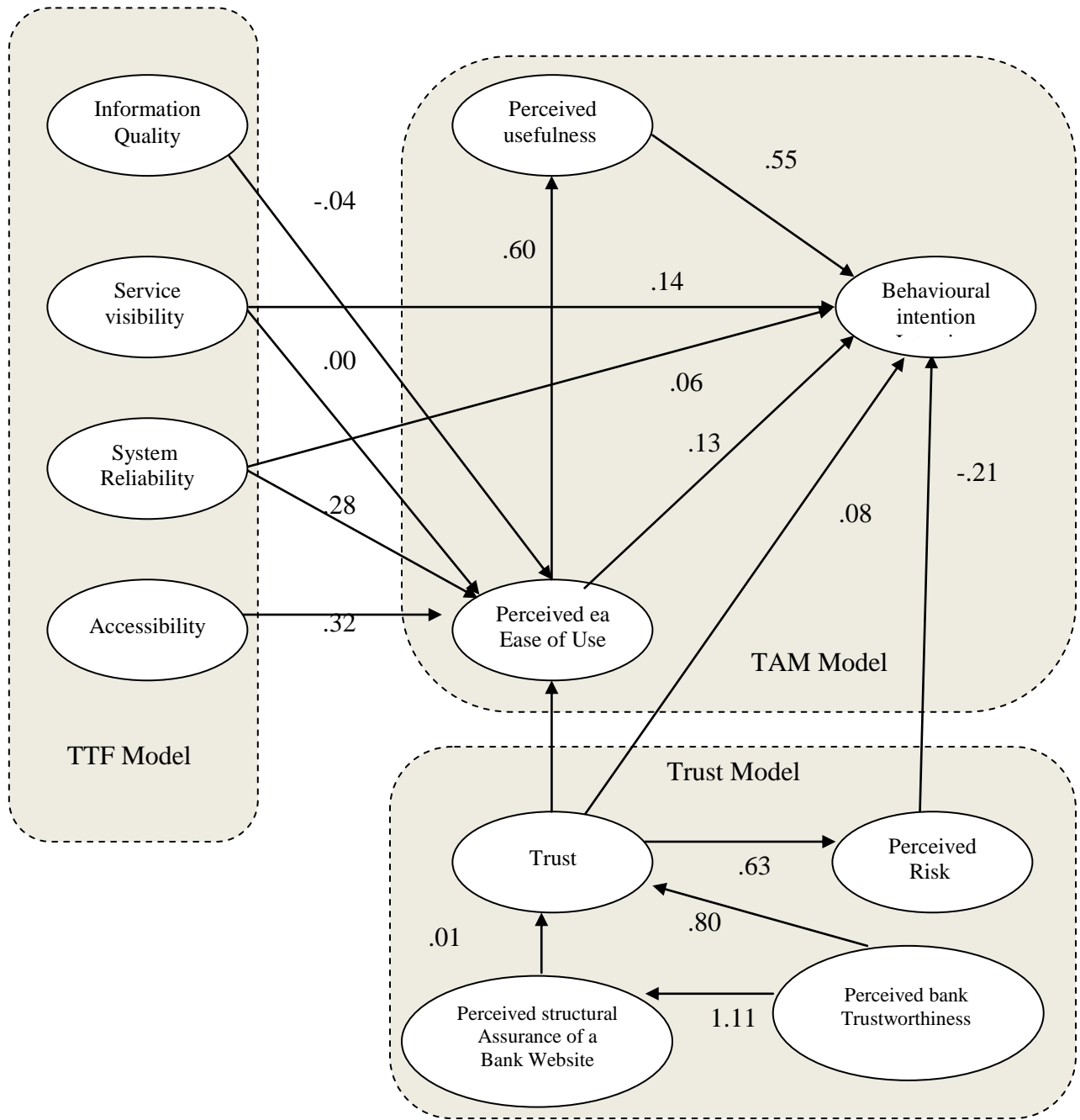
Figure 7.4: Model 3 (TAM and TTF Model, Plus Trust Model)

7.4.1 Proposed Structural Model

The proposed structural model is depicted in Figure 7.5 while the fit statistics and indices are summarized in Table 7.10. The path coefficients, standard errors, and t-values are presented in Table 7.11. The CFI and NFI indices suggest that the proposed model fits the data well, although the normed chi-square was high at 3.08, the RMSEA was in the mediocre range, and the SRMR was above the acceptable benchmark.

The latent constructs in the measurement model were represented in this structural equation model in the following manner. All of the task-technology fit constructs (i.e. information quality, service visibility, system reliability, and accessibility) and bank trustworthiness are entered as exogenous independent variables in the structural equation model. The technology acceptance model constructs (perceived ease of use, perceived usefulness, and behavioural intentions), and the remainder of the trust constructs (perceived structural assurance of a bank website, perceived trustworthiness, and perceived risk) are entered into the model as endogenous variables that are influenced by the exogenous variables. Moreover, the structural model was estimated using the total disaggregation approach in which the loading estimates for the measured items and their error variance terms were fixed and specified to the loading estimates and error variance terms obtained from the CFA model (the measurement model).
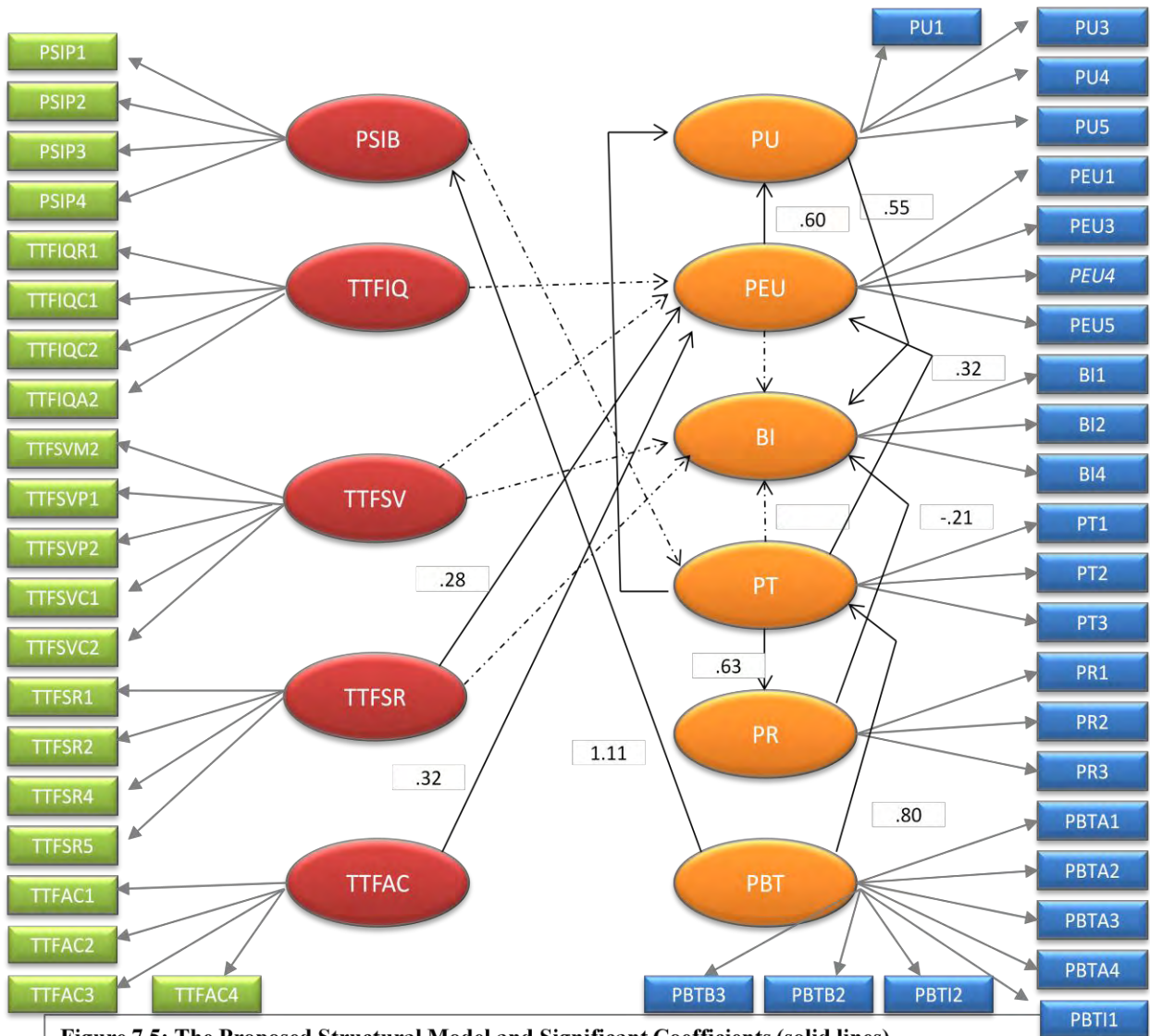
Figure 7.5: The Proposed Structural Model and Significant Coefficients (solid lines)

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Table 7.10: Chi-square Statistic and Fit Indices for Model 3

Index	Value
Chi-square	2082.28
Degrees of freedom	676
Sig.	.01
Normed chi-square	3.08
Tucker-Lewis index (TLI)	.97
Comparative fit index (CFI)	.97
Root mean squared error (RMSEA)	.074
Lower bound of 90 percent confidence interval	.070
Upper bound of 90 percent confidence interval	.078
Standardized root mean squared residual (SRMR)	.14
Expected cross-validation index (ECVI)	6.00
Akaike's information criterion (AIC)	2292

Table 7.11: Maximum Likelihood Estimates for Model 3

Path	B	SE	t
H1 Perceived usefulness to behavioural intention	.55	.28	1.98*
H2 Perceived ease of use to behavioural intention	.13	.10	1.35
H3 Perceived ease of use to perceived usefulness	.60	.04	15.70 ***
H4 Perceived trust to perceived risk	.63	.05	13.27 ***
H5 Perceived risk to behavioural intention	-.21	.07	-3.17 ***
H6 Perceived trust to behavioural intention	.08	.07	1.14
H7 Perceived bank trustworthiness to perceived trust	.80	.12	6.89 ***
H8 Perceived structural assurance to perceived trust	.01	.08	.12
H9 Perceived bank trustworthiness to perceived structural assurance	1.11	.07	15.10 ***
H10 Perceived trust to perceived ease of use	.32	.05	6.29 ***
H11 Service visibility to behavioural intention	.14	.08	1.77
H12 System reliability to behavioural intention	.06	.08	0.68
H13 Information quality to perceived ease of use	-.04	.05	-.76
H14 Service visibility to perceived ease of use	.00	.08	.00
H15 System reliability to perceived ease of use	.28	.08	3.56 ***
H16 Accessibility to perceived ease of use	.32	.05	6.37 ***

$* p < .05.$ $*** p < .001.$

7.4.2 Revised Structural Model

In order to improve the fit of the proposed structural model, the model was revised. Paths that were not statistically significant were deleted (as suggested by Schumacker & Lomax, 2005). Trimming pathways that are not statistically significant is desirable not only for the sake of parsimony, but also for the sake of removing potential suppression effects. Suppression effects occur when a statistically significant relationship between X1 and Y is rendered insignificant when the pathway from X2 and Y is included in the structural model (Bollen, 1989). Suppression typically occurs when X1 does not make a unique contribution to the prediction of Y when X2 is present in the model. For suppression to occur, it is not necessary that X2 have a significant effect on Y (Bollen, 1989).

Non-significant paths were eliminated one step at a time, based upon their effect size and conceptual considerations. After one path was eliminated, the model would be re-estimated with the remaining variables to determine whether any paths that were previously not significant became significant due to the removal of a suppressor variable. The following paths were eliminated in the order indicated:

Step 1: Drop Service Visibility to Perceived Ease of Use.

Step 2: Drop Perceived Structural Assurance to Trust.

Step 3: Drop System Reliability to Behavioural intention.

Step 4: Drop Direct Path from Trust to Behavioural Intentions.

Step 5: Drop Direct Path from Perceived Ease of Use to Behavioural Intentions.

Step 1: No additional pathways became statistically significant when the pathway from Service Visibility to Perceived Ease of Use was constrained to be zero.

Step 2: No additional pathways became statistically significant when the pathway from Structural Assurance to Trust was constrained to be zero.

Step 3: No additional pathways became statistically significant when the pathway from System Reliability to Behavioural Intentions was constrained to be zero.

Step 4: the path from Service Visibility to Behavioural Intentions was significant when the pathway from Trust to Behavioural Intentions was constrained to be zero

Step 5: No additional pathways became statistically significant when the pathway from Perceived Ease of Use to Behavioural Intentions was constrained to be zero.

Following the deletion of these five pathways, the modification indices suggested that further paths could be considered for inclusion in the model. Specifically, noteworthy modification indices were found for the paths shown in Table 7.12. However, the theoretical basis for adding these paths is not clear. Therefore, these paths will not be included to the revised structural model.

Table 7.12 Modification Indices for Non-Hypothesized Paths

Path	MI	Standardized Parameter Change
Accessibility → Behavioural Intentions	154.22	.78
Information Quality → Perceived Trust	145.62	0.69
Accessibility → Structural Assurance	104.61	0.48
Perceived Ease of Use → Structural Assurance	98.05	0.33

The conceptual framework underlying the revised model is shown in Figure 7.6. The fit indices for the Final Revised Model are summarized in Table 7.13. The path coefficients, standard errors, and t-values are presented in Table 7.14, while the squared multiple correlations for each of the endogenous constructs are displayed in Table 7.15.   The deletion of the five pathways discussed above resulted in a modest decrease in X^2 (X^2 = 2078.50; df = 681). The CFI and NFI indices suggest that the revised model fits the data well, the RMSEA was reasonable, and the SRMR was slightly higher than desired.

Table 7.13: Chi-square Statistic and Fit Indices for Final Revised Model

| Index	Value
Chi-square	2078.50
Degrees of freedom	681
Sig.	.001
Normed chi-square	3.07
Tucker-Lewis index (TLI)	.97
Comparative fit index (CFI)	.97
Root mean squared error (RMSEA)	.072
Lower bound of 90 percent confidence interval	.07
Upper bound of 90 percent confidence interval	.079
Standardized root mean squared residual (SRMR)	.14
Expected cross-validation index (ECVI)	5.98
Akaike's information criterion (AIC)	2284.5

Table 7.14: Maximum Likelihood Estimates for Final Revised Model

Path	B	SE	t
H1 Perceived usefulness to behavioural intention	0.42	.07	5.80 ***
H3 Perceived ease of use to perceived usefulness	0.60	.04	15.75 ***
H4 Perceived trust to perceived risk	0.63	.05	13.26 ***
H5 Perceived risk to behavioural intention	-0.16	.05	-3.10 ***
H7 Perceived bank trustworthiness to perceived trust	0.82	.08	10.67 ***
H9 Perceived bank trustworthiness to perceived structural assurance	1.11	.07	15.11 ***
H10 Perceived trust to perceived ease of use	0.32	.05	6.36 ***
H11 Service visibility to behavioural intention	0.17	.08	2.22 **
H13 Information quality to perceived ease of use	-0.04	.05	-0.76
H15 System reliability to perceived ease of use	0.29	.08	3.62 ***
H16 Accessibility to perceived ease of use	0.33	.05	6.48 ***

*$p < .05$. ** $p < .01$. *** $p < .001$.

Table 7.15: Explanatory Power for the Endogenous Constructs in the Final Revised Model

Construct	R^2
Perceived usefulness	0.72
Perceived ease of use	0.39
Behavioural intention	0.25
Perceived trust	0.33
Perceived risk	0.38
Perceived structural assurance	0.64
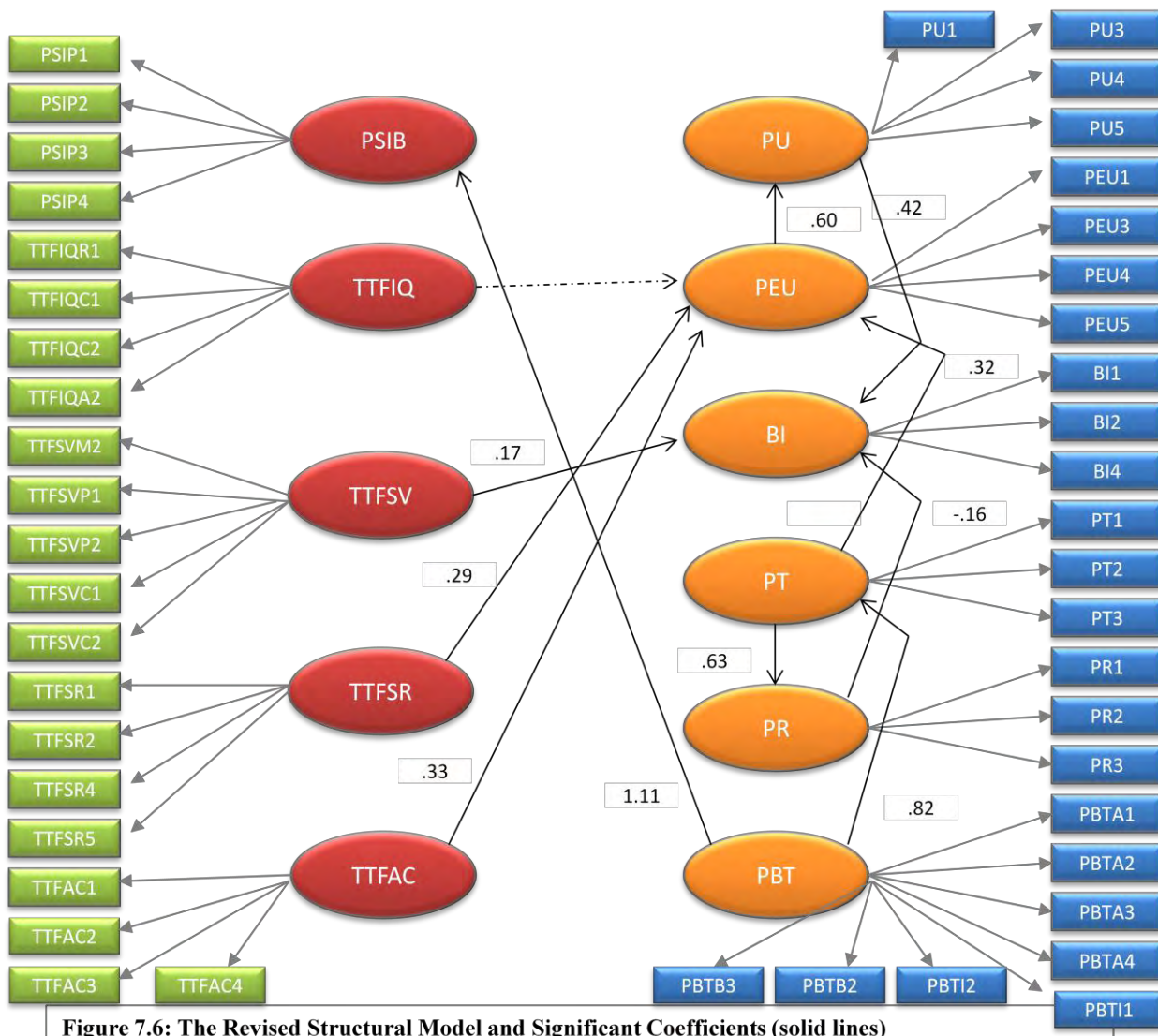
Figure 7.6: The Revised Structural Model and Significant Coefficients (solid lines)

The sixteen hypotheses can now be evaluated with reference to the findings from the revised

structural equation model presented above. The results for the sixteen hypotheses are shown

below. Specific model parameters that support or do not support each hypothesis are cited.

H1. It was hypothesized that perceived usefulness of internet banking would positively influence

the intention to use internet banking services. This hypothesis was supported by the data (B = .42;

$t = 5.80, p < .001$).

H2. It was hypothesized that perceived ease of use of internet banking would positively influence

the intention to use internet banking services. This hypothesis was not supported by the data in

the initial version of Model 3 (B = .13; $t = 1.35$, *NS*). This path was subsequently dropped in the

final revision of Model 3.

H3. It was hypothesized that perceived ease of use of internet banking would positively influence

the perceived usefulness of internet banking. This hypothesis was supported (B = .60; $t = 15.75, p$

$< .001$).

H4. It was hypothesized that higher levels of customer trust in internet banking would reduce

perceived risk of the channel. Note that the risk questions were framed such that a high score

indicated positive opportunities while a low score indicated greater risk. Thus, higher scores

indicated lower perceptions of risk. Accordingly, the findings indicate strong support for this

hypothesis (B = .63; $t = 13.26, p < .001$). The positive and statistically significant coefficient

suggests that the greater the trust in internet banking, the more positive the perceptions for opportunities were.

H5. It was hypothesized that higher levels of perceived risk of internet banking would reduce the intention to use internet banking. This hypothesis was not supported (B = -.16; t = -3.10, p < .05). Although the path coefficient was statistically significant, the direction of the coefficient was negative. As stated above, higher risk scores indicate positive perceptions of opportunity. Since the regression coefficient was negative, the findings suggest that the more positive the perceptions of opportunities were (i.e., the higher the risk score), the lesser the intention to use internet banking. This was counter to what was hypothesized.

H6. It was hypothesized that trust in internet banking would positively influence the intention to use internet banking. In the original version of Model 3, this hypothesis was not supported (B = .08; t = 1.14, *NS*).   This path was subsequently dropped in the final revision of Model 3.

H7. It was hypothesized that perceived trustworthiness of the internet banking website would positively influence customer willingness to place trust in internet banking. This hypothesis was confirmed (B = .82; t = 10.67, p < .001).

H8. It was hypothesized that perceived structural assurance of the internet banking website would positively influence customer willingness to place trust in internet banking. In the original version of Model 3, the findings did not support this hypothesis (B = .01; t = .12, *NS*). This path was dropped in the final revision of the model.

H9. It was hypothesized that perceived trustworthiness of the internet banking website would positively influence perceived structural assurance of the internet banking website. This hypothesis was confirmed (B = .111; t =15.11, $p < .001$).

H10. It was hypothesized that customers' trust in internet banking would positively influence the perceived ease of use of the channel. This hypothesis was supported (B = .32; $t = 6.36$, $p < .001$).

H11. It was hypothesized that service visibility would positively influence the intention to use internet banking. This hypothesis was supported (B = .17; $t = 2.22$, $p < .01$).

H12. It was hypothesized that system reliability would positively influence the intention to use internet banking. In the original version of Model 3, this hypothesis was not supported (B = .06; t = .66, *NS*). This path was dropped in the final revision of the model.

H13. It was hypothesized that information quality would positively influence the perceived ease of use of internet banking. This hypothesis was not supported (B = -.04; $t = -.76$, *NS*).

H14. It was hypothesized that service visibility would positively influence the perceived ease of use of internet banking. In the original version of Model 3, this hypothesis was not supported (B = .00; $t = 0.00$, *NS*). This path was dropped in the final revision of the model.

H15. It was hypothesized that system reliability would positively influence the perceived ease of use of internet banking. This hypothesis was supported (B = .29; $t = 3.62$, $p < .001$).

H16. It was hypothesized that accessibility would positively influence the perceived ease of use of internet banking. This hypothesis was supported (B = .33; $t = 6.37$, $p < .001$).

7.5 Summary of the Findings

The structural model including the TAM and TTF and trust model fit the data best. In this structural model, variance in behavioural intentions was explained primarily by perceived usefulness and one of the task-technology fit dimensions, service visibility. Behavioural intentions were also influenced by perceived risk, although not in the predicted direction. Cumulatively, the model accounted for 25 percent of the variance in behavioural intentions.

Seventy two percent of the variance associated with perceived usefulness was explained by its sole predictor, perceived ease of use. In turn, 35% of the variance associated with perceived ease of use was explained by the task-technology fit dimensions of system reliability, and accessibility. The variance of perceived ease of use was also explained by perceived trust.

Thirty nine percent of the variance associated with perceived trust was explained by its sole predictor, perceived bank trustworthiness. 38 percent of the variance of perceived risk was explained by the perceived trust. Sixty-four percent of the variance of perceived structural assurance was explained primarily by perceived bank trustworthiness (refer to Table 7.16 for a summary of the findings of the study).

Table 7.16: Summary of Findings for the Present Study

Relationship	Result
H1 Perceived usefulness to behavioural intention	Supported
H2 Perceived ease of use to behavioural intention	deleted
H3 Perceived ease of use to perceived usefulness	Supported
H4 Perceived trust to perceived risk	Supported
H5 Perceived risk to behavioural intention	Not supported
H6 Perceived trust to behavioural intention	Deleted
H7 Perceived bank trustworthiness to perceived trust	Supported
H8 Perceived structural assurance to perceived trust	Deleted
H9 Perceived bank trustworthiness to perceived structural assurance	Supported
H10 Perceived trust to perceived ease of use	Supported
H11 Service visibility to behavioural intention	Supported
H12 System reliability to behavioural intention	Deleted
H13 Information quality to perceived ease of use	Not supported
H14 Service visibility to perceived ease of use	Deleted
H15 System reliability to perceived ease of use	Supported
H16 Accessibility to perceived ease of use	Supported

Chapter 7 aimed to examine the hypotheses developed in Chapter 5. The chapter first shed light on screening the data, which included the treatment of missing data, checking for outliers and assessing data normality. Then the assessment of the measurement model and the reliability and validity of the measurement constructs were examined using the confirmatory factor analysis method (CFA). Finally the hypotheses were tested using structural equation modelling (SEM). The next chapter will discuss the results presented in this chapter.

8. Discussion

The present study developed a comprehensive model in order to understand Saudi customers' behaviour towards the use of internet banking. This model extended the TAM in order to overcome its existing weaknesses observed in the present study, by including additional components, namely task-technology fit (TTF) and the trust model proposed in Chapter 3. This chapter discusses the results presented in Chapter 7 regarding the variables embedded in the conceptual model as they relate to previous literature.

8.1 Explanatory Power of the Internet Banking Acceptance Model

The comprehensive and parsimonious model developed in the present study makes an important contribution to the literature concerning online customer behaviour. The model suggested that individuals' acceptance of internet banking is largely determined by their beliefs and attitudes towards using that technology and the degree to which the functionality of internet banking websites assist internet banking users in conducting their banking services. The results revealed that the variance explained for perceived usefulness and perceived structural assurance of an internet banking website was quite high compared to the results from most previous research (see Table 7.15 in Chapter 7, p: 270). This means that the present study has succeeded in capturing the main important factors that affect perceived usefulness and perceived structural assurance of an internet banking website.

However, the findings of this study show that the developed model could explain only 25% of variance in behavioural intention, which is somewhat lower than found in most previous studies focused on the technology acceptance field. For example, in the studies of Chau & Hu (2001), Mathieson et al. (2001), Chan & Lu (2004), Podder (2005), Yousafzai (2005), Mao & Palvia (2006) and Al-Gahtani et al. (2007), it was found to be 42%, 43.8%, 53%, 22%, 77%, 21% and 39.1% respectively. There are three reasons that may justify the somewhat lower variance explained in behaviour intention in the present study compared with previous research. Firstly, most of previous research that studied internet banking users' behaviour described all those users as a homogenous population and as mentioned in Chapter 4, Section 4.5.1 (p: 134) there may be differences of beliefs and attitudes among internet banking users, who are either heavy or dormant users. This may have led the previous studies to a generalisation of some results (e.g. obtaining high variance explained in intentions) that might not be accurate and appropriate for both groups. Secondly, the majority of the previous research that applied the TAM to study the factors affecting non-adopters of internet banking used items for measuring the perceived usefulness and ease of use constructs developed by Davis (1989). Davis (1989) developed and tested these items on individuals who had already used or had little experience with the technology under investigation. However, internet banking researchers applied these items to non-users of internet banking who did not have any experience with this technology. This could lead the non-adopters to evaluating internet banking services wrongly. For example, one of the items used in these studies was 'Using internet banking would enable me to accomplish bank services more quickly.' and in order to place an accurate view on that item, the individuals must have at least a little experience with internet banking services. Therefore, the results, such as getting high variance explained in intentions related to these studies should be viewed cautiously.

Finally, the present study is the first that focuses on internet banking acceptance in Saudi Arabia among dormant users of that technology. This means that this investigation is new and therefore, there are still some important variables which need to be included in the model. As a result, further research is required in order to enhance the explanatory power of the model in the internet banking domain. The following sections discuss the results of the present study related to the variables grounded in the internet banking acceptance model.

8.2 Variables Embedded in the Technology Acceptance Model (TAM)

In the TAM, there are two determinants that play the main role in accepting or rejecting a new technology, namely perceived usefulness and perceived ease of use. The findings of the present study (Table 8.1) reveal that perceived usefulness is significantly and positively related to behavioral intentions to use internet banking. This result is consistent with prior research based on the TAM (Gerrard et al., 2006; Guriting & Ndubisi, 2006; Simon & Paper, 2007). The implication is that if Saudi customers perceive internet banking to be useful, they will be more likely to rely on this channel rather than other banking channels, such as branch banking or ATMs. On the other hand, although the relationship between perceived ease of use and behavioral intention was deleted from the revised structural model, it was not significant in the proposed structural model. The effect of perceived ease of use was only indirectly significant on the behavioral intentions through perceived usefulness, contradicting expectations. This finding is consistent with the original TAM, and with some previous research (Gefen & Straub, 2000; Hu et al., 2003; Cheng et al., 2006). However, there is contradiction with the results from other previous research, in particular Schepers and Wetzels (2007) who conducted a meta-analysis of

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the TAM involving 51 articles. They found that in Western cultures, perceived usefulness seems to be more important in determining intentions and actual use, while ease of use is a key in non-western cultures. The results of this meta-analysis should be treated cautiously, as the authors did not pay attention to the differences in beliefs and attitudes between the different types of subjects that were studied in the 51 articles. They did not distinguish, in their meta-analysis, if the subjects, for example were non-users or users of the technologies under investigation. Karahanna et al. (1999), state that beliefs and attitudes between non-users and users of information systems are different. To support this statement, Ozdemir et al. (2008) studied adopters and non-adopters of internet banking in Turkey and indicated significant differences of beliefs and attitudes between these two categories. Furthermore, Lee et al. (2005) found that further segmenting the non-adopter category revealed meaningful differences between persistent non-adopters and prospective adopters. Therefore, it may not be possible to generalize the results of their meta-analysis to the environment of Saudi Arabia as a non-western culture in which perceived ease of use is more important than perceived usefulness in determining intentions to use internet banking.

Table 8.1: Summary of Findings for the Present Study Related to the Variables Embedded in the Technology Acceptance Model (TAM)

Relationship	Results	
	The proposed structural model	The revised structural model
H1: Perceived usefulness to behavioural intention	Supported	Supported
H2: Perceived ease of use to behavioural intention.	Not supported	Deleted
H3: Perceived ease of use to perceived usefulness	Supported	Supported

Hofstede (1980) developed four dimensions of culture, and one of these is masculinity/femininity. According to Hofstede (1980), cited in Al-Gahtani et al. (2007, p. 683), masculinity/femininity measures the degree to which "masculine" values like assertiveness, performance, success and competition prevail over "feminine" values like the quality of life, maintaining warm personal relationships, service, caring, and solidarity: from tender to tough. Hofstede (1980) states that people scoring high on masculinity believe in independent decisions, have higher job stress and a stronger motivation to achieve. These people continue to excel by trying their best and are focused on money and other material things. People from countries scoring low on masculinity believe in group decisions, have lower job stress and weaker motivation to achieve. Hofstede (1980) suggests that people in these countries are not focused on money or other material things, but rather on other people (for a more thorough review of cultural dimensions refer to Hofstede, 1980). Hofstede (1980) ranked Arabic cultures, which included Saudi Arabia, as a feminine culture. With regards to technology acceptance model' beliefs (perceived ease of use and usefulness), Strite (2006) argues that cultures that are less masculine

(more feminine) might be more concerned with perceived ease of use of a technology which places less emphasis on instrumental goals and more on quality of life. On the other hand, he claims that in a more masculine culture, it would be expected that perceptions of a technology's usefulness would be more significant than in a less masculine culture. Unfortunately, the exact opposite occurred in the present study, in which perceived usefulness was more important in determining Saudi behavioral intentions towards the use of internet banking. One possible explanation is that the Hofstede's (1980) data, which was collected to compute the scores for different cultures, is more than thirty years old. El Louadi & Everard (2004) highlight that the assumption that national cultures remain somewhat stable may not always hold true as Oyserman et al. (2002), for instance, have shown that Japanese and Koreans now would exhibit more individualistic behaviour than Americans, a finding which begs reconsideration of Hofstede's scores for these two countries. El Louadi & Everard (2004) claim that during the three decades since the collection of Hofstede's data several changes have affected Arab nations, including the Gulf War (1990-1991), the invasion of Iraq (2003), the aftermaths of the events of 9/11 and the recent economic situation in the world. These changes may influence Saudi culture which has started to exhibit more masculine behaviour.

Away from the culture values, in this study there are three possible reasons to justify the findings related to the relationships between perceived usefulness, perceived ease of use and behavioural intentions to use internet banking. Davis (1989) claims that the effect of perceived ease of use may influence, indirectly, intentions through perceived usefulness. He indicated that perceived usefulness and perceived ease of use jointly influence individuals' intentions in the early stages

of learning and behaviour. However, with time and experience the intentions are directly influenced by perceived usefulness. At this stage, perceived ease of use affects intentions only indirectly through perceived usefulness. The largest group of respondents, 42% in the present study, were using internet banking for more than two years followed by 34% for 1-2 years and 24% were using the service for less than one year. This indicates that the Saudi respondents have varying levels of experience with internet banking. Applying Davis' (1989) suggestion to internet banking, the perceived ease of use does not directly increase the intentions to use internet banking; however it does lead to a greater perception of usefulness, which in turn increases the behavioural intention to use internet banking. A second possible explanation, suggested by Gefen & Straub (2000), is that in many cases the new technology is adopted because of its extrinsic aspect (perceived usefulness) and not its intrinsic aspect such as ease of use. This could be because, as clients gain more experience in relation to computers and the internet, ease of use becomes less of a problem for them; then more cognitive considerations emerge and gain significance in determining behavioural intentions towards internet banking. This does not imply that banks should abandon their efforts to make internet banking easier to use, but it indicates a higher need to promote the usefulness of the technology over its ease of use. Another possible explanation given by Chan & Lu (2004) is that information technology innovations have become much easier to use, particularly internet technology. For example, internet vendors have made much effort in order to make their websites much easier for their customers. As a result, customers may not be concerned with issues related to the perception of ease of use.

8.3 Variables Embedded in the Trust Model and their relationships with the Technology Acceptance Model (TAM)

The present study has paid attention to the consequences and antecedents of trust in the context of internet banking. It was proposed that customers' trust in internet banking will play an important role in the acceptance of internet banking. It will directly influence customers' perceptions of perceived risk, their behavioral intention to use internet banking and their perception of ease of use of internet banking. On the other hand, trust has been viewed as a multi-dimensional construct. The conceptual model in the current study integrated two theoretical perspectives of trust as "dimensions of trust" which are interpersonal trust and institutional-based trust. Therefore, it was suggested that customer trust is influenced by two constructs, namely perceived bank trustworthiness and structural assurance of a bank's website. It should be noted however that perceived bank trustworthiness was shown to be a problematic measure. Table 8.2 presents the results related to these variables.

Table 8.2: Summary of Findings for the Present Study Related to the Variables Suggested in the Trust Model and their relationships with the Technology Acceptance Model (TAM)

Relationship	Results	
	The proposed structural model	The revised structural model
H4: Perceived trust to perceived risk.	Supported	Supported
H5: Perceived risk to behavioural intention.	Not supported	Not supported
H6: Perceived trust to behavioural intention.	Not supported	Deleted
H7: Perceived bank trustworthiness to perceived trust.	Supported	Supported
H8: Perceived structural assurance to perceived trust.	Not supported	Deleted

Table 8.2: Summary of Findings for the Present Study Related to the Variables Suggested in the Trust Model and their relationships with the Technology Acceptance Model (TAM) (Continued)

Relationship	Results	
	The proposed structural model	The revised structural model
H9: Perceived bank trustworthiness to perceived structural assurance.	Supported	Supported
H10: Perceived trust to perceived ease of use.	Supported	Supported

There are several findings in the present study regarding the consequences of trust. First, perceived trust of internet banking was found to have a negative effect on perceived risk. It is very important to note that the risk questions were framed in the present study questionnaire such that a high score indicated positive opportunities while a low score indicated greater risk. Thus, higher scores indicated lower perceptions of risk. This finding confirms that Saudi customers with a higher perception of trust will perceive less risk of internet banking than other Saudi customers with low perceived trust and is consistent with previous findings (Jarvenpaa et al., 1999; Teo & Liu, 2007; Zhao et al., 2010). A possible theoretical explanation for this relationship (as mentioned previously in Chapter 3, Sections 3.1 and 3.5.3, p: 90 and 113 respectively) is that there are a number of risks caused by two types of uncertainty in the online environment: system-dependent uncertainty and transaction-specific uncertainty (Grabner-Krauter & Kaluscha, 2003). System-dependent uncertainty includes events that are beyond the direct influence of the web retailers and can be characterised as exogenous or environmental uncertainty (Grabner-Krauter & Kaluscha, 2003). In the internet banking domain, there are many examples of system-dependent

uncertainty caused by third parties (hackers) who compromise the transaction process, such as by stealing credit card information or by breaching customers' personal information. Another type of uncertainty, transaction-specific uncertainty, is associated with the bank and its potential behaviour in online transaction processes. Examples of this type of uncertainty caused by the bank include: leaking of customers' private information, presenting wrong or inadequate information regarding products or services and breaking agreements and promises. Low levels of these perceptions of uncertainty related to a bank's behaviour and infrastructure, applied to its internet banking, indicates high levels of Saudi customers' trust in internet banking. In turn, this leads to a reduction in their perception of risk, because the reasons (uncertainties) that cause feelings of risk will disappear.

Second, although the relationship between perceived trust and behavioral intention was deleted from the revised structural model, it was not significant in the proposed structural model. The non-significant relationship between these variables is inconsistent with most previous research which found that trust strongly influences intention to adopt online activities (Torkzadeh & Dhillon, 2002; Pavlou, 2003; Nor, 2005). However, it was found that, in the proposed and revised structural models, perceived trust plays an important role in behavioural intention indirectly through perceived ease of use. This pattern of findings is similar to past research, which has suggested that perceived trust also influences intentions indirectly through perceived ease of use (Gefen et al., 2003b; Pavlou, 2003). This suggests that high perceived trust in internet banking will increase Saudi customers' perception of ease of use of that channel, in that customers' needs to monitor their bank's actions and check every detail in their internet banking

website are reduced, and thus they will perceive that conducting bank services in this manner will be much easier.

The non-significant influence of perceived trust on Saudi customers' intention to use internet banking can be explained by Davis' (1989) assertion that only two variables, perceived usefulness and perceived ease of use, directly influence behavioural intentions and other possible variables may act indirectly on intentions through perceived usefulness or perceived ease of use. The results mentioned above support Davis' assertion. Another potential explanation is that most of the Saudi respondents in the present study have experience with internet banking, although internet banking is not the most frequent way of making their banking transactions. As a result, with time and experience, the direct role of trust on their behavioural intention might shrink and act directly on perceived ease of use of internet banking.

Finally, with respect to the relationship between Saudi customers' perceptions of risk and their behavioural intentions to use internet banking, it was found that this relationship was not supported in the proposed and revised structural modesl. Although the path coefficient was statistically significant in these models, the direction of the coefficient was negative (see Chapter 7, Tables 7.11 and 7.14, p: 263 and 268 respectively). As stated above, higher risk scores indicate positive perceptions of opportunity, high potential for gain and a very positive situation. Since the regression coefficient was negative, the findings suggest that the more positive the perceptions of such opportunities were (lower levels of perceived risk) the lesser the intention to use internet banking. This finding, in the proposed and revised structural models, implies that the greater the

risk perceptions, the greater the intention to use internet banking, which is counter to what was hypothesised in the present study and the findings from prior research. Though some studies did not find any significant relationship between these two variables (Abu Shanab, 2005), the majority of previous studies empirically found that higher levels of perceived risk in a technology reduce the intention to use that technology, such as using the internet to purchase (Tee & Liu, 2007). However, no studies in the internet banking field were consistent with what was found in the proposed and revised structural models. The continuous effort of Saudi banks to develop their internet banking websites and the positive reports published in the media could be a possible reason to explain the positive relationship between these two variables. This indicates that Saudi customers do not pay much intention to the perception of risks or are willing to use internet banking, even if they have some concerns regarding risks involved with using that technology. Another possible reason is that the instruments used to measure perceived risk for this study might not have been properly understood by the respondents or might not be suitable in the internet banking context, particularly in Saudi Arabia. To mitigate this, the instruments were adopted from previous research and have been improved through focus group discussions with Saudi internet banking users, feedback received from academics and managers and through two pilot tests. This led to another justification in which the present research did not focus more on the operationalization of perceived risk that would help to understand more the relationship between Saudi customers' perception of risk and their intention to use internet banking. In the context of e-service adoption, Featherman & Pavlou (2003) examined several facets of perceived risk, such as psychological risk and time risk, and theorised the relationship between the multi-dimensional construct of risk with other variables. Moreover, a recent study conducted by Lee (2009c) empirically examined five types of risk - security/privacy, financial, social,

time/convenience and performance loss among experienced and non-experienced internet banking users in Taiwan. The results revealed that financial risk and security risk negatively influence intention towards the use of online banking. Furthermore, financial risk, time risk, performance risk and security risk negatively influence attitudes towards the use of online banking. However, care should be taken when generalizing the results of that study for two reasons. First, Lee did not pay attention to the differences in beliefs and attitudes among the subjects involved in the study - if the subjects, for example were heavy users or dormant users of internet banking services. In other words, the author described these two categories as a homogeneous population. Second, the author conducted the survey employing a non-random convenience sample which made it difficult to generalize the results. Thus, in order to provide a deeper understanding of the perceived risk among dormant users of internet banking, the present study recommends examining in closer detail the facets which are considered to play an important role in perceived risk of internet banking. This issue may be a promising area for future research.

With regards to the antecedents of trust, the findings of the present reveal that trust is a multi-dimensional construct derived from only one theoretical perspective of trust, namely interpersonal trust (perceived trustworthiness of the bank to provide internet banking) which confirmed only one of the two antecedents of trust proposed in the present study. This means that Saudi customers' trust in internet banking can be developed by focusing on trustworthiness of the bank to provide internet banking. Customers' perceptions that their bank has some desirable characteristics; namely skills or competences to provide bank services through the internet or

telling the truth and fulfilling promises, directly influenced Saudi customers' trust to use internet banking. These characteristics will guarantee them that the bank delivers its services through the internet in a proper, effective and convenient way and also without any opportunistic behaviour. This result is consistent with previous research that found a significant relationship between these two variables (Chen & Dhillon, 2003; Cheung & Lee, 2006). On other hand, the relationship between perceived structural assurance of internet banking and customer willingness to place trust in that channel was insignificant in the proposed structural model though this relationship was deleted from the revised structural model. This finding is contrary to the theoretical hypothesis in the present study and with some prior studies (McKnight & Chervany, 2001; Cheung & Lee, 2006) in which perceived high structural assurance of a bank's website increases the level of trust in internet banking. This may imply that institution-based trust (structural assurance) is not effective in building the trust among dormant users of internet banking, although a safe transaction environment provided by structural assurance is a basic condition for internet banking. Kim et al. (2004), in the electronic commerce context have also found structural assurance insignificant to trust for potential and repeat customers. A possible explanation may be that Saudi customers do not pay much intention to the structural assurance applied in internet banking websites. This is because, in Saudi Arabia, internet banking websites are completely different from other commercial websites. All Saudi commercial bank websites possess robust and similar protective legal and technology structures which are all suggested and monitored by SAMA. However, in other commercial websites, the structural assurance applied varies from strong to weak, because most of these websites are not monitored by the Saudi government. This may reduce the role of structural assurance on Saudi customers' trust in internet banking.

With reference to the relationship between the antecedents of trust, it was found that perceived trustworthiness of a bank as an internet banking provider also influenced customers' perception of structural assurance of the bank's website. This result is similar with previous research (Pavlou, 2002). Therefore, for the perception of protection by law and technology safeguards to exist, Saudi customers must perceive that their bank is trustworthy regarding the internet banking services provided. This is because the customers' perception of trustworthiness, of a bank as an internet banking provider, indicates that the bank has an ability to apply strong technological safeguards, has the integrity to adhere to agreements and fulfil its promises and will not behave opportunistically and in turn all these attributes increase customers' perception of structural assurance of their bank's website.

Finally, it should be noted that there was only limited improvement in the conceptual model with the addition of trust developed in the present study (see Chapter 7, Table 7.9, p: 258). This was also noted when examining the hypotheses developed for this particular study. It was found that there were no direct relationship between perceived trust and perceived risk and the behavioural intention towards the use of internet banking. A possible reason, as mentioned before, might be because in Saudi Arabia internet banking websites are different from other commercial websites as they are known to be monitored by SAMA (Saudi Central Bank). This might lessen the direct role of the trust model on intentions towards the use of internet banking, as uncertainties and risks associated with this method of conducting financial transactions may be reduced due to the monitoring function of SAMA.

8.4 Task-Technology Fit's Dimensions and their Relationships with the TAM Variables

In the present research, the proposed internet banking acceptance model elaborated the TAM to include the TTF model. As mentioned in Chapter 5 (Section 5.1, p: 141), this is because the TAM and TTF model focus on different aspects of users' acceptance of new technologies. The TAM suggests that individuals' acceptance of a new technology are largely based on their beliefs and attitudes toward using that technology. On the other hand, the TTF model focuses on the ability of IT to support a task and match the individual's task requirements with the available IT functionality (Wu et al., 2007). Although, many researchers (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Wu et al., 2007) have elaborated the TAM to include the TTF model, they have dealt with TTF as a single construct in their models. Also, they did not shed further light on the dimensions of task-technology fit, only adopting some elements based on a few dimensions suggested by Goodhue & Thompson (1995) and Goodhue (1998) and ignoring some important dimensions also suggested by Goodhue & Thompson (1995) and Goodhue (1998). As a result, they might not have fully measured the influence of task-technology fit on the TAM variables properly. This is because the dimensions of the TTF created by Goodhue & Thompson (1995) and Goodhue (1998) have been developed originally to cover two aspects, tool functionality and tasks. Therefore, the influence of these dimensions would have varied influences regarding the TAM's variables (see Chapter 5, Section: 5.2.7, p: 152). To overcome the gaps found in the previous research, the present study provided a deeper understanding of the influence of task-technology fit on using internet banking in Saudi Arabia. It divided the TTF construct into four facets based on four dimensions in order to clarify which of these facets are more important in this field. These dimensions of TTF are adopted from Goodhue (1998) and follow Goodhue & Thompson (1995) by grouping some factors into small numbers of task-technology fit

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dimensions. Based on this, four constructs of task-technology fit were identified, and were considered to be more compatible in the context of internet banking. The constructs were: 1) information quality, 2) service visibility, 3) system reliability and 4) accessibility.

There are several findings with regards to the TTF model (see Table 8.3). First, it can be seen from Table 7.14 (Chapter 7, p: 269) that the dimensions of the TTF had varied influences on the TAM variables. This reinforced the interpretation that the TTF construct should not be modelled as a single construct but should be treated as multi constructs based on several dimensions. Second, one of the two facets of task-technology fit, as hypothesized in the present study, was found to be significant influences on Saudi customers' behavioural intention to use internet banking, namely service visibility. The result is consistent with previous studies conducted by Dishaw and Strong (1999) and Klopping and McKinney (2004) in two different domains, workplace technology acceptance and online shopping activity respectively. They found that task-technology fit, which included the service visibility dimension, directly influences actual use, or directly influences behavioural intention to use. Moreover, the result is in parallel with previous research conducted by Burton-Jones & Hubona (2005; 2006) who argue that Davis' (1989) assumption is overstated. They found that, contrary to the normally accepted assumption, external variables can have direct affects on usage behaviour over and above their indirect affects as mediated through the TAM beliefs, perceived usefulness or perceived ease of use. From a theoretical view, these facets of task-technology fit were considered to be in association with Saudi customers' behavioural intention to use internet banking; a good fit between the functionality of a bank's website and the requirements of performing banking services available

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on the website should be interpreted by Saudi customers as high behavioural intention to use internet banking. In particular, the findings imply that when Saudi internet banking users find that banking services available through their bank's website were able to be seen or located in a clear and obvious form, this will increase their intentions to use internet banking.

Third, although the relationship between system reliability and behavioral intention was deleted from the revised structural model, it was not significant in the proposed structural model. The non-significant relationship between these variables is contrary to the theoretical hypothesis in the present study and also is inconsistent with previous studies (Dishaw & Strong, 1999; Klopping & McKinney, 2004). However, the result of the current study was in parallel with Davis' (1998) point of view when he argued that only two variables, perceived usefulness and perceived ease of use, directly influence behavioural intentions and other possible variables may act indirectly on intentions through perceived usefulness and perceived ease of use. One interpretation may be that although the largest group of respondents, in the present study, had used internet banking for more than two years they may still not rely heavily on this channel as they do on other banking channels, such as ATMs and phone banking. Thus, the respondents might not notice the direct influence of internet banking system reliability on their intention towards internet banking. These might make the influence of system reliability on behavioural intention weak among these users of internet banking.

Table 8.3: Summary of Findings for the Present Study Related to the Task-Technology Fit's dimensions and their relationships with the TAM variables

Relationship	Results	
	The proposed structural model	**The revised structural model**
H11: Service visibility to behavioural intention	Not significant	Significant
H12: System reliability to behavioural intention	Not significant	Deleted
H13: Information quality to perceived ease of use	Not significant	Not significant
H14: Service visibility to perceived ease of use	Not significant	Deleted
H15: System reliability to perceived ease of use	Significant	Significant
H16: Accessibility to perceived ease of use	Significant	Significant

Fourth, the findings also reveal that task-technology fit indirectly influenced Saudi customers' behavioural intentions to use internet banking through perceived ease of use. This result was consistent with previous research, which found that task-technology fit directly influences perceived ease of use (Dishaw & Strong, 1999; Wu et al., 2007; Chang, 2010). This suggests that when the degree of fit between the functionality of a bank's website and the requirements of conducting banking on the website becomes higher, Saudi customers will perceive internet banking to be easier to use for performing banking services. From the four constructs of the TTF, only two; system reliability and accessibility positively influenced perceived ease of use of internet banking. The significant relationships between system reliability and accessibility with perceived ease of use mean that when the users of internet banking found that internet banking systems are free from problems and 'crashes' and available whenever they want to use it, it is easy

to get help from the bank when customers face a problem with internet banking and it is easy to access any desired services on internet banking websites, their perception of ease of use of internet banking increases.

Finally, two dimensions of the TTF did not significantly influence perceived ease of use in the proposed structural model, namely information quality and service visibility, although the path between service visibility and perceived ease of use was deleted from the revised structural model. The justification of the non-significant relationship between these two dimensions of the TTF with perceived ease of use could be that as dormant users of internet banking do not use the internet banking channel heavily, there may be some features of the internet banking website related to information quality and service visibility that influence the users' perceptions towards the ease of use of internet banking which are still not recognised by Saudi dormant users accurately. These might make the influence of information quality and service visibility on perceived ease of use weak among dormant users of internet banking.

Chapter 8 discussed the findings from Chapter 7, which were related to the conceptual model for internet banking acceptance proposed in Chapter 5. The next chapter will explore the implications of these results for research and practice and will provide guidelines for future research.

9. Conclusion

The overall aim of the present study was to add to the body of knowledge in the area of technology acceptance and to extend knowledge of the factors influencing intentions towards the use of internet banking among dormant users of this channel. Effort was paid to achieve the following objectives:

1. To identify the factors affecting Saudi customers' intentions towards the use of internet banking.

2. To explain the interactions between those factors affecting the intentions towards internet banking use.

3. To examine the role of Saudi customers' trust with regard to the use of internet banking.

4. To examine how trust might be developed to increase the use of internet banking.

5. To examine how the dimensions of task-technology fit influence behavioural intention and perceived ease of use with regard to internet banking use.

The framework for this study was based on the TAM (Davis, 1986). Additionally, in order to overcome the existing weaknesses of the TAM that have been observed in Chapter 2, Section 2.6.7, p: 75, this research has extended the TAM by including additional components, namely

task-technology fit (TTF), perceived trust and perceived risk. This study is intended to answer the following research questions:

1. What are the factors that directly influence Saudi customers' intentions towards the use of internet banking?

2. What is the relationship between Saudi customers' perception of usefulness and ease of use of internet banking?

3. How do these perceptions affect Saudi customers' intention to use internet banking?

4. What is the main role of Saudi customers' trust in internet banking acceptance?

5. How might Saudi customers' trust in internet banking be increased?

6. Do the dimensions of task-technology fit have varied influences on behavioural intention and perceived ease of use?

7. Which of the task-technology fit dimensions has more influence on Saudi customers' intentions and their perceptions of ease of use?

To answer these questions, the thesis consisted of nine chapters. Chapter 2 discussed consumer behaviour in the context of the financial services industry and reviewed the most important theories of consumer behaviour in the literature, namely the innovation diffusion theory (IDT), the theory of reasoned action (TRA), the theory of planned behaviour (TPB), the technology acceptance model (TAM) and the task-technology fit (TTF) model. Chapter 3 reviewed the role

of trust in the context of internet banking. The chapter proposed a model of trust in the context of internet banking based on reviewing various theories of trust, namely personality theories, institution-based trust and interpersonal theories. Chapter 4 reviewed previous studies conducted in the context of internet banking, and then identified the main issues with these studies.

The literature review, presented in Chapter 2 to Chapter 4, laid the foundations for Chapter 5 which developed a conceptual framework for internet banking acceptance. The conceptual model incorporated some of the most important factors influencing customer behaviour towards the use of internet banking. Particulary, it has extended the TAM (Davis, 1986) by including two additional componenets, namely TTF and trust model developed in Chapter 3. 16 hypotheses were proposed based on the conceptual model. Chapter 6 provided an overview of the philosophical assumptions related to the position of the present study and described the methodology used to collect and analyse the data in order to examine the hypotheses associated with the proposed conceptual model in Chapter 5. Next, the results of the data analysis using structural equation modelling (SEM) performed through LISREL, version 8.8 were presented in Chapter 7. The chapter was divided into five sections. In Section 1, the results of the data screening procedures were presented; this section includes the treatment of missing data, checking for outliers, and assessing normality. In Section 2 and 3, the results pertaining to the assessment of the measurement model and the reliability and validity of the measurement constructs were presented respectively using the confirmatory factor analysis method (CFA). In Section 4, the structural model was evaluated and the hypotheses developed in Chapter 5 were

examined. The findings were summarised in the final section. Chapter 8 discussed the findings from Chapter 7 as they related to previous research.

The final chapter summarises the key findings of the present study and explores the implications of the results for theory and practice. The chapter also summarises the limitations of the study, directions for future research and conclusion.

9.1 The Key Findings of this Research

In this study the empirical results reported in Chapter 7, associated with the seven research questions set out in Chapter 1, section 1.4 (p: 5) suggest the following.

1) Perceived usefulness and service visibility directly influence Saudi customers' intention to use internet banking.

2) The positive and statistically significant relationship between perceived usefulness and ease of use indicates that the more positive are perceptions of ease of use, the more positive the perception of usefulness appears.

3) Perceived usefulness is significantly and positively related to behavioral intention to use internet banking and the effect of perceived ease of use is only indirectly significant on the behavioural intention through perceived usefulness.

4) There is no direct significant role of customers' trust in their behavioural intention to use internet banking. However, higher levels of customer trust in internet banking will reduce perceived risk of that channel and increase customers' perceptions of ease of use of internet banking.

5) Trust is a multi-dimensional construct derived from only one theoretical perspective of trust, namely interpersonal trust, which confirmed only one of the two antecedents of trust proposed in the present study. This means that Saudi customers trust in internet banking can be developed by focusing on trustworthiness of the bank to provide internet banking. Moreover, perceived trustworthiness of a bank as an internet banking provider also influenced customers' perceptions of structural assurance of the bank's website.

6) Task-technology fit dimensions are found to have varied influences on Saudi customers' behavioural intentions and their perception of ease of use of internet banking.

7) One of the dimensions of task-technology fit has a significant and direct influence on Saudi customers' behavioural intentions to use internet banking, namely service visibility. Two out of

the four dimensions, namely system reliability and accessibility significantly influence perceived ease of use of internet banking.

9.2 Contributions and Theoretical Implications

The present study makes significant contributions and has implications for online customer behaviour research. First, the majority of previous research studied non-users or continual users of internet banking and provided preliminary evidence suggesting that non-adoption and continual usage of internet banking are determined by different factors. This study is the first to study the behaviour of customers who are dormant users of internet banking. Drawing upon the findings, there are indications that the influences of some factors are also varied in dormant users compared with previous research that studied non-users and continual users of internet banking. According to Lee et al. (2005), describing all non-adopters of internet banking as a homogeneous population may be inaccurate and inappropriate. They conducted an empirical study and found that further segmenting the non-adopter category revealed meaningful differences between persistent non-adopters and prospective adopters. Moreover, previous studies (Eriksson et al., 2005; Yousafzai, 2005; Suh & Han, 2002) of current users of internet banking revealed different results. A reason for this could be that these studies described the heavy users and dormant users as a homogeneous population. Therefore, it is recommended that future research studying online customers' behaviour should further distinguish their samples amongst four categories, persistent non-adopters, prospective adopters, dormant users and heavy users.

Second, it is considered that the present study is the first to elaborate the TAM to include the TTF model to predict behavioural intention in the internet banking field, particularly in Saudi Arabia. It captured different aspects of users' acceptance of internet banking. It was suggested that Saudi customers' acceptance of internet banking is largely determined by their beliefs and attitudes toward using that technology and the degree to which the functionality of internet banking websites assist internet banking users in conducting their banking services. Therefore, this study extends the existing body of knowledge related to the TTF model as applied in a different context and culture. The results of the present study supports the robustness of the TTF model in terms of its ability to understand Saudi customers' behaviour towards the use of internet banking within different sampling and target technologies. Figure 9.1 shows the final research model of the present study.
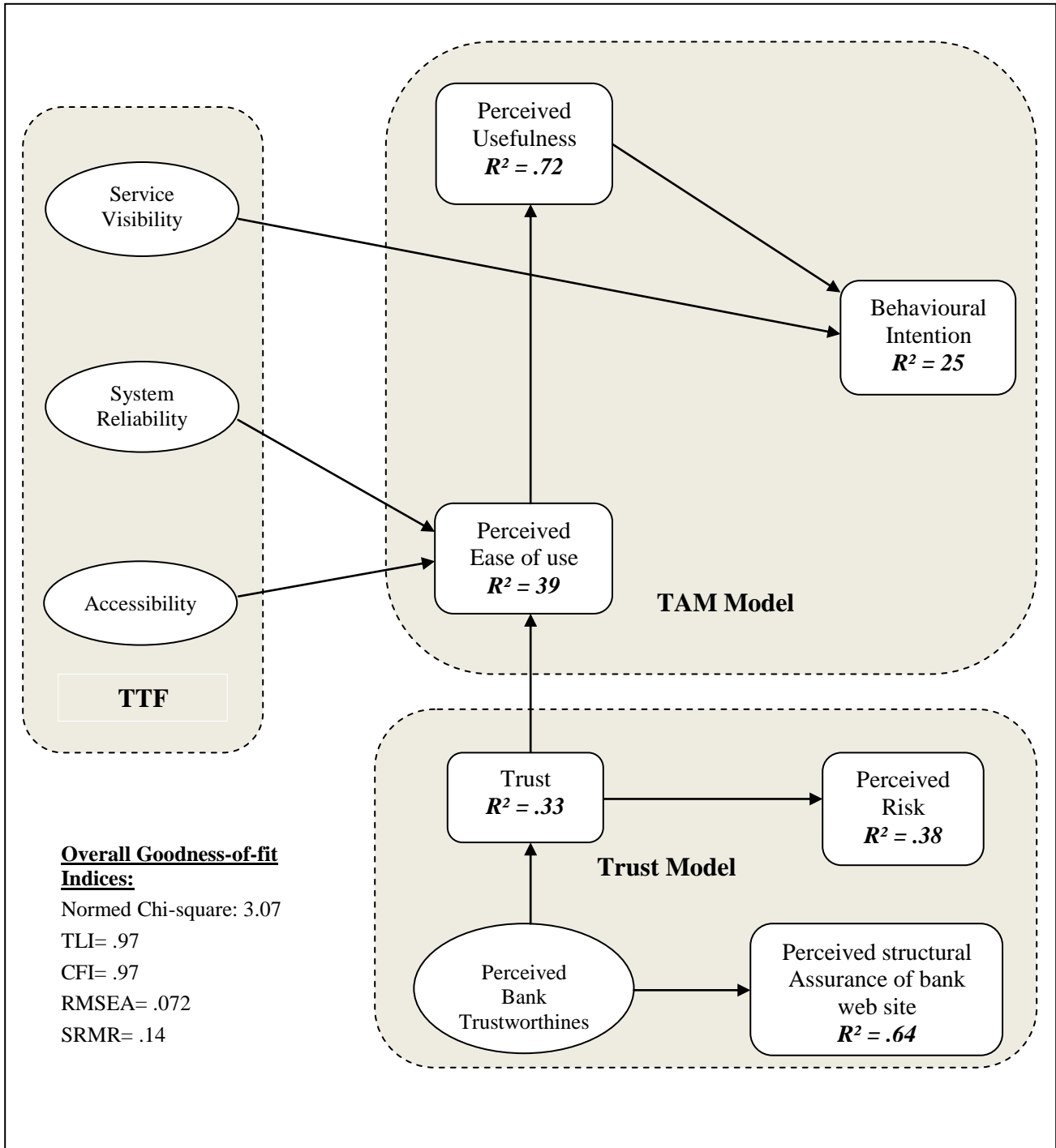
Figure 9.1: The Final Research Model

Third, the present study provided a deeper understanding of the influence of task-technology fit on accepting internet banking in Saudi Arabia. It divided the TTF construct into four facets based on four dimensions in order to clarify which of these facets is more important in this domain. The results revealed that the dimensions of TTF had varied influences on the TAM variables. This reinforced the interpretation that the TTF construct should not be modelled as a single construct but must be treated as multiple constructs based on several dimensions. As a result, this study provided significant dimensions of task-technology fit that can be used in the context of internet banking to understand specific factors, such as behavioural intention and perceived ease of use. These dimensions may be used to understand intentions to use other technologies.

Fourth, another important contribution of the present study is the focus on the consequences and antecedents of trust in the context of internet banking. The results of this study suggest that with time and experience, the direct role of trust on behavioural intention might shrink and act directly on perceived ease of use of internet banking. This study recommends incorporating trust as one of the antecedents of perceived ease of use of internet banking, with time and experience of users, as appropriate. E-commerce shares similar characteristics with internet banking, this recommendation may be generalized to include the e-commerce domain. The results also suggest that trust is a significant antecedent of perceived risk. Therefore, the directionality of the causal relationship flows from trust to perceived risk. A surprising result is the positive relationship between perceived risk and behavioural intention to use internet banking. This finding is inconsistent with what was proposed in the present study and also with some previous research.

Thus, future research should examine the concept of perceived risk in more detail in order to reach definitive conclusions.

Furthermore, other findings of the present study support the interpretation that in the internet banking domain, trust should be considered to be a multi-dimensional construct derived from only one theoretical perspective; interpersonal trust. Therefore, customer trust in internet banking can be developed by focusing on one antecedent, namely perceived bank trustworthiness. The present study also has shed more light on the relationship between the antecedents of trust. The results of this study suggest that interpersonal trust affect institution-based trust. In other words, it was found that perceived high trustworthiness of a bank as an internet banking provider significantly increases customers' perceptions of the structural assurance of an internet banking website. However, care should be taken when generalizing these results. This is because, in the present study, perceived bank trustworthiness does not have a desired level of discriminant validity, although the instruments were adopted from previous research and have been improved through focus group discussions with Saudi dormant users of internet banking, feedback received from academics and managers as well as through two pilot tests. This might have implications with regard to previous studies. Most previous research, such as Yousafzai et al. (2003), Al-Sajjan (2009) and Guerrero et al. (2007) demonstrated a high level of discriminant validity for perceived trustworthiness as previous research had mainly focused on internet banking users as a homogenous group conducting their financial services online. However, this study has focused mainly on dormant users of internet banking and considers that the instrument of perceived bank

trustworthiness might be interpreted differently among the dormant users compared to heavy users of internet banking

Fifth, regarding external variables in the TAM, Davis (1989) claims that only two variables, perceived usefulness and perceived ease of use directly influence behavioural intentions and that other possible variables may act indirectly on intentions through perceived usefulness and perceived ease of use. However, recent studies conducted by Burton-Jones & Hubona (2005; 2006) argue that Davis' assumption is overstated. They found that, contrary to the normally accepted assumption, the external variables can have direct effects on usage behaviour over and above their indirect effects as mediated through the TAM beliefs, perceived usefulness and perceived ease of use. It was found that in the present study, one of the dimensions of task-technology fit, service visibility, directly influences behavioural intention to use internet banking, which indicates support for Burton-Jones & Hubona's (2005; 2006) assumption. Thus, future research should pay attention that external variables in the TAM may have direct effects on behavioural intention or usage over and above their indirect effects as mediated through perceived usefulness and perceived ease of use.

Sixth, regarding the competing models which were tested in the present study in order to evaluate the fit of the conceptual model it was found that there was only limited improvement in the conceptual model with the addition of trust developed in the present study (see Chapter 7, Table 7.9, p: 258). The findings of this particular investigation have implications with regard to previous studies. For example Yousafzai et al. (2003) and Guerrero et al. (2007) documented

trust and perceived risk as main constructs which influence intention to use internet banking, as previous research had mainly focused on internt banking users as a homogenous group conducting their financial services online. However, this study has focused mainly on dormant users of internet banking and considers that perceived risk and trust might have different meanings for the dormant users compared to heavy users of internet banking. Moreover, there might be some other factors which directly influence dormant users other than trust and perceived risk. Therefore, this issue could be a promising area for future research.

A further contribution of the present study is the development of an Arabic instrument (using the backward translation method) in the technology acceptance context. The instrument was based on a review of literature on customer behaviour. The instrument consists of items to measure 11 constructs. The items were examined to assess their reliability and validity using a sample of Saudi bank customers. This Arabic instrument provides a foundation for future research.

Finally, the present study concentrates on the phenomenon of internet banking and its situation in Saudi Arabia, which is considered to be uniquely culturally different from other countries, such as western states. In other words, dormant users' behaviour and perceptions towards technology use in Saudi Arabia may differ from individuals in other countries. Consequently, the present study provides a better understanding of Saudi customer behaviour towards internet banking. Cross-cultural studies could provide insight and understanding into cultural differences between Arabic countries and western countries.

9.3 Implications for Practice

This study has identified factors that influence dormant users' intentions towards the use of internet banking channels in Saudi Arabia, thus the results are relevant to Saudi banking practitioners. Identifying factors and understanding the relationship between them and their impact on behavioural intentions could help Saudi banks to build appropriate websites and strategies in order to encourage their customers to fully utilize the internet banking channels. In this study, it was found that there are two significant issues that directly help to increase customers' intentions towards the use of internet banking. Therefore, Saudi banks should focus on these issues in order to develop strategies and build desirable internet banking websites. These issues are:

- One of the most significant issues for Saudi banks is the need to recognise that internet banking, in order to be fully utilized, should be managed with the purpose of creating a useful service more than just creating ease of use. Saudi banks should build websites that are useful for their customers, enabling them to manage their finances effectively.

- Service visibility on internet banking websites is another important factor. Internet banking users must find all the services available on the internet banking website with clear and obvious form. Therefore, in order to achieve this, Saudi banks must make sure that all their available services have clear information definition, are presented in an understandable form and are not presented in so many different forms that it is hard to know how they should be used.

The present study provides one factor that should be concentrated on by Saudi banks in order to increase the perception of usefulness among dormant users of internet banking. The factor is that internet banking websites should be easy to use to encourage and motivate dormant users to explore and use the services and their features, and in turn raise their perception of system usefulness. Saudi banks should know that when bank customers encounter difficulties in using the internet banking website, they may stop using this channel and may not recognise the usefulness of it.

The findings also provide guiding principles for banks to build internet banking websites which are easy to use. The principles are:

1- The internet banking system should be built in a way that allows customers to rely on it. In particular, Saudi banks should build an internet banking system that is free from problems and 'crashes'. The internet banking system must not be subjected to unexpected down times or frequent denial of service. Moreover, Saudi banks should provide full assistance to their customers when they face a problem with internet banking.

2- Another guiding principle to create an internet banking website that is easy to use is that, customers must find that all the services available on the internet banking website can be accessed quickly and easily whenever they want or need them.

With these guiding principles to build a desired internet banking website, advertising and promotion of internet banking in Saudi Arabia should also emphasise the benefits and advantages of this channel to customers. Since the cost of operating internet banking services is lower than any other banking channels, such as branch or ATMs, Saudi banks should exploit this by encouraging their customers to use internet banking. This could result in lower charges for transactions conducted through internet banking as a promotion for internet banking, for example, banks may reduce charges for cash transfer between banks or reduce interest rates on loans.

9.4 Limitations of the Study

As with any research, there are limitations to this study. First, although internet banking in Saudi Arabia is not a new innovation, it is still in its infancy. Due to the limited number of studies concerned with e-commerce, in particular internet banking in Saudi Arabia, the development of the conceptual model for this study has been based on previous studies conducted in other countries. This may not accurately describe the phenomenon and situation in Saudi Arabia, especially with the cultural differences between Arabic countries and non-Arabic countries. This may be one justification for the quite low variance associated with the behavioural intention to use internet banking in the conceptual model compared with previous research. Second, the data for the present study was collected in Saudi Arabia therefore the results may not be generalizable to customers in other countries. This is because each country has its own culture, level of information technology infrastructure and legal framework and policies to protect customers. Third, the sample for this study included only bank customers who are dormant users of internet

banking. Persistent non-adopters, prospective adopters and heavy users might be influenced by different factors to accept or use internet banking services. Thus the results of this study should be interpreted as only understanding bank customers who are dormant users of internet banking. Fourth, due to the cross-sectional nature of this study, it might not explain if there are possible changes in Saudi customers' behaviour over time. Additional longitudinal research will find out whether or not the customers' behaviour toward the use of internet banking will change over time. Finally, in this study, one multi-choice question 'what are your most frequent ways of making banking transactions?' was used in order to reach bank customers who are dormant users of internet banking. This might not be the best measure to clarify whether Saudi bank customers are heavy or dormant users of internet banking. A more accurate measure would use an objective measure (frequency recorded by the computerised system). The researcher tried to obtain the required sample using objective measures, however due to confidentiality requirements, all Saudi banks declined to help the researcher on this point.

9.5 Future Research Directions

There are a number of areas for future research arising from this study. Future research needs to determine the extent to which the results of this study can be generalized to include other technologies. One way of doing this is to use the conceptual model of the present study to examine the factors that influence Saudi customers' behaviour towards online shopping. An interesting extension of the present study would be also to determine how the proposed model in this study could be applied to include perceptions of persistent non-adopters, prospective adopters and heavy users. A comparison of the perceptions of persistent non-adopters, prospective

adopters, dormant users and heavy users regarding internet banking should provide a greater insight into the operational model proposed in the present study and generally to online customer behaviour research. Moreover, future research could replicate this study in other countries. The conceptual model in this study could be used as a base in order to understand cross-cultural affects on the acceptance of internet banking services among bank customers who are dormant users of that channel.

The present study reports low variance in behavioural intentions towards the use of internet banking. Therefore, further research should attempt to enhance the explanatory power of the proposed model in this study. One way to increase the explanatory power of the model is to incorporate other issues found in previous research affecting internet banking acceptance, such as perceived user resources (Mathieson et al., 2001) and customer loyalty (Reichheld & Schefter, 2000). Due to the lack of studies conducted in the Saudi environment regarding the acceptance of new technologies, the proposed model in the present study can serve as a blueprint for further exploratory research.

As an instrument now exists that can be used in the Arabic environment, additional research is encouraged to validate the instrument in different settings, such as online shopping. Moreover, a more accurate measure could be used in order to clarify whether bank customers are heavy or dormant users of internet banking. It is recommended for future research that to reach the dormant users of internet banking will depend on objective measures (frequency recorded by the computerised system of a bank).

The findings from the present study reveal that the more positive the perceptions of opportunities were (lower levels of perceived risk), the less the intention to use internet banking. This result is inconsistent with what was hypothesised in the conceptual model and with the findings from previous research. Featherman & Pavlou (2003) examined several facets of perceived risk, such as psychological risk and time risk, and theorised the relationship between the multi-dimensional construct of risk with other variables. Thus, another suggestion for future research in order to understand the relationship between perceived risk and behavioural intention more deeply would be to shed more light on the operationalization of perceived risk. This could be achieved by examining, in closer detail, all possible facets of perceived risk, which are considered to play an important role in internet banking acceptance among dormant users. This will help online behaviour researchers to understand the role of perceived risk in the acceptance of internet technologies more deeply.

As mentioned in Section 9.2 (p: 306), there are two different assumptions which deal with external variables in the TAM. One assumption is that external variables may act indirectly on intentions through only perceived usefulness and perceived ease of use (Davis, 1989). However, Burton-Jones & Hubona (2005; 2006) argue that the external variables can have direct affects on usage behaviour over and above their indirect affects as mediated through the TAM beliefs. The findings of the present study support Burton-Jones & Hubona's (2005; 2006) assumption. Consequently, future research should take into account that external variables in the TAM may have direct affects on behavioural intention or usage over and above their indirect effects as mediated through perceived usefulness or perceived ease of use.

The present study is the first that provides a deeper understanding of the influence of task-technology fit on adopting internet banking. It divided the TTF construct into four facets based on four dimensions in order to clarify which of these facts are more important in this field. The results of this study reveal significant facts of task-technology fit that can be used in the context of internet banking to understand specific factors, such as behavioural intention and perceived ease of use. Additional research is required to confirm the influence of these dimensions on accepting other internet technologies, such as electronic government or online shopping.

The impact of demographic variables on the acceptance of a new technology has been a longstanding topic in information systems research. Understanding specifically who the user is may have an important effect on a given technology's acceptability to that user (Morris & Venkatesh, 2000). Nosek et al. (2002) state that demographic variables are expected to have a profound affect on individuals' perceptions and behaviour. Among internet banking users, Yousafzai (2005) found that demographic variables moderate the relationship of perceived usefulness with intention such that the relationship was stronger for male and young, and the relationship between perceived ease of use and intention was significant for female and older. Therefore, future research should improve the internet banking acceptance model developed in the present study by investigating the role of demographic characteristics on the relationships between perceptions and the behavioural intentions to use internet banking among dormant users of that channel. This would further illuminate the factors that influence dormant users of internet banking and finally will enable banks to develop strategies for internet banking in order to be efficient and suitable for all types of customers.

A final suggestion for future research would be to conduct longitudinal research in order to find out whether or not the customer's behaviour toward the use of internet banking will change over time. This could investigate the conceptual model developed in the present study in different time periods and make comparisons, consequently providing more insight into the phenomenon of the acceptance of internet banking services.

9.6 Summary

Research has been conducted to better understand Saudi customers' behaviour regarding the use of internet banking and to determine the factors that influence bank customers' intentions to use internet banking among dormant users of that channel. A comprehensive model of internet banking acceptance has been developed. It extended the TAM to include additional componenets, namely task-technology fit and trust model developed in Chapter 3. The comprehensive model combined two aspects of users' acceptance of new technologies; their beliefs towards internet banking (perceived usefulness and perceived ease of use) and a rational approach by suggesting that individuals choose to use a new technology that provides advantages for them (task-technology fit). The model also integrated variables associated with environmental uncertainty (perceived trust and perceived risk).

The main results of this study suggest that perceived usefulness and service visibility directly influence Saudi customers' intention to use internet banking. Perceived ease of use is indirectly significant on the behavioral intentions through perceived usefulness. Furthermore, perceived

trust, system reliability and accessibility significantly influence perceived ease of use of internet banking. The results also reveal that customer trust in internet banking can be developed by focusing on only one theoretical facet of trust: perceived bank trustworthiness as the internet banking provider.

The internet banking acceptance model, proposed and validated in this study is the starting point to understand the phenomenon and situation in Saudi Arabia towards the acceptance of internet banking among dormant users of this channel. Therefore, further study is required to increase the explanatory power of the model and also to better understand Saudi customers' behaviour regarding acceptance of internet technologies.

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Appendix 1

<div align="center">

The Moderator's Guide for Focus Group

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The preamble:

- Welcome and thank the participants.
- Brief introduction regarding the aim of my research.
- Explain the purpose of the focus group.
- Explain the ground rules which include:

    1. Everyone has ideas that are important and everyone has opportunity to speak freely, therefore, I need to hear from everyone.
    2. There are no correct answers; even negative comments may be useful in gaining insight about the topic under discussion.
    3. Tape recording will be used, so that I can focus on what you are saying.
    4. All your comments will be confidential and only summarised information will be used for the research purposes, and also the tape recording will be destroyed when I have finished the research.
    5. Any question?

Ice breaking:

- Please share with us your first name and how long have you used Internet banking services?
- "Trigger" question that enables the participants to begins to focus on the topic:

    Which banking services do you use through Internet banking?

Main discussion:

It includes three parts:

Part 1: General beliefs related to the use of Internet banking

- What do you find Internet banking most useful for?
- What do you find Internet banking least useful for?

- What affects your ideas about ease of use of Internet banking?
- What are your intentions towards the use of Internet banking? Are you planning to continue using Internet banking for conducting some of your banking transactions, or planning to use Internet banking for most of your banking transactions?

Part 2: Beliefs related to the trust, its antecedents and its consequences

- How do you feel when you use the Internet for financial transactions?
- How do you feel when you manage your bank account(s) without human touch, such as conducting banking transactions through Internet banking?
- Are there any risks in conducting banking transactions through Internet banking? If yes, what kinds of risks are?
- What kind of assurances that your bank has applied in its Internet banking website?
- Can you suggest further assurances that you would like your bank to apply in its Internet banking website?
- What are the characteristics that banks should have in order for their customers to trust them as Internet banking providers?
- What is the role of trust that plays in your intention towards the use of Internet banking? (I will ask this question when the participants did not raise the issue of trust).

Part 3: Questions regarding the Internet banking website

- Tell me some thing about your bank's website, anything that concerns you or you like on the website.
- Can you tell me some thing about the information available on the Internet banking website in terms of its quality?
- How easy is it to find the services you want on the Internet banking website?
- "Each banking service on the Internet banking web sit has obvious meaning and easy to find out" can you comment on this statement?
- How do you find the presentation of the internet banking website?
- Can you give me an example for an easy banking transaction that you conducted through the Internet banking website? And why?
- Can you give me an example for a difficult banking transaction that you conducted through the internet banking website? And why?
- How easy is it to get help and support from the bank when you face a problem with Internet banking?
- Can you give me some examples regarding the helps that you have got from the bank?
- Can you rely on the Internet banking system? And why?
- Have you experienced any difficulties in accessing a desired service on the Internet banking website? If yes can you tell me about it?
- Any suggestions regarding the internet banking website?

Closure:

- Give me an opportunity to return to any question that I feel was left unfinished and to clarify certain responses.
- Give the participants an opportunity for final questions and comments.

Appendix 2

Main Points and Themes Raised During the Focus Group Discussions

Technology Models	Key Points and Themes
The TAM	Using internet banking saves time.
	Internet banking allows managing of accounts from anywhere.
	Among bank channels, internet banking is the quick way of conducting banking services.
	Ease of registering for internet banking.
	Ease of checking accounts and paying utility bills.
	Some bank services are very easy to conduct.
	Mental effort spent first time in conducting some services.
	There is agreement among the participants to use internet banking for most of their banking transactions in future, if their banks develop their websites in a way, which they like.
Trust Model	Internet banking websites are more secure than other commercial websites.
	All participants prefer using bank technologies (no human involvement) to conduct their transactions.
	There are some risks with using any technology.
	Some people can control their perception of risk related to the use of technologies and reduce these perceptions, but others cannot.
	There are always some feelings of uncertainty caused by third parties (hackers).
	All participants agree that trust helps people to be able to live in risky environments.
	Trust is very important in internet banking.
	Most participants agree that bank websites are more trusted than other commercial websites, because of the attributes of the banks.
	Compared with other vendors, Saudi banks are monitored by the Central Bank, therefore they must adhere to the agreements and not behave opportunistically with their customers.
	Banks have the capability to provide excellent services and fulfil their customers' needs.
	The importance of protective legal structures.
	The importance of protective technological structures.

Main Points and Themes Raised During the Focus Group Discussions (Continued)

Technology Models	Key Points and Themes
TTF Model	There is not enough information with regards to some services, such as personal loans services.
	The accuracy of information between banking channels.
	Updated information among banking channels.
	Most services are found easily.
	There is a mental effort spent in order to understand some information related to some processes when conducting some banking services.
	The importance of presentation of internet banking services.
	Most the participants have phoned their bank at least twice because they did know how to complete some of their banking services through the internet.
	All the participants had the following problem: sometimes they want to conduct a bank transaction through the website, but there is denial from the system.
	The importance of getting help from the bank regarding internet banking problems.
	All participants think that banks should allow them full access to conduct any banking services without phoning their bank first for beneficiary identification.

Appendix 3

Comparisons between the Original and Adapted Measurement Items for the final scales

Variable	Original Item	Reference	Adapted Item
Perceived usefulness	Using Chart-Master in my job would enable me to accomplish tasks more quickly.	Davis (1989)	I believe that using Internet banking enables me to conduct banking transactions more quickly.
	Using Internet banking enables me to conduct banking transactions anytime.	New item	I believe that using Internet banking enables me to conduct banking transactions anytime.
	Using Chart-Master would make it easier to do my job.	Davis (1989)	I believe that using Internet banking makes it easier for me to conduct banking transactions.
	I believe that using Internet banking enables me to mange my bank account (s) more effectively.	New Item	I believe that using Internet banking enables me to mange my bank account (s) more effectively.
	I would find Chart-Master useful in my job.	Davis (1989)	I believe that Internet banking is very useful in conducting my banking transactions
Perceived Ease of Use	Learning to operate Chart-Master would be easy for me.	Davis (1989)	I believe that it was easy for me to learn how to use Internet banking to conduct banking transactions.
	Interacting with this retailer's Website does not require a lot of mental effort.	Pavlou (2003)	I believe that conducting banking transactions through the Internet banking website does not require a lot of mental effort.
	My interaction with Chart-Master would be clear and understandable.	Davis (1989)	I believe that the interaction with the internet banking website is clear and understandable.
	It would be easy for me to become skilful at using Chart-Master.	Davis (1989)	I believe that it was easy for me to become skilful at using Internet banking.
	I would find Chart-Master easy to use.	Davis (1989)	I believe that Internet banking is very easy to use.
Behavioural Intention	In the near future, I intend to continue using Internet banking for doing some of my banking transactions	New Item	In the near future, I intend to continue using Internet banking for doing some of my banking transactions
	In the future, I intend to use Internet banking for most of my banking transactions.	New Item	In the future, I intent to use Internet banking for most of my banking transactions.
	In the future, I will continue using internet banking for performing some of my banking transactions	New Item	In the future, I will continue using internet banking for performing some of my banking transactions.
	In the future, I will use Internet banking to conduct most of my banking transactions.	New Item	In the future, I will use Internet banking to conduct most of my banking transactions.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

Variable	Original Item	Reference	Adapted Item
Perceived Risk	How would you characterise the decision of whether to buy a product from this web retailer? (significant opportunity / significant risk).	Jarvenpaa et al. (2000)	The decision towards the use of Internet banking to conduct banking transactions is: A significant risk → A significant opportunity
	How would you characterise the decision of whether to buy a product from this web retailer? (high potential for loss / high potential for gain).	Jarvenpaa et al. (2000)	The decision towards the use of Internet banking to conduct banking transactions is: High potential for loss → High potential for gain
	How would you characterise the decision of whether to buy a product from this web retailer? (very positive situation / very negative situation).	Jarvenpaa et al. (2000)	The decision towards the use of Internet banking to conduct banking transactions is: A very negative situation → A Very positive situation
Trust	My bank is trusted as an Internet banking provider.	New Item	My bank is trusted as an Internet banking provider.
	I rely on Internet banking as a trusted medium of financial transactions.	New Item	I rely on the Internet banking as a trusted medium of financial transactions.
	Overall, I trust Internet banking to perform my banking transactions.	New item	Overall, I trust Internet banking to perform my banking transactions.
Perceived structural assurance of the Internet banking websit	I feel assured that legal structures, such as the bank's terms and conditions regarding the use of Internet banking protect me from problems when using the Internet banking website.	New item	I feel assured that legal structures, such as the bank's terms and conditions regarding the use of Internet banking protect me from problems when using the Internet banking website.
	I feel confident that encryption and other technological advances on the Internet make it safe for me to do business there.	McKnight et al. (2002)	I feel assured that technological structures, such as firewall and encryption on the internet banking website make it safe for me to conduct banking transaction there.
	The Internet has enough safeguards to make me feel comfortable using it to transact personal business.	McKnight et al. (2002)	I feel that internet banking web site has enough safeguards to make me feel comfortable using it for my baking transactions.
	In general, the Internet is now robust and safe environment in which to transact business.	McKnight et al. (2002)	In general, the Internet banking web site is a robust and safe environment in which to perform banking transactions.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

Variable		Original Item	Reference	Adapted Item
Perceived Bank Trustworthiness	Ability	Amazon.com knows how to provide excellent service.	Gefen (2002)	I believe that my bank is competent in providing excellent internet banking services..
		I believe that my bank has the capability to meet its Internet banking customers needs.	New Item	I believe that my bank has the capability to meet its Internet banking customers needs.
		Amazon.com knows how to provide excellent service.	Gefen (2002)	I believe that my bank knows how to provide excellent Internet banking services.
		I believe that my bank generally is an expert at providing Internet banking services.	New Item	I believe that my bank generally is an expert at providing Internet banking services.
	Integrity	I would characterise LegalAdvice.com as honest.	McKnight et al. (2002)	I believe that my bank is honest with its Internet banking customers.
		LegalAdvice.com is trustful in its dealings with me.	McKnight et al. (2002)	I believe that my bank is trustful in its dealing with my Internet banking transactions.
		I expect that Amazon.com will keep promise they make.	Gefen (2002)	I believe that my bank keeps promises they make to their Internet banking customers.
	Benevolence	I believe that LegalAdvice.com would act in my best interest.	McKnight et al. (2002)	I believe that my bank is acting in my best interest.
		I expect that Amazon.com is ready and willing to assist and support me.	Gefen (2002)	I believe that my bank would be ready and willing to do its best to assist and support me with using its internet banking.
		I expect that Amazon.com intentions are benevolent.	Gefen (2002)	I believe that my bank generally has a kind intention towards their Internet banking users.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

Variable			Original Item	Reference	Adapted Item
Task-Technology Fit (TTF)	Information Quality	Right Level of Detail	Sufficiently detailed data is maintained by the corporation or division.	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, detailed information is maintained sufficiently by the bank.
			The company maintains data at an appropriate level of detail for my purposes (group's tasks)	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, my bank maintains the information at the right level of detail for my bank purposes
		Accuracy	The data that I use or would like to use is accurate enough for my purposes.	Goodhue (1998)	On the Internet banking website, the information related to banking services is accurate enough for my bank needs.
			On the Internet banking website, my account(s) information is always as correct as at bank branch records.	New Item	On the Internet banking website, my account(s) information is always as correct as at bank branch records.
		Currency	On the internet banking web site, my account(s) information is up to date.	New Item	On the internet banking web site, my account(s) information is up to date.
			The data is up-to-date enough for my purposes.	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, the information is overall up to date enough for my bank needs.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

Variable			Original Item	Reference	Adapted Item
Task-Technology Fit (TTF) (Continued)	Service Visibility	Locatability	It is easy to locate corporate or divisional data on a particular issue, even if I have not used that data before.	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, It is very easy for me to locate a banking service, even if I have not conducted that service before.
			It is easy to find out what data the corporation maintains on a given subject.	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, it is very easy for me to find out what banking services my bank provides.
		Meaning	On the reports or systems I deal with, the exact meaning of data elements is either obvious, or easy to find out.	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, the exact meaning of each banking service is obvious.
			On the internet banking web site, each individual process of performing a banking service has obvious information	New Item	On the internet banking web site, each individual process of performing a banking service has obvious information
		Presentation	On the Internet banking web site, banking services are displayed in a clear form.	New item	On the Internet banking web site, banking services are displayed in a clear form.
			On the Internet banking web site, banking services are in general presented in a way I like it.	New Item	On the Internet banking web site, banking services are in general presented in a way I like it
		Confusion	There are so many different systems or files, each with slightly different data, that it is hard to understand which one to use in a given situation.	Goodhue (1998)	On the Internet banking web site, banking services are in few different forms that make it very easy for me to know how to use them.
			On the Internet banking web site, I never get confused with the process of conducting a bank transaction.	New Item	On the Internet banking web site, I never get confused with the process of conducting a bank transaction.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

Variable		Original Item	Reference	Adapted Item
Task-Technology Fit (TTF) (Continued)	System reliability	On the internet banking web site, conducting banking transactions are subject to frequent denial from the system	New item	On the internet banking web site, conducting banking transactions are subject to frequent denial from the system
		I can count on the system to be "up" and available when I need it	Goodhue & Thompson (1995) and Goodhue (1998)	On the Internet banking web site, I can rely on the system to be "up" and available when I need it.
		On the Internet banking web site, I believe that if I required assistance in accessing a banking service, my bank would assist me on that.	New Item	On the Internet banking web site, I believe that if I required assistance in accessing a banking service, my bank would assist me on that.
		It is easy to get assistance when I am having trouble finding or using data.	Goodhue (1998)	On the Internet banking web site, my bank will assist me when I have a problem in finding or using a required service.
		On the Internet banking web site, I believe that my bank will help me when I face a fraud.	New item	On the Internet banking web site, I believe that my bank will help me when I face a fraud.
	Accessibility	I can get data quickly and easily when I need it.	Goodhue (1998)	On the Internet banking website, I can get a desired banking service quickly and easily whenever I want.
		On the Internet banking website, my bank provides me seven days and 24 hours access to banking services.	New Item	On the Internet banking website, my bank provides me seven days and 24 hours access to banking services.

Comparisons between the Original and Adapted Measurement Items for the final scales (Continued)

	Variable	Original Item	Reference	Adapted Item
Task-Technology Fit (TTF) (Continued)	**Accessibility (Continued)**	It is easy to get access to data that I need.	Goodhue (1998)	On the Internet banking, it is easy for me to get access to any banking service that I need to conduct
		On the Internet banking website, specified conducted banking transactions which require a phone call to complete them; as benefitary identification i.e is not time consuming.	New Item	On the Internet banking website, specified conducted banking transactions which require a phone call to complete them; as benefitary identification i.e is not time consuming.

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Appendix 4

The questionnaire consultation sent to academics and managers

Dear Sir/ Madam,

I'm a PhD student in the School of Business at Birmingham University. My research project aims to investigate the factors that Influence customers' behaviour towards the use of Internet banking in Saudi Arabia. To collect data necessary for this study I have developed the enclosed items, which I will use in my questionnaire. As an expert in the field, I would like to consult you to check the Items' clarity and to determine their applicability with the constructs being measured. Your feedback is highly important to me and will definitely improve my questionnaire. Therefore, I would appreciate it very much if you can find time to review these items.

Please find attached with this letter the questionnaire consultation form which you can use to give your judgment on the questionnaire items and the research questions.

Thank you

Bader Almohaimmeed
Birmingham Business School
█████████████████
███████████████████████

For the purpose of this questionnaire, **Internet banking** refers to the use of the Internet to conduct banking transactions, such as checking account balance, transferring money to another account, paying utility bills, etc.

Part One: **The purpose of the following statements is to measure feelings related to the Internet Banking service provided by your own bank**

Perceived usefulness		**Statement's applicability with the construct being measured**		**Statement's clarity**		**Suggested modification**
I believe that…		**Inapplicable**	**Applicable**	**Unclear**	**Clear**	
1	…using Internet banking enables me to conduct banking transactions more quickly.					
2	…using Internet banking enables me to conduct banking transactions anytime.					
3	…using Internet banking makes it easier for me to conduct banking transactions.					
4	…using Internet banking enables me to mange my bank account (s) more effectively.					
5	…Internet banking is very useful in conducting my banking transactions.					
Perceived Ease of Use I believe that…						
6	…it was easy for me to learn how to use Internet banking to conduct banking transactions.					
7	…conducting banking transactions through the Internet banking website does not require a lot of mental effort.					
8	…the interaction with the internet banking website is clear and understandable					
9	…it was easy for me to become skilful at using Internet banking					
10	…Internet banking is very easy to use.					

Behavioural Intention:	Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
In the future…	Inapplicable	Applicable	Unclear	Clear	
11 …I intend to continue using Internet banking for doing some of my banking transactions					
12 …I intend to use Internet banking for most of my banking transactions.					
13 …I will continue using internet banking for performing some of my banking transactions					
14 …I will use Internet banking to conduct most of my banking transactions.					

Part Two: **The purpose of the following statements is to measure feelings associated with behavioural and environmental uncertainty**

Perceived Risk		Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
		Inapplicable	Applicable	Unclear	Clear	
15	The decision towards the use of Internet banking to conduct banking transactions is: A significant risk → A significant opportunity					
16	The decision towards the use of Internet banking to conduct banking transactions is: High potential for loss → High potential for gain					
17	The decision towards the use of Internet banking to conduct banking transactions is: A very negative situation → A very positive situation					
Perceived Trust						
18	My bank is trusted as an Internet banking provider.					
19	I rely on Internet banking as a trusted medium of financial transactions					
20	Overall, I trust Internet banking to perform my banking transactions					
Perceived structural assurance of the Internet banking website						
21	I feel assured that legal structures, such as the bank's terms and conditions regarding the use of Internet banking protect me from problems when using the Internet banking website.					

Perceived structural assurance of the Internet banking website (Continued)	Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
	Inapplicable	Applicable	Unclear	Clear	
22	I feel assured that technological structures on the internet banking website make it safe for me to conduct banking transaction there.				
23	I feel confident that legal and technological structures adequately protect me from problems when using Internet banking.				
24	I feel that internet banking website has enough safeguards to make me feel comfortable using it for my baking transactions.				
25	I feel that the Internet banking website, in general is a robust and safe environment in which to perform banking transactions.				

Perceived Bank Trustworthiness: (consists of three dimensions)	Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
(1) Ability I believe that…	**Inapplicable**	**Applicable**	**Unclear**	**Clear**	
26 … my bank is competent in providing an excellent Internet banking services.					
27 … my bank has the capability to meet its Internet banking customers needs.					
28 … my bank knows how to provide excellent Internet banking services.					
29 … my bank generally is an expert at providing Internet banking services.					
(2) Integrity I believe that…					
30 …my bank is honest with its Internet banking customers.					
31 …my bank is trustful in its dealing with my Internet banking transactions.					
32 …my bank keeps promises they make to their Internet banking customers					
(3) Benevolence I believe that…					
33 … my bank is acting in my best interest.					
34 …my bank would be ready and willing to do its best to assist and support me with using its internet banking.					
35 … my bank generally has a kind intention towards their Internet banking users.					

Part Three: **The purpose of the following statements is to measure the degree to which the Internet banking website assists you in conducting banking transactions.**

Task-Technology Fit (TTF): (consists of four dimensions)	Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
(1) Information Quality On the Internet banking website, …	**Inapplicable**	**Applicable**	**Unclear**	**Clear**	
36	… detailed information is maintained sufficiently by the bank.					
37	… my bank maintains the information at the right level of detail for my bank purposes					
38	… the information related to banking services is accurate enough for my bank needs.					
39	…my account(s) information is always as correct as at bank branch records.					
40	… my account(s) information is up to date.					
41	On the Internet banking web site, the information is overall up to date enough for my bank needs.					
(2) Services Visibility On the Internet banking website, …					
42	…It is very easy for me to locate a banking service, even if I have not conducted that service before.					
43	… it is easy for me to find out what banking services my bank provides.					
44	…the exact meaning of each banking service is obvious.					

Task-Technology Fit (TTF): (consists of four dimensions) (Continued)		Statement's applicability with the construct being measured		Statement's clarity		Suggested modification
(2) Services Visibility (Continued) On the Internet banking website, …		Inapplicable	Applicable	Unclear	Clear	
45	…each individual process of performing a banking service has obvious information					
46	… banking services are displayed in a clear form.					
47	… banking services are in general presented in a way I like it					
48	… banking services are in few different forms that make it very easy for me to know how to use them.					
49	… I nevert get confused with the process of conducting a bank transaction.					
(3) System reliability On the Internet banking website, …						
50	…conducting banking transactions are subject to frequent denial from the system.					
51	…I can rely on the system to be "up" and available when I need it.					
52	…I believe that if I required assistance in accessing a banking service, my bank would assist me on that.					
53	…my bank will assist me when I have a problem in finding or using a required service.					
54	…I believe that my bank will help me when I face a fraud.					
(4) Accessibility On the Internet banking website, …						
55	…I can get banking services quickly and easily					

	whenever I want.					
56	…my bank provides me seven days and 24 hours access to banking services.					
57	…it is easy for me to get access to any banking service that I need to conduct					
58	…to get authorisation by phoning the bank in order to complete some banking transactions is not time consuming for me.					

Note: a seven-point Likert scale was applied to all above questions

Finally: In your opinion is there anything which can be done to improve the content of this questionnaire? Please list any suggestions or comments.

Final Questionnaires (English Copy)

Saudi Customer Behaviour towards Internet Banking

Dear Madam/Sir,

I am Mr. Bader Almohaimmeed, a lecturer at Al Gasseem University in The Kingdom of Saudi Arabia. Luckily, for the time being, I am on a study leave to pursue my post graduate studies for the doctorate degree at The University of Birmingham; school of Business in the UK.

My research project aims to investigate factors affecting Saudi customers' behaviour towards the use of Internet banking. It is highly anticipated that the analysis of this questionnaire will contribute significantly to my research, aiming to improve Internet banking services in Saudi Arabia so that we can enjoy a better service towards our money and time.

This questionnaire has been carefully designed for most items to be circled in order to enable you to complete the questionnaire in less than 12 minutes. Your responses will be anonymous and confidential and used only for the purpose of this study. You can withdraw from this procedure at any time for any or no reason, but I would utterly appreciate your help. If you have completed this questionnaire before, please stop and thank you again for your co-operation.

Finally, by completing this questionnaire you will be one of those who assisted me in completing my dissertation and I value this very highly and acknowledge your generosity.

Yours Faithfully,

Bader Almohaimmeed
PhD Student
Birmingham Business School

For the purpose of this questionnaire, **Internet banking** refers to the use of the Internet to conduct banking transactions, such as checking account balance, transferring money to another account, paying utility bills, etc.

Part 1

	The following statements measure your general beliefs related to the use of Internet banking. Please **circle** only the one number which best reflects your level of agreement or disagreement with the following statements:					
	I believe that…	Strongly Disagree		Neutral		Strongly Agree
1	…using Internet banking enables me to conduct banking transactions more quickly.	1	2	3	4	5
2	…using Internet banking enables me to conduct banking transactions anytime.	1	2	3	4	5
3	…using Internet banking makes it easier for me to conduct banking transactions	1	2	3	4	5
4	…using Internet banking enables me to mange my bank account (s) more effectively.	1	2	3	4	5
5	…Internet banking is very useful in conducting my banking transactions.	1	2	3	4	5
6	… it was easy for me to learn how to use Internet banking to conduct banking transactions.	1	2	3	4	5
7	…conducting banking transactions through the Internet banking website does not require a lot of mental effort.	1	2	3	4	5
8	…the interaction with the Internet banking website is clear and understandable.	1	2	3	4	5
9	…it was easy for me to become skilful at using Internet banking.	1	2	3	4	5
10	…Internet banking is very easy to use.	1	2	3	4	5
	In the future, …	Strongly Disagree		Neutral		Strongly Agree
11	… I intend to continue using Internet banking for doing some of my banking transactions	1	2	3	4	5
12	… I intend to use Internet banking for most of my banking transactions	1	2	3	4	5
13	… I will continue using internet banking for performing some of my banking transactions	1	2	3	4	5
14	… I will use Internet banking to conduct most of my banking transactions.	1	2	3	4	5

Part 2

	The following statements measure how you feel about the behavioural and environmental uncertainty associated with the Internet service provided by your own bank. Please **circle** only the one number which best indicates your level of agreement or disagreement with the following statements:					
		Strongly Disagree ←		**Neutral**		**Strongly** Agree →
15	I trust my bank as an Internet banking provider.	1	2	3	4	5
16	I rely on Internet banking as a trusted medium of financial transactions.	1	2	3	4	5
17	Overall, I trust Internet banking to perform my banking transactions.	1	2	3	4	5
		A significant Risk ←		**Neutral**		**A significant** Opportunity →
18	The decision towards the use of Internet banking to conduct banking transactions is:	1	2	3	4	5
		High Potential For Loss ←		**Neutral**		**High potential for Gain** →
19	The decision towards the use of Internet banking to conduct banking transactions is:	1	2	3	4	5
		A Very Negative Situation ←		**Neutral**		**A very Positive Situation** →
20	The decision towards the use of Internet banking to conduct banking transactions is:	1	2	3	4	5
		Strongly Disagree ←		**Neutral**		**Strongly** Agree →
21	I feel assured that legal structures, such as the bank's terms and conditions regarding the use of Internet banking protect me from problems when using the Internet banking web site.	1	2	3	4	5
22	I feel assured that technological structures, such as firewall and encryption on the internet banking web site make it safe for me to conduct banking transaction there.	1	2	3	4	5
23	I feel that the internet banking web site has enough safeguards to make me feel comfortable using it for my baking transactions.	1	2	3	4	5
24	I feel that the Internet banking web site, in general is a robust and safe environment in which to perform banking transactions.	1	2	3	4	5

	I believe that my bank…	Strongly Disagree ←		Neutral		Strongly Agree →
25	…is competent in providing excellent Internet banking services.	1	2	3	4	5
26	…has the capability to meet its Internet banking customers needs.	1	2	3	4	5
27	…knows how to provide excellent Internet banking services	1	2	3	4	5
28	…generally is an expert at providing Internet banking services.	1	2	3	4	5
29	…is honest with its Internet banking customers.	1	2	3	4	5
30	…is trustful in its dealing with my Internet banking transactions.	1	2	3	4	5
31	…keeps promises they make to their Internet banking customers.	1	2	3	4	5
32	…is acting in my best interest.	1	2	3	4	5
33	…would be ready and willing to do its best to assist and support me with using its internet banking.	1	2	3	4	5
34	……generally has a kind intention towards their Internet banking users.	1	2	3	4	5

Part 3

The purpose of the following statements is to measure the degree to which the Internet banking website assists you in conducting banking transactions. Please **circle** only the one number which best indicates your level of agreement with the following statements:

	On the Internet banking website, …	Strongly Disagree ←		Neutral		Strongly Agree →
35	…detailed information is maintained sufficiently by the bank.	1	2	3	4	5
36	…my bank maintains the information at the right level of detail for my bank purposes	1	2	3	4	5
37	…the information related to banking services is accurate enough for my bank needs.	1	2	3	4	5
38	…my account(s) information is always as correct as at bank branch records.	1	2	3	4	5

	On the Internet banking website, …	Strongly Disagree ←		Neutral		Strongly Agree →
39	…my account(s) information is up to date	1	2	3	4	5
40	…the information is overall up to date enough for my bank needs.	1	2	3	4	5
41	…it is very easy for me to locate a banking service, even if I have not conducted that service before.	1	2	3	4	5
42	…it is very easy for me to find out what banking services my bank provides.	1	2	3	4	5
43	…the exact meaning of each banking service is obvious.	1	2	3	4	5
44	…each individual process of performing a banking service has obvious information.	1	2	3	4	5
45	…banking services are displayed in a clear form.	1	2	3	4	5
46	…banking services are in general presented in a way I like it	1	2	3	4	5
47	…banking services are in few different forms that make it very easy for me to know how to use them.	1	2	3	4	5
48	…I never get confused with the process of conducting a bank transaction	1	2	3	4	5
49	…conducting banking transactions are subject to frequent denial from the system	1	2	3	4	5
50	…I can rely on the system to be "up" and available when I need it	1	2	3	4	5
51	…I believe that if I required assistance in accessing a banking service, my bank would assist me on that.	1	2	3	4	5
52	…my bank will assist me when I have a problem in finding or using a required service.	1	2	3	4	5
53	…I believe that my bank will help me when I face a fraud.	1	2	3	4	5
54	…I can get a desired banking service quickly and easily whenever I want.	1	2	3	4	5
55	…my bank provides me seven days and 24 hours access to banking services.	1	2	3	4	5
56	…it is easy for me to get access to any banking service that I need to conduct	1	2	3	4	5
57	…specific transactions that require a phone call for completion (such as beneficiary identification) are not time consuming.	1	2	3	4	5

Part 4

Please answer the following questions about yourself. (Please tick ☑ at the appropriate box for you)

1) How long have you used Internet banking?

❑ Less than one year   ❑ More than 2 years
❑ 1-2 years

2) What are your most frequent ways of making banking transactions? **(Please choose only two)**

❑ Branch banking   ❑ Cash Machine
❑ Phone Banking   ❑ Internet Banking

4) Which banking services do you always use through Internet banking? **(Please check all that apply)**

❑ Basic account information   ❑ Making online bill payments
❑ Accounting check balance   ❑ Bank transfer
❑ Inter-account transfer   ❑ Stock trading
❑ Applying for cheque books   ❑ Other

5) What is your gender?   ❑ Male   ❑ Female

6) What is your age?

❑ 16-25 Years   ❑ 46-60 Years
❑ 26-35 Years   ❑ Above 60 Years
❑ 36-45 Years

7) What is your highest eductional qualification?

❑ Less than secondary school   ❑ Bachelor
❑ Secondary school   ❑ Master or above

❑ Professional Diploma

8) What is your current occupation?

❑ Student   ❑ Technical Staff
❑ Clerical Staff   ❑ Professional
❑ Houeswife   ❑ Pensioner
❑ Other

THANK YOU

FOR

YOUR PARTICIPATION IN THIS STUDY

Appendix 6

Final questionnaire (Arabic copy)

استبانة عن
اتجاهات المستهلك (العميل) السعودي تجاه خدمة الانترنت المصرفية

جامعة بيرمنجهام
كلية التجارة
بيرمنجهام، انجلترا
المملكة المتحدة

2008

اخي الكريم/اختي الكريمه

السلام عليكم ورحمة الله وبركاته

اتوجه إليكم انا الباحث الاكاديمي بدر المحيميد المحاضر بجامعة القصيم بقسم التسويق والمبتعث حاليا لنيل درجة الدكتوراه في التسويق في بريطانيا بالشكر والتقدير على إستقطاعكم 12 دقيقه فقط من وقتكم الثمين لتعبئة هذه الاستبانه والتي صُممت بطريقة إختيار الاجابه التي تتفق مع رغباتكم وقناعاتكم الشخصيه

إن هذه الاستبانه ماهي إلا جزء من أطروحتي المقدمه إلى جامعة برمنجهام في المملكة المتحدة لنيل درجة الدكتوراه في مجال التسويق حيث سأبحث العوامل المؤثرة في استخدام الخدمات المصرفيه المقدمه عن طريق الانترنت التي تقدمها البنوك السعوديه لعملائها السعوديين راجياً من الله عز وجل ان يسهم هذا البحث في تطوير هذه الخدمات لدى هذا القطاع الحيوي مما يشكل دفعة قويه لاقتصاد مملكتنا الحبيبه, ناهيكم ان نتائج هذه الاستبانه ستسهم وبشكل كبير في إنجاز هذه الاطروحه العلميه

من هذه المنطلق احب ان اؤكد على ان جميع البيانات والنتائج التي ستظهر من خلال اجاباتكم على هذه الاستبانه ستعامل بسريه تامه ولن يطلع عليها احد سوى الباحث تأكيدا لاخلاق البحث العلمي ناهيكم ان الجميع يملك كامل الحريه في الانسحاب من هذه المهمه سواء قبل او أثناء الاجابه على هذه الاستبانه

ختاماً احب ان اشكر كل من ساهم في نجاح توزيع وتعبئة الاستماره وليتذكر الجميع انكم انتم من النخب المضيئه في حياتي والتي سأذكرها بالإجلال والتقدير في مقدمة اطروحتي العلميه

مع تحيات اخوكم /بدر المحيميد

طالب دكتوراه في جامعة بيرمنجهام
المملكة المتحدة
Bxa620@bham.ac.uk

في جميع عبارات هذه الاستبانة فإن مصطلح **الانترنت المصرفية** يعني إستخدام الشبكه العنكبوتيه (الانترنت) لإجراء معاملات بنكية مثل متابعة الحساب الجاري والتحقق منه وكذلك دفع الفواتير و تحويل المبالغ الماليه من حساب إلى حساب مستفيد آخر... الخ.

الجزء الاول

توضح العبارات التاليه مدى قناعتك المتعلقة باستخدام خدمة الانترنت المصرفية، لذا المرجو منك وضع دائرة (O) على الرقم المناسب الذي يتوافق مع قناعتك ورأيك الشخصي من عدمه :

لا اوافق بشدة		محايد		اوافق بشدة	اعتقد ان...	
1	2	3	4	5	... استخدام خدمة الانترنت المصرفية تمكنني من تنفيذ معاملاتي البنكية بشكل اسرع.	1
1	2	3	4	5	... استخدام خدمة الانترنت المصرفية تمكنني من تنفيذ معاملاتي البنكية في اي وقت.	2
1	2	3	4	5	... استخدام خدمة الانترنت المصرفية تجعل من السهل على العميل اجراء معاملاته البنكية.	3
1	2	3	4	5	... استخدام خدمة الانترنت المصرفية تمكن العميل من متابعة حسابه الجاري بدقه وفعاليه اكثر.	4
1	2	3	4	5	... خدمة الانترنت المصرفية ضرورية للعميل فيما يتعلق بتنفيذ المعاملات البنكية.	5
1	2	3	4	5	... من السهوله بمكان لأي عميل تعلم استخدام خدمة الانترنت المصرفيه.	6
1	2	3	4	5	... إجراء المعاملات البنكية عبر خدمة الانترنت المصرفية لا يتطلب جهدا ذهنياً.	7
1	2	3	4	5	... التواصل بين العميل وموقع البنك عبر الانترنت عمليه مفهومه وواضحه.	8
1	2	3	4	5	... من السهل على العميل فهم آلية عمل خدمة الانترنت المصرفيه.	9
1	2	3	4	5	... خدمة الانترنت المصرفية سهلة الاستخدام.	10
لا اوافق بشدة		محايد		اوافق بشدة	في المستقبل...	
1	2	3	4	5	... انوي مواصلة إستخدام خدمة الانترنت المصرفية لإجراء بعض معاملاتي البنكية.	11
1	2	3	4	5	... انوي مواصلة إستخدام خدمة الانترنت المصرفية لإجراء معظم معاملاتي البنكية.	12
1	2	3	4	5	... سوف اواصل إستخدام خدمة الانترنت المصرفية لآداء بعض معاملاتي البنكية.	13
1	2	3	4	5	... سوف استخدم خدمة الانترنت المصرفية لإجراء معظم معاملاتي البنكية.	14

الجزء الثاني

	العبارة	اوافق بشدة		محايد		لا اوافق بشدة	

توضح العبارات التالية مدى شعورك حول خدمة الانترنت المصرفية التي يقدمها بنكك، لذا المرجو منك وضع دائره (O) على الرقم المناسب الذي يتوافق مع قناعتك ورأيك الشخصي من عدمه:

	اوافق بشدة ←		محايد		← لا اوافق بشدة	رقم
توجد لدي ثقه كامله ببنكي المحلي فيما يتعلق بتقديمه لخدمة الانترنت المصرفية.	5	4	3	2	1	15
أعتمد على خدمة الانترنت المصرفية بوصفها آليه جديره بالثقه فيما يختص بعمل التحويلات المالية.	5	4	3	2	1	16
بشكل عام انا اثق بخدمة الانترنت المصرفية للقيام بتنفيذ معاملاتي البنكية.	5	4	3	2	1	17

	لايتصف بالمخاطرة ←		محايد		← يتصف بالمخاطرة	رقم
إن القرار المتخذ حول استخدام خدمة الانترنت المصرفية لإجراء المعاملات البنكية هو قرار :	5	4	3	2	1	18

	ربح كبير ←		محايد		← خسارة كبيرة	رقم
إن القرار المتخذ حول استخدام خدمة الانترنت المصرفية لإجراء المعاملات البنكية هو قرار :	5	4	3	2	1	19

	ايجابي جدا ←		محايد		← سلبي جدا	رقم
إن القرار المتخذ حول استخدام خدمة الانترنت المصرفية لإجراء المعاملات البنكية هو قرار :	5	4	3	2	1	20

	اوافق بشدة ←		محايد		← لا اوافق بشدة	رقم
أن شروط أستخدام خدمة الانترنت المصرفية تحوي ضمانات قانونيه وتشريعيه كافيه لضمان موقف العميل وحمايته حال وجود خطأ يّضر بالعميل اثناء تنفيذ اي عملية عبر خدمة الانترنت المصرفية.	5	4	3	2	1	21
إن وجود حمايه الكترونيه كبرامج الحمايه والاختراق مهم لخلق بيئه آمنه لعملاء البنك اثناء استخدامهم لخدمة الانترنت المصرفية.	5	4	3	2	1	22
اشعر بثقه تامه بأن وجود حمايه الكترونيه علاوة على وجود ضمانات قانونيه وتشريعيه كافي لحماية العميل من اي مشكلة اثناء استخدام خدمة الانترنت المصرفية.	5	4	3	2	1	23
اشعر بأن موقع البنك عبر الشبكه العنكبوتيه بشكل عام هو بيئه آمنه لإجراء المعاملات البنكية.	5	4	3	2	1	24

لا اوافق بشدة		محايد		اوافق بشدة	اعتقد بأن بنكي...	
1	2	3	4	5	... ذو كفاءة عالية فيما يختص بتقديم الخدمات المصرفيه الالكترونيه عبر الانترنت.	25
1	2	3	4	5	... لديه القدره لتلبية رغبات عملائه مستخدمي خدمة الانترنت المصرفية.	26
1	2	3	4	5	... لديه المعرفه الكافيه لتقديم خدمات بنكية عبر خدمة الانترنت المصرفية.	27
1	2	3	4	5	... بشكل عام خبير في تقديم الخدمات البنكية عبر خدمة الانترنت المصرفية.	28
1	2	3	4	5	... صادق مع عملائه مستخدمي الخدمات البنكية عبر خدمة الانترنت المصرفية .	29
1	2	3	4	5	... لديه المصداقيه الكافيه فيما يتعلق بالتعامل مع معاملاتي البنكية عبر خدمة الانترنت المصرفية.	30
1	2	3	4	5	... لديه المصداقيه الكافيه فيما يتعلق بالوعود المعطاه لعملانه مستخدمي خدمة الانترنت المصرفية.	31
1	2	3	4	5	... يعمل الأفضل لصالحي.	32
1	2	3	4	5	... لديه القدره والاستعداد التام والكافي لتقديم افضل مساعده ممكنه فيما يتعلق بأستخدام خدمة الانترنت المصرفية.	33
1	2	3	4	5	... في الغالب يحمل في طياته نوايا طيبه لعملانه مستخدمي خدمة الانترنت المصرفية.	34

الجزء الثالث

توضح العبارات التاليه مدى فعالية موقع البنك على الشبكة العنكبوتية على مساعدتك في تنفيذ عملياتك البنكية. لذا المرجو منك وضع دائره (O) على الرقم المناسب الذي يتوافق مع قناعتك ورأيك الشخصي من عدمه :

لا اوافق بشدة		محايد		اوافق بشدة	على موقع البنك في الشبكة العنكبوتية...	
1	2	3	4	5	... توجد بيانات كافيه تراجع وتصحح بدقه كافيه.	35
1	2	3	4	5	... توجد بيانات كافيه تراجع وتصحح على حسب حاجة العملاء.	36
1	2	3	4	5	... توجد معلومات دقيقه حول الخدمات البنكية التي تلبي رغبة العميل.	37
1	2	3	4	5	... يوجد توافق تام بين بيانات حساباتي الشخصيه و سجلات البنك.	38
1	2	3	4	5	... معلومات حسابي البنكي دوماً محدثه.	39
1	2	3	4	5	... معلوماتي الشخصية والمالية محدثه بصوره كافيه لاحتياجاتي البنكية.	40
1	2	3	4	5	... من السهولة بمكان بالنسبة لي ايجاد الخدمه المطلوبة حتى وإن لم انفذ هذه العمليه من قبل.	41
1	2	3	4	5	... من السهولة بمكان بالنسبة لي معرفة الخدمات البنكية المقدمة.	42

لا اوافق بشدة		محايد		اوافق بشدة		على موقع البنك في الشبكة العنكبوتية...	
1	2	3	4	5		... يعطى وصف دقيق لكل خدمة بنكية.	43
1	2	3	4	5		... يتضح للعميل الخطوات المتبعه لإجراء الخدمة البنكية المطلوبه.	44
1	2	3	4	5		... الخدمات المصرفيه الالكترونيه معروضة بطريقه واضحة.	45
1	2	3	4	5		... الخدمات المصرفيه الالكترونيه معروضة بطريقه محببة الي.	46
1	2	3	4	5		... الخدمات المصرفية معروضة بطريقة مختصره مما يسهل على العميل استخدامها.	47
1	2	3	4	5		... لايحصل عندي أي إلتباس إثناء إجراء اي عملية بنكية.	48
1	2	3	4	5		... تنفيذ العمليات البنكية احيانا معرضة للرفض من النظام الالكتروني للبنك.	49
1	2	3	4	5		... النظام الالكتروني المستخدم من قبل البنك يعمل بجاهزية تامة عندما احتاجه.	50
1	2	3	4	5		... اعتقد انه اذا طلبت مساعدة في الدخول على خدمة بنكية فان بنكي سوف يساعدني في ذلك.	51
1	2	3	4	5		... سوف يساعدني بنكي إذا واجهت مشكله في ايجاد او استخدام خدمه بنكية معينه.	52
1	2	3	4	5		... اعتقد ان بنكي سوف يساعدني إذا لا قدر الله تعرضت لعملية نصب او احتيال.	53
1	2	3	4	5		... استطيع ان احصل على خدمات بنكية سريعه وبسهولة متى ما اردت ذلك.	54
1	2	3	4	5		... يقدم بنكي الخدمات البنكية للعملاء طيلة ساعات اليوم وطوال ايام الاسبوع.	55
1	2	3	4	5		... من السهوله بالنسبة لي الدخول على اي خدمة بنكية احتاجها.	56
1	2	3	4	5		...اكمال تنفيذ بعض المعاملات البنكية يستلزم اجراء اتصال هاتفي بالبنك كعمل تعريف مستفيد مثلا،لا يعد هدرا للوقت	57

الجزء الرابع

معلومات عامة..الرجاء الاجابة على الاسئلة التالية بوضع اشارة (�) على الاختيار المناسب:

1) منذ متى وانت تستعمل خدمة الانترنت المصرفيه ؟

☐ اقل من سنة   ☐ من عام الى عامين   ☐ أكثر من سنتين

2) ماهي وسيلتك المعتاده لإجراء معاملاتك المصرفيه؟ (الرجاء اختيار وسيلتين فقط)

☐ مكائن الصرف الالي   ☐ زيارة الفرع

☐ الانترنت المصرفية   ☐ الهاتف المصرفي

4) ماهي المعاملات البنكية التي تنفذها باستمرار عند استعمالك لخدمة الانترنت المصرفية؟ (الرجاء إختيار كل ما يناسبك في الحقول المذكوره ادناه)

❑ تحويل الاموال بين الحسابات	❑ الاستفسارات المتعلقة بالحساب
❑ دفع فواتير الخدمات	❑ تحويل الاموال بين البنوك
❑ خدمات بطاقات الائتمان	❑ خدمات دفاتر الشيكات
❑ اخرى	❑ المتاجرة بالاسهم

5) الرجاء تحديد الجنس :   ❑ ذكر   ❑ انثى

6) الرجاء تحديد العمر:

❑ 26-35 سنة	❑ 16-25 سنه
❑ 46-60 سنة	❑ 36-45 سنه

❑ اكثر من 60 سنة

7) ما هو اعلى مؤهل اكاديمي حصلت عليه؟

❑ الثانوية العامة	❑ اقل من الثانوية
❑ بكالوريوس	❑ دبلوم متوسط

❑ ماجستير او أعلى

8) ماهي مهنتك الحالية؟

☐ وظيفة فنية   ☐ طالب

☐ وظيفة ادارية   ☐ وظيفة مهنية

☐ متقاعد   ☐ ربة منزل

☐ اخرى

شاكراً لكم على مشاركتكم القيمه في هذه الاستبانه

Appendix 7

Overall Demographic Data of the Respondents

Demographic Variable	Category	Research Sample (n = 400)	
		Frequency	**Percent %**
Gender	Male	290	72.5
	Female	108	27.0
	Missing	2	0.5
Age	18-25 Years	120	30.0
	26-35 Years	189	47.2
	36-45 Years	74	18.5
	46-60 Years	13	3.3
	Above 60 Years	4	1.0
Educational Level	Less than secondary school	11	2.8
	Secondary school	73	18.2
	Professional Diploma	48	12.0
	Bachelor	223	55.7
	Master or above	43	10.8
	Missing	2	0.5
Job	Student	76	19.0
	Technical Staff	36	9.0
	Professional	72	18.0
	Clerical Staff	143	35.7
	Housewife	22	5.5
	Pensioner	4	1.0
	Other	47	11.8
Internet Banking experience	Less than One Year	96	24.0
	1-2 Years	136	34.0
	More than 2 years	168	42
Most Frequent Way of Making Banking Transactions	Branch Banking	42	10.5
	Cash Machines	184	46
	Phone Banking	174	43.5

Source: This research

Appendix 8
Frequencies and Percentages for Item Responses

Item	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Perceived usefulness										
PU1	30	7.7	135	34.6	75	19.2	69	17.7	81	20.8
PU2	22	5.6	115	29.5	97	24.9	75	19.2	81	20.8
PU3	120	7.4	120	30.8	96	24.6	70	17.9	75	19.2
PU4	117	8.5	117	30.0	117	30.0	50	12.8	73	18.7
PU5	26	6.7	96	24.6	112	28.7	75	19.2	81	20.8
Perceived ease of use										
PEU1	34	8.7	96	24.6	115	29.5	70	17.9	75	19.2
PEU2	38	9.7	108	27.7	136	34.9	64	16.4	44	11.3
PEU3	25	6.4	99	25.4	109	27.9	76	19.5	81	20.8
PEU4	33	8.5	95	24.4	116	18.2	71	18.2	75	19.2
PEU5	36	9.2	107	27.4	146	14.4	56	14.4	45	11.5
Behavioural intent										
BI1	30	7.7	82	21.0	119	30.5	94	24.1	65	16.7
BI2	30	7.7	83	21.3	119	30.5	91	23.3	67	17.2
BI3	27	6.9	94	24.1	122	21.3	81	20.8	66	16.9
BI4	34	8.7	82	21.0	119	30.5	92	23.6	63	16.2
Perceived trust										
PT1	53	13.6	106	27.2	129	33.1	64	16.4	38	9.7
PT2	52	13.3	128	32.8	107	27.4	64	16.4	39	10.0
PT3	48	12.3	107	27.4	128	32.8	65	16.7	42	10.8
Perceived risk										
PR1	49	12.6	115	29.5	126	32.3	64	16.4	36	9.2
PR2	50	12.8	124	31.8	104	26.7	75	19.2	37	9.5
PR3	53	13.6	120	30.8	100	25.6	55	14.1	62	15.9

Item	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
Perceived assurance										
PSIB1	19	4.9	107	27.4	126	32.3	49	12.6	89	22.8
PSIB2	21	5.4	127	32.6	104	26.7	46	11.8	92	23.6
PSIB3	23	5.9	128	32.8	122	31.3	69	17.7	48	12.3
PSIB4	24	6.2	126	32.3	125	32.1	67	17.2	48	12.3
Perceived bank trust										
PBTA1	20	5.1	129	33.1	126	32.3	66	16.9	49	12.6
PBTA2	23	5.9	131	33.6	122	31.3	68	17.4	46	11.8
PBTA3	29	7.4	126	32.3	121	31.0	67	17.2	47	12.1
PBTA4	25	6.4	126	32.3	125	32.1	67	17.2	47	12.1
PBTI1	22	5.6	131	33.6	127	32.6	66	16.9	44	11.3
PBTI2	22	5.6	131	33.6	127	32.6	66	16.9	44	11.3
PBTI3	27	6.9	136	34.9	125	32.1	55	14.1	47	12.1
PBTB1	22	5.6	136	34.9	125	32.1	64	16.4	43	11.0
PBTB2	27	6.9	125	32.1	136	34.9	47	12.1	55	14.1
PBTB3	27	6.9	125	32.1	136	34.9	47	12.1	47	14.1
TTF information quality										
TTFIQR1	33	8.5	134	34.4	121	31.0	67	17.2	35	9.0
TTFIQR2	31	7.9	137	35.1	120	30.8	69	17.7	33	8.5
TTFIQA1	38	9.7	139	35.6	109	27.9	78	20.0	26	6.7
TTFIQA2	39	10.0	141	36.2	107	27.4	79	20.3	24	6.2
TTFIQC1	33	8.5	137	35.1	117	30.0	69	17.7	34	8.7
TTFIQC2	31	7.9	140	29.8	116	29.7	65	16.7	38	9.7

Item	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
TTF service visibility										
TTFSVL1	34	8.7	138	35.4	116	29.7	68	17.4	34	8.7
TTFSVL2	36	9.2	137	35.1	118	30.3	68	17.4	31	7.9
TTFSVM1	38	9.7	140	35.9	107	27.4	78	20.0	27	6.9
TTFSVM2	26	6.7	84	21.5	131	33.6	114	29.2	35	9.0
TTFSVP1	24	6.2	84	21.5	134	34.4	114	29.2	34	8.7
TTFSVP2	27	6.9	85	21.8	133	34.1	112	28.7	33	8.5
TTFSVC1	26	6.7	85	21.8	128	32.8	116	29.7	35	9.0
TTFSVC2	26	6.7	84	21.5	114	29.2	131	33.6	35	9.0
TTF system reliability										
TTFSR1	31	7.9	101	25.9	134	34.4	99	25.4	25	6.4
TTFSR2	33	8.5	101	25.9	132	33.8	99	25.4	25	6.4
TTFSR3	25	6.4	99	25.4	136	34.9	99	25.4	31	7.9
TTFSR4	21	5.4	21	26.4	153	39.2	73	18.7	40	10.3
TTFSR5	26	6.7	86	22.1	130	33.3	113	29.0	35	9.0
TTF accessibility										
TTFAC1	33	8.5	122	31.3	104	26.7	74	19.0	57	14.6
TTFAC2	35	9.0	116	29.7	105	26.9	75	19.2	59	15.1
TTFAC3	33	8.5	123	31.5	104	26.7	74	19.0	56	14.4
TTFAC4	36	9.2	121	31.0	104	26.7	73	18.7	56	14.4

Appendix 9

Data Screening

Outliers and Mahalanobis Distance Values

Case Number	D^2	Sig.
16	30.42	.000
65	25.57	.000
66	31.59	.000
130	28.79	.000
155	53.18	.000
171	47.24	.000
173	28.73	.000
193	32.07	.000
221	28.70	.000
222	24.69	.000