THE MEDIATING ROLE OF AWARENESS IN THE INTENTION TO USE INTERNET BANKING AMONG SMEs IN YEMEN

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Doctor of Philosophy (PhD) in Business Management

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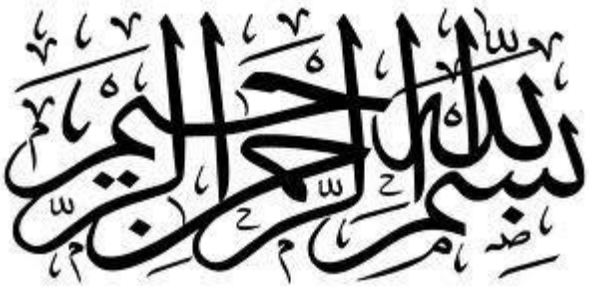

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ABSTRACT

This study examines the direct empirical relationship between independent variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) and intention to use internet banking (IB) among 376 SMEs owners in Yemen. Moreover, the research identifies the significance of intention to use IB as a plausible mediator in the relationship between independent variable (technology, perceived usefulness, accessibility, trust, and perceived ease of use) and intention to use IB - intention to use internet banking rates. In this study, technology, perceived usefulness, accessibility, trust, and perceived ease of use are posited as having an influence on intention to use IB rates among SMEs owners in Yemen. For data analysis and hypothesis testing, Structural Equation Modelling and several statistical methods such as the maximum likelihood estimate and regression technique were utilised to understand the dimensionality of the variables. The results show that technology and perceived ease of use negatively influences intention to use, while perceived usefulness, accessibility, and trust were found to positively affect intention to use. Moreover, awareness was found to be significant mediating factors in the relationship among perceived usefulness, accessibility, trust and intention to use IB among SMEs' owners. Awareness was a negative mediating factors in the relationship between technology and perceived ease of use among SMEs' owners. The relationship between awareness, (technology, perceived usefulness, accessibility, trust, perceived ease of use), and intention to use IB play a particularly important role in developing IB among SME in Yemen. Based on research findings, theoretical and practical implications were discussed. Limitations and recommendations for future research were also highlighted.

Keywords: IB, Owners of SMEs, awareness, (technology, perceived usefulness, accessibility, trust, perceived ease of use), intention to use, internet banking and SMEs owners.

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Amen.

DEDICATION

All praise, glory, and honour to Allah for his everlasting and steadfast love throughout my life and throughout this journey of completing my doctorate. With deep gratitude to my parents, for instilling the values of faith, character, virtue, discipline, patience, perseverance, and the encouragement to pursue and achieve my educational goals.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH OVERVIEW

Internet banking (IB) and the World Wide Web (WWW) has become critical service delivery channels (Lederer *et al.,* 2000). This channel has made IB reliable and easy for individuals to use, also easy for small to medium enterprises (SMEs) to implement into their services. IB will continue to revolutionise the current traditional banking industry, as it offers more opportunities to enhance further and improve consumer services through enhanced interaction, reliability, speed, and customisation in online banking services. The internet offers the banking sector a new channel for delivering services to its customers and extending its presence beyond a country's borders (Zolait *et al.,* 2008).

IB refers to transacting online banking activities via the internet (Pikkarainen et *al.,* 2004). It offers the ability to access accounts, transfer funds and purchase financial products or services online (Sathye, 1999). IB helps reduce inefficiencies while promoting competitiveness (Sathye, 1999). It is a major tool to provide banking services in a technology-savvy society. It also attracts new customers by extending its reach to a broader population (Suganthi *et al.,* 2001).

However, all of these concepts have remained theoretical regarding developing countries, as they have not progressed in the banking sector as quickly as predicted by previous research. In the case of Yemen, which is a developing country, research shows that most consumer banking customers rank IB as less important than other technology-based delivery channels, such as automated teller machines (ATMs) and telebanking (Aladwani, 2001). In developed countries, IB is widely accepted and used among SMEs to carry out daily personal and business transactions. However, this is not the case for developing countries such as Yemen, where multiple reasons have created a barrier toward the usage of IB, and consequently, the percentage of the population that use IB on a normal basis is relatively small (Alhariry, 2007; Zolait and Sulaiman, 2008).

The situation is similar among SMEs, although there is a lack of research in this area. In the case of Yemen, a limited amount of SMEs has implemented IB into their services. Corporate customer interactions have become more intense and complex since

they involve relationships between firms and banks (Athanassopoulos and Labroukos, 1999). Banks' corporate clients require complex banking needs, but the positive side is that they also provide a significant amount of profit opportunities to banks (Tyler and Stanley, 1999). These important customers, who are a considerable number, have not used IB to the required extent. The potential value to be gained by customer use of web-based service delivery seems to depend on overcoming several critical barriers to usage.

Prior studies have frequently focused on positive aspects (benefits) of IB (Suganthi *et al.,* 2001). Also, previous research on IB tends to concentrate on the perspective of individual customers (Gerrard *et al*., 2003).

In a world that is becoming increasingly interconnected as a consequence of the internet, IB has been gaining ground globally, at both the personal and business levels. This offers banking institutions a new frontier of opportunities and challenges to further augment competition in the global banking market. Internet technology is fundamentally changing the global banking industry, blurring the traditional lines that define product, market, and customer base (Gerrard *et al.*, 2003). Today, the click of the mouse empowers individuals with unprecedented freedom in choosing vendors for their financial service needs. Individuals have a wide array of companies to choose from, and of online services to use.

1.2 BACKGROUND OF THE PROBLEM

In the current changing and challenging business environment, banks have been gaining an increasing importance in paving the way for the development processes in any country. In the same vein Yemeni banking sector is not different from other banking sectors in many other developing countries. Specifically, Yemeni banks have been reported to have many problems that hinder their overall organizational performance Al-Swidi (2011). However, the main issues are related to the lack of market and customer-focus of these banks that results in the failure to attract Yemenis to do their transactions through banks Al-Swidi (2011). It has been logically argued that this lack of customer focus can be attributed to the lack of entrepreneurial capabilities of these banks. In other words, Yemeni banks lack the entrepreneurial capabilities that enable them to explore and exploit the great available business opportunities embodied in the wide pool of customers Al-Swidi (2011). Besides that, the poor service quality of the Yemeni banks has been another issue contributing to the nonexistence of trust between banks and the Yemeni savers. These issues could be the most threatening forces for the

survival of these banks if the economy opened up, after the soon expected entrance of Yemen to the World Trade Organization Al-Swidi (2011).As an attempt to shed some lights on the Yemeni banking sector's situation.

More importantly, the Yemeni banking system has not been able to gain the trust of the Yemeni customers. Moreover, according to the Mayor of the Central Bank of Yemen, the Yemeni people prefer to save their money at homes rather than dealing with banks. He also confirmed that there are only 600 thousand bank accounts, that represent only 2.7 per cent of the population, and no more than 500-600 thousand checks annually circulated. These facts have been corroborated by a recent study conducted by the Malaysian company SIRIM Berhad (2010) in the effort to establish a strategic plan for industrial development in Yemen.

These figures reflect that there has been a weak relationship between banks and the Yemeni savers. This situation requires that the Yemeni banks should exert huge efforts to attract an increasing number of Yemeni savers who refrain to deal with the current operating banks. As it was widely reported that 70 per cent of the Yemenis live in the rural areas and they have no awareness- and in many cases have no trust in the operating banking system, the Yemeni banking system holds only 60 per cent of the money supply and the bulk of the economy operates with cash (Al-Kamaly, 2004; Zolait *et al.* 2008).

Several studies on IB in Yemen were conducted by previous research (Alkibsi, 2010; Al-Ajam, 2013; ISA, 2013; Alqaatary, 2013; Kadam, 2013). Other IB research includes studies conducted by Zolait (2009) and Sulaiman (2009), which offer a specific understanding on the acceptance among Yemenis toward IB. However, these studies are limited to consumers only.

Transactions via IB systems are another major concern among customers. As a result, the concerns of these customers have affected the decisions of SMEs to implement IB into their services, because if there is a limit on IB usage by customers, this will directly affect the reliability and likelihood of system failure of those SMEs (Suh and Han, 2002). Perceived risk can cause customers to reject new technology-based service delivery. Safety and documentation in making financial transactions are the major factors in which SMEs are concerned. Customers are also worried that technology-based service delivery systems will not work as expected, and they also lack confidence that problems can be solved quickly (Ainin *et al.*, 2005).

To promote the age of IB, several factors need to be considered. Firstly, it is important to create "confidence" among customers about an IB system by providing sufficient information before SMEs can implement these systems. Secondly, banks should provide centres to promote and provide adequate assistance for SMEs to use these systems. Thirdly, banks must support the use of these systems by providing in-group training to make them aware and comprehend the usefulness of these systems (Najmie, 2009).

1.2.1 IMPORTANCE OF INTERNET BANKING FOR SMES

IB may help SMEs to expand their market to other countries, and even to a global level. SME managers may develop their relationships in the international market by participating in international trade fairs and exhibitions. IB services may enable SMEs to engage in electronic commerce (e-commerce), to gain better control of their financial situation, and eventually, control risk in a better way. On the other hand, banks may also find a profit when integrating their services with an SME. The implementation of IB by SMEs may help them improve their overall efficiency and competitiveness, among other factors (Gilaninia *et al.*, 2011).

SMEs are of great importance to developed and undeveloped (developing) countries, as they play a pivotal role in economic and social development, where their economic contribution reaches up to over 70% (Social Fund for Development, Yemen, 2011).

Economists consider SMEs as tools to reduce poverty and reduce unemployment by improving the overall quality of administrative and marketing skills of entrepreneurs, reflecting the importance of SMEs in their ability to generate jobs with low capital cost, thus helping address the unemployment problem faced by numerous countries. SMEs have ties with large companies that contribute to the increase and diversification of income, in addition to adding value to their local communities.

Despite the low capital needed, SMEs make use of it in an efficient way. This is due to the direct connection between the ownership of the enterprise and those that manage them, and to the dedication of such owners to succeed in their projects and manage them in the best way possible (Social Fund for Development, Yemen, 2011).

The government pays considerable attention to the importance of SMEs in improving the overall economy and reducing poverty and unemployment in Yemen. To reach its goal, the Yemeni government, through the Social Fund for Development

(SFD), attempts to raise public awareness about the importance of these enterprises (Social Fund for Development, Yemen, 2011).

Experience has shown that SMEs are frequent recipients of loans and have a record of demanding credit service from Microfinance institutions, which, in turn, contribute to the growth of their profits and amount of employees. This has resulted in the government creating the strategies, laws and legislation that promote and create an appropriate environment for the small and micro enterprises industry (Social Fund for Development, Yemen, 2011).

It is useful to shed light on the current situation of SMEs in Yemen. Based on data taken in 2000, SMEs in Yemen are considered a suggested solution for many economic problems related to the increasing unemployment rates and reducing poverty in the country (Al-swidi, 2011). SMEs in Yemen, comprise 99.6% of all business organisations, and over 7.2% of the GDP of the country, employing over about half a million workers (Ministry of Planning and International Cooperation MOPIC, 2004).

Regarding IB, individual SMEs are challenged with the problem of awareness and intention to use. Because individuals lack the required level of awareness toward the intention to use IB, SMEs also consider IB intention to use risky, since individuals' awareness is limited. As a result, SMEs rarely consider the implementation of IB, since their main concern is the individuals and the rate of individuals that use IB in Yemen is relatively limited (Zolait, 2010; Qatinah, 2012).

There are several barriers when it comes to the intention to use IB in Yemen. The main barrier is awareness (Zolait, 2010). Kardaras & Papathanassiou (2001) found that, when banks provide service via the web for its SMEs, customers demand many various types of support from banks, such as after sales service support for customer training in using the IB system, customers demand many various types of support from banks. In the financial services sector, service innovation has become critical for service providers to keep ahead of the competition. Currently, intention to use SMEs of web-based service delivery indicates that the web creates new opportunities for customers of SMEs and the bank to improve collaboration in product design and customisation.

1.2.2 INTERNET BANKING IN YEMEN

Internet services in Yemen started in 1996 through direct marketing by major companies via email. It has mainly been used by several Yemeni companies to advertise their products and services through email. Two operators provide local internet services,

which are Tele Yemen and the Public Telecommunication Corporation (PTC). The internet connections are adequate in certain parts of the country. Furthermore, dial-up, cable modem, and DSL services are available. According to recent statistics published by the PTC, the number of internet subscribers in Yemen increased to 295,215 in 2008 and was 216,076 subscribers the previous year. The number of internet cafes increased to 973 cafes in 2008, while there were only 925 cases in 2007. In other words, internet subscribers have risen to 36% in Yemen (Homaid, 2010).

To start with, it is renowned that individuals in the Middle East, including Yemen, are late adopters of the internet (Baraghani, 2008). This is a serious situation considering the importance of the internet to the development of the nation. According to the data in Table 1.1, with the exception of Iran and Saudi Arabia, which amount to 43.3 % and 15.9% respectively, all countries in the Middle East recorded less than 10% regarding internet usage as of June 31, 2013. Figure 1.1 shows all of the countries in the Middle East and their corresponding internet usage.

Middle East Internet Users, Population

MIDDLE EAST	Population (2014 Est.)	Users, in Dec/2000	Internet Usage 31-Dec-2013	% Population (Penetration)	Internet % users
Bahrain	1,314,089	40,000	1,182,680	90.0 %	1.1 %
Iran	80,840,713	250,000	45,000,000	55.7 %	43.3 %
Iraq	32,585,692	12,500	2,997,884	9.2 %	2.9 %
Israel	7,821,850	1,270,000	5,537,870	70.8 %	5.3 %
Jordan	6,528,061	127,300	2,885,403	44.2 %	2.8 %
Kuwait	2,742,711	150,000	2,069,650	75.5 %	2.0 %
Lebanon	4,136,895	300,000	2,916,511	70.5 %	2.8 %
Oman	3,219,775	90,000	2,139,540	66.4 %	2.1 %
Palestine (West Bk.)	2,731,052	35,000	1,512,273	55.4 %	1.5 %
Qatar	2,123,160	30,000	1,811,055	85.3 %	1.7 %
Saudi Arabia	27,345,986	200,000	16,544,322	60.5 %	15.9 %
Syria	22,597,531	30,000	5,920,553	26.2 %	5.7 %
United Arab Emirates	9,206,000	735,000	8,101,280	88.0 %	7.8 %
Yemen	26,052,966	15,000	5,210,593	20.0 %	5.0 %
Gaza Strip	1,816,379	n/a	n/a	n/a	n/a
TOTAL Middle East	231,062,860	3,284,800	103,829,614	44.9 %	100.0 %

Figure 1. 1: All of the countries in the Middle East and their internet usage.
Source: IWS (2013)

Due to the fact that internet usage is limited in Middle Eastern countries, IB awareness is also limited. The table shows that the use of the internet has dramatically increased in Middle Eastern countries at a rate of 40% from 2000 to 2013.

Consequently, most countries in the region have been implementing IB by increasing the awareness of individuals. In several countries, however, the awareness of intention to use IB has not met the desired level, as is the case of Yemen.

Kassim and Abdulla (2006) stated that only 20% of banks in the Arab region, including Gulf countries, provide state of the art IB services. They also expect an increase in intention to use IB by Arab banks, as most banks spend approximately 25% to 30% of their information technology (IT) budgets on the internet and web-related banking technologies. This indicates the desire and intention to use of banks to offer IB, and the bright future of IB for the developed countries in the region.

From the perspective of Yemen, even though statistics show a very low percentage of internet users (Table 1.1), the IWS (2013) suggests that internet usage is also increasing remarkably. As of June 2013, internet users in Yemen are about 5, 210, and 593.

Although a few studies addressed numerous issues on IB in developing countries, there is a lack of research related to IB in Yemen. Zolait *et al.,* (2008) examined informational readiness dimensions that affect intention to use IB in Yemen. Zolait and Sulaiman (2008) also investigated the basic characteristics of innovation depending on Roger's five innovation attributes. The respondents were Yemeni bank customers. Both users and non-users were taken into consideration. Another study conducted by Zolait *et al*., (2008) investigated the websites of Yemeni banks and stated that both the bank management and the government share the responsibility of developing banking activities and operations to increase the number of users of banking services. They reported that there remains a need to address many issues related to IB and the customers who are non-users and their intention to use IB.

Ba'alwy (2003, p. 13) reported that: E-commerce, e-business, and e-banking are still in their early stages of development. Although major banks in Yemen have a website, it cannot be considered electronic banking. Simultaneously with the national program of information technology (electronic government), other electronic services were declared, such as settling water, electricity and telephone bills through the internet (E-Rial). However, these services have not been entirely electronic, and their use is limited and not sufficiently promoted.

The Yemen Gulf Bank was among the first to offer IB to customers. According to Mohammed Al-Zubieri, Chairman of the Yemen Gulf Bank: "We were the first to introduce internet banking in 2005, but now we are upgrading it to be a full-fledged

operation" (Willems, 2004). Currently, many other banks have introduced I, such as CAC Bank, Yemen Commercial Bank, and Islamic Bank of Yemen. However, individuals' awareness of the intention to use IB is not at the level of the IB services that are offered by these banks. Even though Yemeni IB services were initiated by two banks, which are the Arab Bank (AB) and Yemen Gulf Bank (YGB), in 2002 (Alhariry, 2007), these services have not been fully utilised in the country (Alhariry, 2007).

At the inception of the intention to use IB services, local banks that operate in Yemen only offered a simplistic range of services, such as information of online services, access to sources of general information about banks, detailed institutional information, services promotional information, bank' branch locations, detailed information about the board of directors, call details, and information on special actions. The development in these services that banks currently offer in conjunction with the informational level shape communicative services that banks provide customer, such as historical background, organisational structure, a list of services, and products, contact channels and electronically publish the annual financial reports on their website (Zolait, 2008). Clearly, during the operation of these banks in Yemen, to emerge in such development, they had to adapt new technologies and further develop the infrastructure that enables them to offer such services (Paul Budde Communication Pty Ltd, 2011; Alhariry, 2007).

However, some banks provide internet banking services in Yemen as shown in Table 1.1, while Table 1.2 lists the electronic services provided by banks operating in Yemen collected from several references in 2011.

Table 1. 1:
Electronic Banking Services in Yemen

No	Bank	Bank Website	e-Banking Services			
1	CAC	www.cacbank.com.ye/newsite/	MB	TB	POS	IB
2	AB	www.arabbank.com/ar/aboutus.aspx	MB	TB	POS	IB
3	YCB	www.ycb.com.ye/ycben/index.htm	MB	TB	POS	IB
4	YGB	www.yg-bank.com/index.html	MB	TB	POS	IB

Source: Central Bank of Yemen, 2010

(CAC) Cooperative and Agricultural Credit Bank, (MB) Mobile banking

(AB) Arab Bank, Bank, (TB) Telephone Banking, (YCB) Yemen Commercial Bank (POS) Point of Sale, (YGB) Yemen Gulf Bank.

1.2.3 SMEs

SMEs make a significant contribution to the socio-economic and political infrastructure of developed and developing countries, as well as the nations transitioning from command to market economies (Matlay and Westhead, 2004). Furthermore, a healthy and growing SME sector is perceived to be crucial for a sustainable competitive advantage and economic development at the local, regional, and international levels (Porter and Kramer, 2006). The importance of SMEs has grown remarkably over the past 20 years. Appreciation of their role has matched this remarkable growth. In addition, SMEs have reduced the average rate of unemployment and increase innovation (Hussain, 2010).

Bhatti (2012) claimed that small and medium sized companies are usually companies that employ less than 250 employees. The technical definition varies from country to country in the Middle East and the Asia-Pacific region but is generally based on employment, assets, or a combination of the two. SMEs are an important part of a country's economy and have long been recognised as different from large companies (Street and Meister, 2004). SMEs are also the fastest growing sector of most economies, and are seen as more flexible, and possess the ability to adapt in terms of structure and speed of response of large organisations (Tagliavini *et al.,* 2001). SMEs play a vital role in the economic development and growth of a country (McLarty, 1999). However, there is a lack of consensus on how to define SME projects (Gibb, 1993; Curran and Blackburn, 2001). Every country defines SMEs in a different way. For example, in developed countries, such as the European Union (Eyre and Smallman, 1998), SMEs are companies that employ less than 500 employees.

Based on recent statistics by the government of Yemen, there are 27.796 SMEs in the Republic of Yemen (YMIT, 2014). The definition of SMEs in Yemen is adopted in several studies. According to the Ministry of Planning and International Cooperation, the Yemeni government defined SMEs, and according to them, a small business has 1-4 employees, a medium business has 5-9 employees, and a large business has over 10 employees.

According to Fararah and Al-Swidi (2011), 27% of all SMEs in Yemen established in Sana'a, 10.5% in Taiz and 7.8% in Ibb. The World Bank defined SMEs depending on a number of employees the microenterprise from 1-10 employees, and small enterprise from 11-50 workers, and the medium enterprise from 51- 300 employees (Malhotra *et al.*, 2006). The World Bank definition of the SMEs is not the same as the Yemeni definition. Based on Bo (2010), SMEs are "usually medium or small-scale enterprises with simple internal organisation structure, independent production, and operation, non-monopoly of relevant product markets, corresponding social responsibility, and different kinds of ownerships and organisation patterns".

Khalid (2007) claimed that SMEs in Yemen may face numerous problems related to marketing, investor access to various funding sources, and marketing their products, and services at the local and international levels, which has led to the weak position of competition in the domestic market (Bhatti, 2012).

1.3 Problem Statement

IB is defined as the use of the internet as a remote delivery channel and tool of banking system services via the web (Furst, Lang and Nolle, 2002). With the increasing rate of technology and the internet, banks have implemented IB on this new channel that the internet has made possible. This way, banks would take advantage of the concept of IB, making it convenient for both banks and individuals to access and manage their account using an internet connection, which is currently available in almost every home.

The general problem is that there is low awareness of IB services among individuals, leading to lack of interest among individuals and SMEs to use IB, and there must be a deeper explanation for the phenomenon (Al-Ajam, 2013; Alkibsi, 2010; ISA, 2013; Alqaatary, 2013; Kadam, 2013; Zolait, 2009).

Although IB services are rapidly increasing in Yemen because the country has been swept away by the wave of technology that hit the world on a global scale, awareness by the SMEs is not at the level of the services provided (Zolait, 2009). Although IB has been widely and exhaustively adopted in developed countries, awareness by owners of SMEs of this service has been slower than anticipated. Furthermore, based on World Bank's report in 2009, Yemen also lags behind other countries in the region when it comes to the general and overall usage of information technology (IT) services.

Previous research has not taken into consideration SME owners (Al-Ajam, 2013; Alkibsi, 2010; ISA, 2013; Alqaatary, 2013; Kadam, 2013; Zolait, 2009) and the range of variables affecting individuals' intention to use IB and awareness that taken into account by these researchers are limited. This gap has brought up the motivation to carry out this study. Unlike previous research, this work will take into consideration owners of SMEs in Yemen, to investigate several dimensions (technology, perceived usefulness, accessibility, trust, ease of use), and how they are related to the awareness and intention to use IB in Yemen.

This research seeks to understand the low awareness and acceptance of Internet banking in Yemen and whether that has caused the low intention to use IB. It experiments by putting awareness as a mediating factor and wish to find out if awareness can be a good mediating factor in the intention to use IB. This research study aimed to fill the gap in the literature by assessing the specific and empirical relationship between owners of SMEs' awareness and intention to use IB in Yemen, and to examine the role of awareness as a mediating variable between the dependent and independents variables. Several dimensions (technology, perceived usefulness, accessibility, trust and ease of use) and their relationships with the intention to use IB and awareness toward IB in Yemen will be examined closely.

The research aims to provide solutions to the mentioned gap by extending the ability of technology acceptance model (TAM; Davis, 1989) to investigate empirically the factors that influence on owners of SMEs to intention to use and awareness of IB services in Yemen. The underlying model employed in this research will help to better comprehend the relationships of these variables with intention to use internet banking and, in order to attempt to provide assistance in the spreading of IB service usage by owners of SMEs, by offering solutions to enhance its intention to use IB services in Yemen and improve the economy as a result.

The research plans to use about 900 owners of SMEs in Yemen as my respondents to administer a research instrument in the field works. The research findings will show the significant variables that can predict the adoption of Internet banking in Yemen and measure the role that awareness play in determining the intention to use IB among SMEs in Yemen.

1.4 Significance of the Study

IB reduces the transaction costs of banking for both SMEs and banks. SMEs need not visit banks for banking transactions, providing round the clock services (Karjaluoto *et al.,* 2002; Cheng *et al.,* 2006). SMEs can apply for loans and carry out other banking services online (Smith and Rupp, 2003). Despite these benefits, little research has been conducted on factors affecting internet banking users by owners of SMEs in developing countries, especially in Yemen.

However, the financial services of SMEs have so far received limited attention regarding research (Gehling *et al.,* 2007). Nonetheless, internet financial services represent a critical issue for the survival of SMEs (Wright and Ralston, 2002). From the banks' point of view, the use IB is expected to lead to reductions in cost by sweeping away inefficiencies and enhancing competitiveness.

This study helps to increase the awareness of both individuals in SMEs toward IB, and, in turn, this will help with the intention to use internet banking of owners of SMEs. This work may have the potential to drive individuals toward the intention to use IB, and consequently, to encourage owners of SMEs to implement IB into their services, since individuals will be at the desired level regarding intention to use internet banking. Moreover, the use of the internet in the banking sector is at an early stage. This study will focus on the perceived barriers of IB among individuals to observe how they affect awareness of IB in Yemen, and how this affects the intention of owners of SMEs in the country.

1.5 Objectives of the Study

The objectives of this research are as follows;

1. To examine the role of awareness in predicting intention to use IB in Yemen.
2. To investigate the role of technology on the intention to use IB.
3. To investigate the role of ease of use on the intention to use IB.
4. To investigate the role of perceived usefulness on the intention to use IB.
5. To investigate the role of accessibility on the intention to use IB.
6. To investigate the role of trust on the intention to use IB.
7. To deliberate the implications for theoretical development and practice concerning consumers banking in the country.

1.6 Research Questions

The questions of this research are as follows;

1. Does awareness affect the intention to use of IB in Yemen?
2. Does technology affect the intention to use of IB in Yemen?
3. Does ease of use affect the intention to use of IB in Yemen?
4. Does perceived usefulness affect the intention to use of IB in Yemen?
5. Does accessibility affect the intention to use of IB in Yemen?
6. Does trust affect the intention to use of IB in Yemen?
7. What are the implications of the relationship between awareness and the intention to use IB for policy makers, marketers, industry players that aim to target Yemenis?

1.7 Potential Contribution of the Study

This study focuses on the intention to use internet banking (IB) by SMEs and seeks to carry out a deeper investigation about the factors affecting the intention to use IB services, which are considered as independent variables in this research (technology, perceived usefulness, accessibility, trust, and ease of use).

From the perspective of SMEs, the researcher also expects organisations that depend on e-commerce or present their products or services via the internet to benefit from the results of this study after gaining knowledge about the factors that influence customers' attitudes to use new technologies. Therefore, this study could contribute to help organisations such as banks, insurance companies, airline companies, and health sectors to understand the factors that influence individuals' behaviours regarding the awareness and intention to use technological services. Furthermore, the availability of financial information via the internet is beneficial to organisations seeking and planning to conduct e-commerce in Yemen, if local banks cannot provide online transactions that are necessary for e-commerce, e-government, e-services, and other online activities of those organisations.

It is essential for banks to better comprehend the reasons SMEs refuse to use new technologies in order to predict how owners of SMEs respond to innovation. Consequently, they can motivate non-user acceptance of information technology-based innovations by changing the technological characteristics and processes to satisfy their demands.

From the perspective of the government, IB is an innovation, and the result of this study may be used to improve the banking sector and enhance the quality of IB services in the future. It is predicted to contribute to improving the economy in Yemen since the banking sector is a stepping-stone to achieve that goal.

1.8 Scope of Study

The focus of this study is to determine the main factors that influence owners of SMEs demand for IB. The factors that contribute to the demand are technology, perceived usefulness, accessibility, trust, and ease of use IB. This study uses the data collected from questionnaires, which has been distributed to SMEs. The final version of the questionnaires has been distributed to owners of SMEs. Target respondents consist of owners of SMEs in Yemen.

1.9 Feasible Limitations

The current research is limited to SMEs with bank accounts in Yemen and agreed to participate voluntarily. The examination will include owners of SMEs and intention to use internet banking only.

1.10 Definition of Key Terms in this Study

This study defines internet banking (IB) as the use of internet based banking to conduct informational, communicative, and transactional banking activities, such as paying bills, viewing checking account balances, and making information enquiries. User acceptance of internet banking is defined as a consumer's and SME's decision to continue using IB services in the future. It is examined by the intention to use IB services.

Intention to use: Intention to use is defined by Swanson (1988) as potential user's predisposition toward personally using a specific system, is considered as the predictor of system usage within the TAM.

Technology: In this research, the term of technology is defined as the capabilities that are offered to organisations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes (Attaran, 2003).

Perceived Usefulness: perceived usefulness is defined as the degree to which individuals believe that using a particular system would enhance their overall job performance (Davis, 1989).

Perceived Ease of Use: perceived ease of use is defined as, "the degree to which the prospective user expects the target system to be free of effort" (Davis *et al.*, 1989, p. 985).

Accessibility: accessibility is defined as the ability of users to access information and services on the web, and is dependent on numerous factors. These include the content format, hardware, software and settings, internet connection, environmental conditions and a user's abilities and disabilities (Godwin-Jones, 2001; Hackett and Parmanto, 2009).

Trust: trust is defined 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 trust, irrespective of the ability to monitor or control that other party" (Mayer *et al.*, 1995).

Awareness: awareness is the imperative exploration on the mechanism of individuals to gain knowledge of a particular product or service and to what degree there is a lack of their information about it.

1.11 Organisation of the Research

The layout of this study is as follows;

Chapter 1 defines the problem statements and study objectives. It provides operational understandings of IB and SME, and the research scope is defined. It offers a detailed overview of this empirical study.

Chapter 2 reviews literature on SMEs and IB, especially in Yemen. All prominent theories used by previous research on the same theme of this investigation are also reviewed. It details the research framework and develops the hypotheses.

Chapter 3 articulates the research methodology and variables. The research methods and data sources are also identified. This includes the decision to use a questionnaire to collect data, and the tools to verify its validity through statistical analyses.

Chapter 4 examined the outcomes from analysing the data and how they reflect on the research questions and objectives

Chapter 5 presents the discussion and conclusions of the study. It provides an overview of the research and discusses findings related to the results drawn from testing of the hypotheses in this study. The chapter presents theoretical and managerial

implications drawn from the results reported in Chapter Four. It concludes by presenting limitations and directions for future research followed by the conclusions.

1.12 Summary

This chapter introduces this research by articulating the problem statement, research objectives and questions, and provides the significance of the study. This study identifies that limited studies exist on the relationship between SMEs and IB. In addition, this chapter presents the general objectives and specific objectives for this study. Moreover, it provides the research scope and explains relevant IB terminologies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The current study examines the relationship between owners of SMEs' awareness and intention to use IB in Yemen, and to consider the role of awareness as a mediating variable between the dependent and independents variables. The chapter will present a definition of awareness and will highlight several dimensions (technology, perceived usefulness, accessibility, trust and ease of use), and their relationships with the intention to use IB and awareness toward IB in Yemen.

The research community has been trying to comprehend methods and factors that will change people's behaviours and attitudes to use and utilise information systems. This topic plays a central role for cooperation since comprehending those factors will enhance their capacity in getting to know the perceptions of individuals that use these systems, and at the same time, empowering designers and developers to improve the systems and their utility by concentrating on these people's choices and behaviours (Venkatesh and Davis, 1996). During years of research on these factors, studies in this area have investigated possible factors to predict users' adaptation of information systems and information technology. Numerous models have been used and developed to understand what enables a user to use information systems (Venkatesh *et al.,* 2003).

There are several theories, including the theory of reasoned action (TRA), theory of planned behaviour (TPB), and TAM that are widely accepted and used by previous research in this area. The TAM has a clearer focus on information systems and their usage.

The TAM theory was highly utilised for the sole objective of the prediction and the improvement of the understanding of the reasons individuals adopt technology in diversified fields. It is of high importance to highlight that this research adopts the TAM-based findings as a milestone for the design and creation of the conceptual model.

2.2 Conceptual Models Used in the Intention to Use and Utilisation of Technology

The acceptance of technology has significantly increased in various organisations. In 1999, it was predicted that the yearly global spending on information technology (IT) might reach over one trillion US dollars per year, and it was estimated to grow roughly around 10% yearly in a compound manner (Seddon *et al.*, 1999). Statistics and reports have illustrated that 50% of capital investment of cooperation has been spent on IT since the 1980s (Venkatesh *et al.*, 2003). Although the positive impact of this on the improvement of IT systems is not confirmed, these systems are adopted and used by the targeted users (Venkatesh and Davis, 1996). Thus, it is vital to acquire knowledge on the core reasons that make individuals interested or uninterested in utilising new information systems (IS) to understand and be able to come up with pragmatic ways to further improve IS, to predict targeted individual's reaction and intention toward the practical usage of IT systems (Davis, 1989).

Studies have found that intention significantly predicts the adoption and use of new IT systems (Venkatesh and Morris, 2000; Fishbein and Ajzen, 1975; Davis, 1989; Ajzen and Fishbein, 1980; Davis *et al.*, 1989).

Fishbein and Ajzen (1975) introduced TRA to explaining and predict IT usage and behaviour. Ajzen (1991) added perceived behavioural control (PBC) to TRA so that both intention and actual behaviour to use can be examined named the theory of planned behaviour (TPB). Mathieson (1991) and Taylor and Todd (1995) supported that using TRA and TPB is appropriate for investigating IT usage behaviour. Davis introdcued TAM in 1986 to model user acceptance of an IS. The TAM is one of the most widely accepted models to elaborate user acceptance of new IS/IT systems (Venkatesh and Davis, 2000).

2.2.1 Theory of Reasoned Action

TRA is used in social psychology to explain the factors influencing an individual's behaviour (Ajzen and Fishbein, 1980). It posits that behaviour is rational meaning that users weigh the consequences of their actions before deciding on a course of action (Ajzen and Fishbein, 1980).

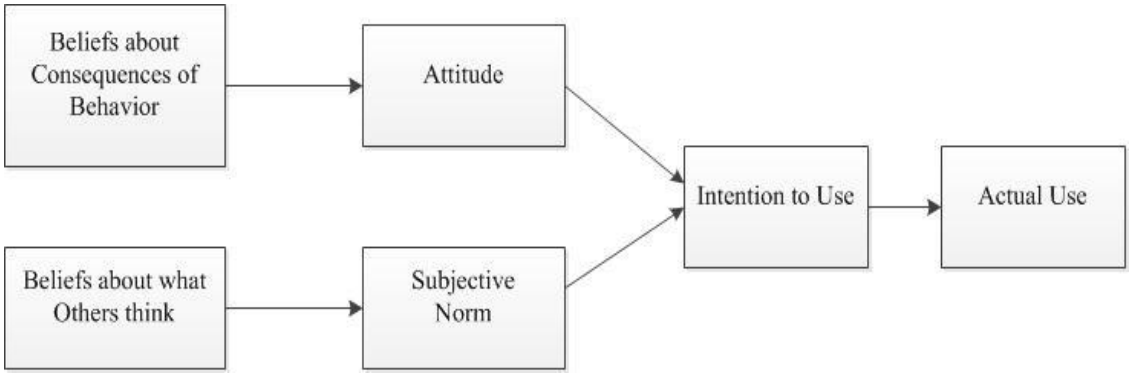

Figure 2. 1 Theory of Reasoned Action (Fishbein and Ajzen, 1975)

According to Ajzen and Fishbein (1980), TRA posits that "most behaviours of social relevance are under volitional control, and are thus predictable". The TRA model, as shown in the figure, defines relationships among beliefs, norms, attitudes, intended behaviour, and actual behaviour. In the TRA, attitudes and subjective norms affect an individual's intention, which predicts the behaviour of that person. Attitude refers to an individual's negative or positive assessment of the behaviour in question (Fishbein and Ajzen, 1975). Subjective norm, a social influence factor, refers to an individual's perception of social pressure to perform (or not to perform) the particular behaviour (Fishbein and Ajzen, 1975). Therefore, the TRA comprises two core constructs, which are attitude and subjective norms. These are defined in Table 2.1.

Table 2. 1:
Core constructs in TRA

Core Constructs	**Definition**	**Author**
Attitude	Refers to an individual's negative or positive evaluation of the behaviour.	Fishbein and Ajzen (1975)
Subjective Norm	Refers to an individual's perception of social pressure to perform or not to perform the behaviour.	Fishbein and Ajzen, (1975)

The TRA has been widely implemented and tested in various related studies to predict and explain the performance both the intended and the actual behaviour (Davis *et al.*, 1989). However, by the time this theory was applied in various academic areas,

researchers' realised that this theory was not sufficient, and there were several limitations when applied in particular contextual settings (Davis *et al.*, 1989; Ajzen, 1991). Davis *et al.*, (1989) suggested that the TRA is a general behavioural theory and does not specify what specific beliefs are suitable in specific situations. Furthermore, the TRA theory was criticised for being unsuitable for predicting situations where individuals have low levels of volitional control (Ajzen, 1985). To address these limitations, Ajzen (1991) extended the TRA and proposed a new theory called the TPB, which is discussed in the next section.

2.2.2 Theory of Planned Behaviour

Ajzen (1991) added perceived behavioural control (PBC) to accommodate for volitional control. PBC factor, subjective norms (SN), and attitudes determine intentions to use and actual behaviour.

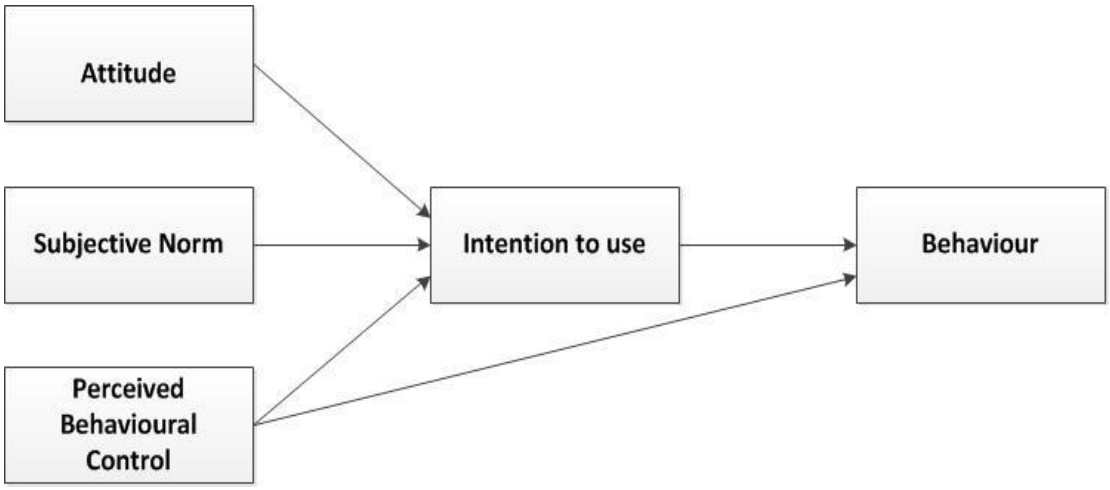

Figure 2. 2: Theory of Planned Behaviour (Ajzen, 1991)

TPB can predict the performance of intentions and actual behaviour including what helps people decide to use information systems (Mathieson, 1991) and behave unethically. TPB includes perceived behavioural control as opposed to the TRA and directly influences intention.

The significance of perceived behavioural control in predicting behaviour (Mathieson, 1991; Taylor and Todd, 1995) depends on self-efficacy (Armitage and Conner, 2001).

Table 2. 2:
Core constructs in TPB

Core Constructs	Definition	Author
Behavioural intention	Refers to individual's intention to perform behaviour and is a function of attitude, subjective norm, and perceived behavioural control.	Fishbein and Ajzen (1975), Ajzen (1991), Mathieson (1991)
Attitude	Refers to individual's negative or positive evaluation of the behaviour.	Fishbein and Ajzen (1975), Ajzen (1991), Mathieson (1991)
Subjective Norm	Refers to individual's perception of social pressure to perform or not to perform the behaviour.	Ajzen (1991), Mathieson (1991)
Perceived Behavioural Control	Refers to the perceived ease or difficulty of performing the behaviour and reflects.	Ajzen (1991), Mathieson (1991)

Source: Developed for this research

2.2.3 Technology Acceptance Model

TAM is broadly used to study the acceptance of information systems (IS). It models the acceptance of IS before people use new systems. It helps predict and explain user acceptance of IS.

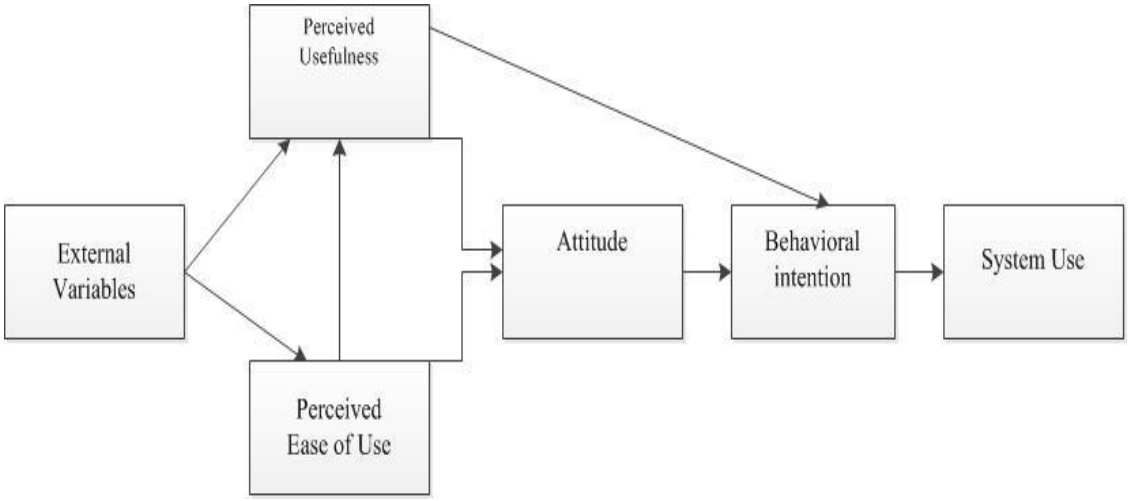

Figure 2. 3: Technology Acceptance Model (Davis, 1989)

Regarding new technologies, individuals are influenced by perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989) as they form an individual's attitude. Davis (1989) later revised the original TAM to better predict and explain user behaviour by including behavioural intention (BI). Supporting this, Davis and Venkatesh (1996) proved that attitude only partially mediated the BI to use. The revised TAM is illustrated in Figure 2.4.

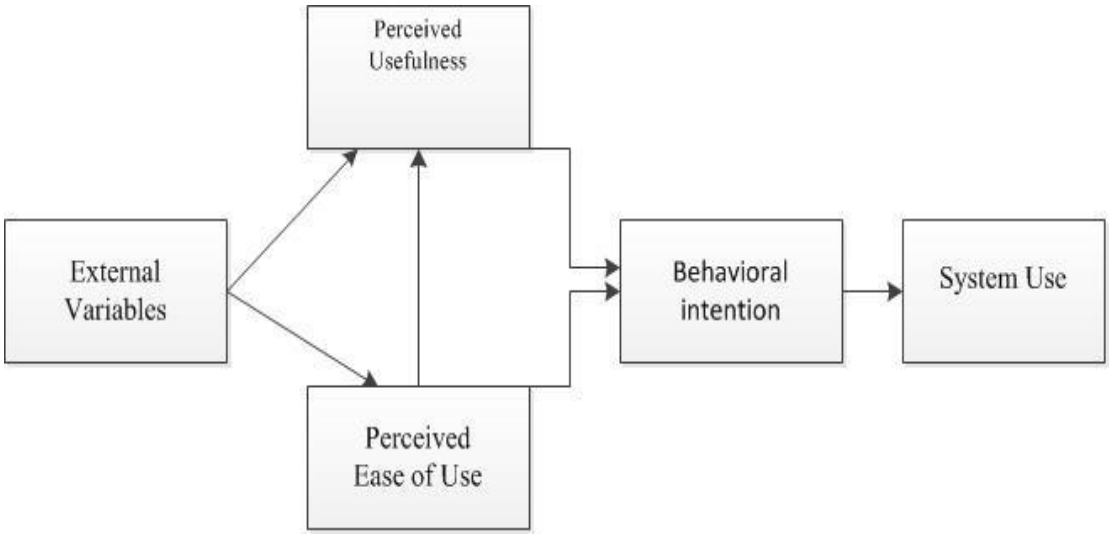

Figure 2. 4: Revised Technology Acceptance Model (Davis, 1989)

The revised model of technology acceptance proposes that BI is determined by both PU and POEU. PU is determined by PEOU and external factors. PEOU is also hypothesised to have a direct effect on PU. In addition, external variables are claimed to have an effect on core beliefs of the TAM (PU and PEOU). According to Davis et al.

(1989), these external variables, as suggested in the TAM, could be system design features, personal characteristics, and training, among others. Table 2.3 shows the definitions of the main constructs in the TAM.

Table 2. 3:
Core constructs of the Technology Acceptance Model

Core Constructs	Definition	Authors
Perceived Usefulness	Is when a person believes using that system enhances performance.	Davis (1989), Davis *et al.,* (1989), Venkatesh *et al*., (2003)
Perceived Ease of Use	Is when a person believes a system is effort free.	Davis (1989), Davis *et al.,* (1989), Venkatesh *et al.,* (2003)

Source: Developed for this research

2.3 Extensions and Integration of Models with TAM

Several factors were added to the TAM model by introducing subject norm (SN), PBC and perceived resources (PR) (Wixom and Todd, 2005). There have been mixed findings for the effectiveness of SN (Venkatesh and Davis, 2000; and Chau and Hu, 2001).

Taylor and Todd (1995) emphasised the need for additional factors that explain intention to use and behaviour. This led Igbaria *et al.*, (1995) to research how user training, computing support, and managerial support affect behaviour which has had mixed findings as Karahanna and Straub (1999) could not how training affects PEOU and PU.

In 2000, Venkatesh and Davis developed TAM2 to measure the roles of subjective norms, voluntariness, and image on the intention to use. Their research identified demonstrability, image, subjective norms, job relevance, and results affected intention to use.

2.4 Concepts and Definitions of Internet Banking:

IB is defined as, "the use of technology to communicate instructions and to receive information from a financial institution where an account is held" (Nor, 2013).

This service includes the system that enables financial institution customers, individuals, or businesses to access accounts, carry out transactions, or obtain information on financial products and services through a public or private network (Prakash and Malik, 2008).

The concept of IB has been defined in several different ways. Daniel (1999) defined IB as the delivery of a bank's information and services by the bank to customers via different delivery platforms that can be used with different terminal devices, such as a personal computer, a mobile phone with a web browser or desktop software, a telephone, or a digital television.

Pikkarainen *et al.,* (2004) defined IB as an internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments. With the exception of cash withdrawals, IB gives customers access to almost any type of banking transaction easily (De Young, 2001). The use of the internet as a new alternative channel for the distribution of financial services has become a competitive necessity rather than a way to achieve a competitive advantage with the advent of globalisation and fiercer competition (Flavián *et al.,* 2004; Gan and Clemes, 2006). Banks use IB because it is one of the cheapest delivery channels for banking products (Pikkarainen *et al.*, 2004). Such a service also saves time and money with an added benefit of minimising the likelihood of committing errors by bank tellers (Jayawardhena and Foley, 2000).

IB is, however, a general concept that consists of several distribution channels. It is reasonable to state that IB is broader than simply conducting banking transactions via the internet or web. However, the most well known and most general kind of using banking services on the internet is IB. IB can be explained in several ways. In simple terms, it is the provision of information or services by a bank to its customers, via a computer, television, telephone or mobile phone (Baraghani, 2008).

IB provides many benefits to banks and their customers (Nasri, 2011). The main benefits of banks are cost savings, reaching new segments of the population, efficiency, enhancement of a bank's reputation, and better customer service and satisfaction (Nasri, 2011). To customers, IB is considered a new value. With the help of the internet, banking is no longer bound by time or geography. Individuals all over the world have relatively easy access to their accounts anytime of the day, seven days a week. It also makes available to customers a wide range of services, including some services not offered at the physical branches. Ayrga (2011) revealed that IB provides faster, easier,

and more reliable services to customers. However, customers are still hesitant to use IB services, since they are concerned with security issues, and they may not have sufficient ability to deal with the applications of IB.

IB has the advantage that the customer avoids travelling to and from a bank branch. This way, IB saves time and money and provides convenience and accessibility (Nasri, 2011). Customers may manage their banking affairs anytime they want, and they can enjoy more privacy while interacting with their bank. It has been claimed that IB offers customers with more benefits at lower costs (Nasri, 2011). Turban *et al*., (2000) indicated that IB is extremely beneficial to customers because of the savings in costs, time, and space it offers. Additionally, its quick response to complaints and delivery of improved services are all benefits that result in easier banking for customers. To summarise, IB in general offers numerous benefits to both service providers such as SMEs and their customers.

2.5 Definition of Small to Medium Enterprises

The term SMEs covers a wide range of definitions and measures, varying based on country and also between the sources reporting SME statistics. Several of the most commonly used criteria are the number of employees, total net assets, sales and investment level (Gilaninia *et al.,* 2011).

Despite this variance, a large number of sources define an SME to have a cut-off range of 0-250 employees. SMEs are defined as formal enterprises, and are thus different from informal enterprises. In countries such as the USA, Britain, and Canada, a small business is defined in terms of annual turnover and the number of paid employees. In Britain, a small business is defined as one with an annual turnover of two million pounds or less, and with fewer than 200 paid employees (Gilaninia *et al.,* 2011).

SMEs make a significant contribution to the socio-economic and political infrastructure of developed and developing countries, as well as the nations in transition from command to market economies (Matlay and Westhead, 2004). Furthermore, a healthy and expandable SME sector is perceived to be crucial for sustainable competitive advantage and economic development at all the local, regional and international levels (Porter and Kramer, 2006).

The European Commission's definition of SMEs suggests specific requirements for companies to be referred to as small or medium sized. The relevant requirement for a small-sized enterprise is less than 50 employees and less than €10 million annual

turnover (or € 10 million balance sheet), while medium sized enterprises employ fewer than 250 people, and have an annual turnover of less than € 50 million (or € 43 million balance sheet; European Commission 2009). Based on this definition, in Europe in 2008, there are about 20.9 million SMEs (or 99.8% of the enterprises in the non-financial business economy), and they are considered "key drivers for economic growth, innovation, employment and social integration" (Eurostat, 2013). SMEs are estimated to generate approximately 58.6% of the value added within the non-financial business economy. Furthermore, they have a significant contribution to the employment in the European Union, hiring about 66.7% of the non-financial business economy workforce (Eurostat 2013).This research has defined SME as independent firms which employ fewer than a given number of employees, This number varies from one country to another.

In Yemen, the Ministry of Planning and International Cooperation (MOPIC) (2004) has reported that the accurate definition of SMEs is a great issue to face, and the differences between the large sector and SMEs is not only in the number of workers, but also in other factors, such as capital, and technology. The popular definition of SMEs in Yemen has been adopted in numerous research works. According to the MOPIC, the government of Yemen defined SMEs as having 1-4 employees are small businesses, having 5-9 employees are medium businesses, and having over 10 employees are large businesses.

The statistical definition of SMEs varies by country is usually based on the number of employees, and value of sales and/or value of assets. Due to its ease of collection, the most commonly used variable is the number of employees. The European Union and the Organisation for Economic Cooperation and Development set the upper limit of the number of employees in SMEs between 200-250, with a few exceptions, such as Japan (300 employees) and the USA (500 employees) (Beck and Demirgüç-Kunt, 2005).

Accessing business information services has been greatly improved and enhanced with the emergence of various information and communication technologies (ICTs). In developed countries, because of the state of the art ICT infrastructure and easy access to computer hardware and software, SMEs enjoy easy access to business information services. In developing economies, on the other hand, there are numerous challenges regarding ICT infrastructure and the cost of IT hardware and software. This in itself has created a great deal of problems in the area of business information services

for the SME sector. As governments and business service providers attempt to address the many challenges facing the SME sector, it is also important that the current use of ICTs in accessing business information services be identified in order to provide more development and support in this area (Chiware and Dick, 2008).

2.6 Internet Banking Among Small to Medium Enterprises

IB involves individuals using the internet to access their bank accounts and carrying out banking transactions, anytime, and anywhere (Pikkarainen *et al.*, 2004). It involves a provision of facilities, such as accessing accounts, funds transfer, and buying financial products or services online. From a bank's point of view, the use of IB is expected to lead to cost reductions by sweeping away inefficiencies and by enhancing competitiveness. This service delivery channel is regarded as a powerful instrument because it can retain current web-based customers who continue using banking services from any geographic location.

Previous studies have frequently focused on positive aspects (benefits) of IB (Zolait, 2010). In addition, IB academic research has tended to concentrate on the perspective of individual customers (Al-Ajam and Nor, 2013). This study, however, aims at investigating the intention to use IB among SMEs, and the factors that encourage companies to use the service and remove the barriers that prevent non-users from using this technology. It also investigates the core characteristics that are common to both users and non-users of IB.

SMEs have been mushrooming in Yemen, especially with the government encouraging the public to set up their own businesses by providing them with incentives and guidance in their projects (Padachi and Louis, 2010). Numerous SMEs export their products to different countries and contribute significantly to the economic growth of the country. However, the environment in which these SMEs operate is becoming more and more challenging, and, in turn, they need to operate efficiently within tight deadlines to be able to survive. To respond to the growing competition faced by organisations, banks have introduced IB services to allow their customers to undertake banking transactions online, anytime, and anywhere. IB enables companies and SMEs in Yemen to deal with both their local and international clients by allowing them to carry out their banking transactions even outside standard bank opening hours.

2.7 Benefits of Internet Banking for SMEs

IB among SMEs can use the internet for lines of credit, credit cards, loans, and mortgages, hence, less conventional visits are required to banks for conducting banking transactions. M. Riyadh (2009) mentioned that the owners of SMEs in Bangladesh visit the bank at a rate of 15 times for a single loan. Han (2008) also found the favourable impact of the application of informational technology on SME finance. M. Riyadh (2009) mentioned that internet SME businesses are more profitable and produce higher revenues than SMEs that use only traditional channels.

Through the internet, SMEs can conduct research on banking products, interest rates, terms, and then choose lenders that best fulfil their expectations and needs. Customer prefers IB for convenience, speed, round the clock services, and access to the account from any geographical location (Cheng *et al.*, 2006). IB offers benefits to banks as well. Banks can benefit from lower transaction costs, as IB requires less paper work, less staff and physical branches (Cheng *et al.*, 2006). IB leads to a higher level of customer satisfaction and retention (Polatoglu and Ekin, 2001). IB reduces loan processing times, as a borrower's loan application can be viewed by loan processing and loan approval authorities simultaneously (Smith and Rupp, 2003). Typically, loan applications are received at the branch level and are sent to the head office for approval. These documents are transferred to and from the branch head office, consume a great deal of time, and delay loan sanction periods.

In spite of the numerous advantages of IB, many individuals still prefer to conduct their banking transactions conventionally at the bank, which is what they have been doing for years. Thus, apart from security aspects, there are numerous factors and barriers (Cunninghan and Devlin, 2006) that cause individuals to prefer the traditional methods for their banking transactions over IB.

2.8 Factors Affecting Intention to use IB

2.8.1 Technology

In order to describe the process of technology intention to use, it is essential to define technology as well as to scrutinise the concept of intention. For this research, an inclusive term of technology is defined to cover the multiplicity of these technologies. Within the diffusion and acceptance of information technology literature, there is no generally accepted technology definition, as various definitions of technology have been widely used by different researchers. Technology might be regarded as a

technological aspect of information systems (IS) (Hollander *et al.*, 1999), which is aimed for creation of computer-based IS by using computer systems in organisations (Sarosa and Zowghi, 2003). Technology can be defined as, "those technologies engaged in the operation, collection, transport, retrieving, storage, access presentation, and transformation of information in all its forms" (Boar, 1997). Moreover, technology is defined by Tan *et al.*, (2009) as the application of ICT tools including computer hardware, software, and networks required for connecting to the internet.

In this research, the term of technology is defined as the capabilities that are offered to organisations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes (Attaran, 2003), however, with regards to the concept of supplier relationships, Carr and Smeltzer (2002) define technology as the use of automated purchasing systems, supplier links through electronic data interchange (EDI) computer-to-computer links with key suppliers and finally information systems.

Technology is also one of the factors that will enable people to become more aware toward tools offered by organisations. This is because, from the technology revolution, consumer's awareness will be created because using technology, activities, and tasks can be carried out easily, efficiently, and reliably (Kotler, 2004).

Technology helps to improve the service offering through the strengthening of relationships with customers, the offering of new services, and adapting to employee and customer's needs. Developing the service offering, supplying more service delivery choices, and good communication can all lead to a superior relationship with customers. The use of computerised communication allows the service marketer to establish an ongoing relationship with the customer at each stage of the consumption process. Online databases of customers can show consumption patterns and help track demand fluctuations (Fisk, 1999).

2.8.2 Perceived Ease of Use and Perceived Usefulness

The TAM, introduced by Davis (1985), is one of the most cited theoretical frameworks to predict the acceptance and use of new information technology within organisations. This model is derived from the TRA. The TAM hypothesises that system use is directly determined by behavioural intention to use, which is in turn influenced by users' attitudes toward using the system and the perceived usefulness of the system. Attitudes and perceived usefulness are also affected by perceived ease of use. Perceived

usefulness was defined as the degree to which individuals believe that using a particular system would enhance their overall job performance (Davis, 1989), whereas perceived ease of use relates to the degree to which individuals believe that using a particular system would require no effort (Davis, 1989). These two factors have been empirically justified as important factors determining the acceptance and use of new information technology, including the intention to use IB as well (Nasri, 2011).

Perceived ease of use is defined as, "the degree to which the prospective user expects the target system to be free of effort" (Davis *et al.*, 1989, p. 985). Individuals expect that, if a new technology is easy to use, this will create a positive attitude toward it. In the IB acceptance context, perceived ease of use appears as an important factor that was employed in several previous studies (e.g. Ramayah *et al.*, 2009; Lee, 2009; Wu and Wang, 2005, and Wei *et al.*, 2009).

Nor (2013) found that perceived ease of use has a significant positive effect on using IB. The linkage between perceived ease of use and intention has also been found in other studies (e.g. Ramayah *et al.*, 2009; Lee, 2009; Wu and Wang, 2005, and Wei *et al.*, 2009). The reason is that the effort saved by improved perceived ease of use can enable individuals to do a better job or accomplish more at work, thus enhancing their job performance (Davis *et al.*, 1989). Other things being equal, the easier a particular IT (i.e., internet banking) can be learned or used, the more useful it will be perceived. Therefore, the higher perceived ease of utilising particular IB makes it more likely that the individual will have a positive feeling toward using it. Banks should make IB as easy to use as possible.

2.8.3 Accessibility

Accessibility is defined as the ability of users to access information and services on the web, and is dependent on numerous factors. These include the content format, hardware, software and settings, internet connection, environmental conditions and a user's abilities and disabilities (Godwin-Jones 2001; Hackett and Parmanto, 2009). The term "web accessibility" generally relates to the implementation of website content in such a way as to maximise the ability of users with disabilities to access it. For example, providing a text equivalent for an image content of a web page, allows users with certain visual disabilities to have access to the information via a screen reader. The techniques and approaches that create more accessible web pages for people with disabilities also

addresses many other access issues, such as download speed and discoverability (Godwin-Jones, 2001; Hackett *et al.,* 2004; Hackett and Parmanto, 2009).

Jun *et al.,* (1999) revealed reliable/prompt responses, attentiveness, and ease of use had considerable impacts on both customers perceived overall service quality and satisfaction. It also indicated that there is a significant positive relationship between overall service quality and satisfaction. Yang and Jun (2002) redefined the traditional service quality dimensions in the context of online services, and suggested an instrument consisting of seven online service dimensions (reliability, access, ease of use, personalisation, security, credibility, and responsiveness). Joseph *et al.,* (1999) considered banking service quality with respect to technology use, such as ATMs, telephone, and the internet, and identified six dimensions. They were convenience/accuracy, feedback/complaint management, efficiency, queue management, accessibility; and customisation. Therefore, it is hypothesised that accessibility has a positive effect on customer satisfaction.

2.8.4 Trust

Transacting via the internet contains numerous vulnerabilities (Morgan and Hunt, 1994). Sensitive information can be acquired and used for malicious purposes including exploiting one's personal and financial details (Suh and Han, 2002). This is an unfortunate reality and underscores the importance of trust in IB (Mishra, 1996). IB transactions require trust between parties and that the system used to transact is secure. With trust, online transactions increase and with it e-commerce (Gefen *et al.,* 2003). It is the belief that the involved parties will not engage in opportunistic behaviour.

2.8.5 Awareness

A deep understanding of the meaning of awareness is crucial and imperative to ensure that owners of SMEs preserve their success and competitiveness. Multiple definitions have been viewed through the literature to illustrate the awareness concept. According to Kotler (2004), awareness is the imperative exploration on the mechanism of individuals to gain knowledge of a particular product or service and to what degree there is a lack of their information about it. With reference to Hyytinen (2008), the concept of awareness was defined as the degree of association of individuals to products or brands as a choice of tackling a problem, meanwhile those individuals have either little or no information about them, which was also argued by Sharon (1999).

Furthermore, Mansor *et al.,* (2012) provided a simpler definition of awareness, as he defined awareness as the knowledge about products that are offered.

The important factor that individuals consider before IB is the amount of information they have about it. In this context, Sathye (1999) identified awareness as a major factor impacting the intention to use. According to Sathye (1999), while the use of IB services is relatively a new experience to many people, low awareness of IB is a major factor in causing people not to use it.

Rogers and Shoemaker (1971) stressed that individuals undergo a process of knowledge, belief, decision making, and confirmation before using a product or service. Similarly, Pikkarainen *et al.,* (2004) enlightened that the intention to use IB is determined by the level of information that a customer has about online banking and its likely benefits. Sathye (1999) added that low awareness of this concept is a critical reason for the non-intention to use of this service. However, banks are undertaking marketing campaigns to create awareness of their services and their likely benefits in most countries. Suganthi *et al.,* (2000) supported this notion by stating that there is a rise in promotional efforts done by banks to generate a greater awareness of IB and its paybacks in the context of Malaysia. Therefore, awareness is an important element that needs to be considered before adopting any innovative products (Guiltinand and Donnelly, 1983).

Howcroft *et al.,* (2002) concluded that one of the most important reasons of customer reluctance for intention to use IB is their lack of awareness of its services and advantages. Moreover, Sathye (1999) noted that low degree of awareness of IB is a critical factor in causing customers not to use it. Azouzi (2009) conclude in his study that awareness of IB advantages and services have a significant positive effect on intention to use it by customers. This issue is supported by other research works (Gerrard *et al.,* 2003; Al-Somali *et al.,* 2009; Pikkarainen *et al.,* 2004), which comment that the volume of information customers receive about IB is recognised as the main influential factor for using this service. Information of customers about service, facilities, advantages, and way of using IB, can be regarded as IB awareness.

2.9 Summary of Internet Banking Studies

Table 2. 4:
Internet banking studies

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
Ali Saleh Al-Ajam, Khalil Md Nor (2013) Adoption Of Internet Banking By Yemeni Consumers: An Empirical Investigation	The main aim of this study is to examine empirically the factors that affect the acceptance of internet banking.	This study applied Innovation Diffusion Theory on 1286 respondents in Yemen. Structural equation modelling was used for data analysis.	Intention to accept IB	-Relative Advantage -Perceived Ease of Use -Perceived Compatibility -Perceived Trialability	The findings of this study provide several important implications for internet banking adoption research and practice.	This phenomenon needs further investigations and validations. Hence, the replication of this study is essential for the further generalisation of the findings. Finally, the conclusions drawn from our study are based on cross-sectional data. With our cross-sectional data, we only took a snapshot of this model. A stricter test of our argument, however, could be employed by using a longitudinal study to evaluate this aspect.
Ali Al-Ajam, Khalil Md Nor (2013) Evaluation Of Internet Banking Service Adoption Among Yemeni Customers	-The main aim of this study is to examine empirically the factors that affect the adoption of internet banking.	Data collected from 1286 respondents in Yemen. (Structural equation modelling)	Behavioural Intention to Use IB	- Relative Advantage - Perceived Ease of Use - Perceived Compatibility - Perceived Trialability - Trust	The results indicate that perceived relative advantage, perceived ease of use, perceived compatibility, perceived trialability, and trust are salient determinants of customers' adoption of internet banking.	This phenomenon needs further investigations and validations. Hence, the replication of this study is essential for the further generalisation of the findings.

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
Khaled Alqasa (2013) Factors Affecting Intentions To Use Banking Services In Yemen	examined the same problem in the Yemeni economy, that most consumers do not consider using IB services to facilitate and manage their financial needs.	Questionnaire	Behavioural intention	-Service quality -Legal framework -Bank Advertisement -Cultural belief	The study highlighted that the main relationship between service quality, banking legal framework, bank and advertisements are significant and positive on behavioural intentions, with the exception of cultural belief, which was significant but played a negative role in using the banking system in Yemen.	The study highlighted that the main relationship between service quality, banking legal framework, bank and advertisements are significant and positive on behavioural intentions. Dealing with the banking system is an integrated process requiring study a range of factors that can be obstacles for the consumer to access the banking system. Therefore, this study is an important and a good attempt to find reasons not to deal with the Yemeni banking system.
Thanika Devi Juwaheer, Sharmila Pudaruth and Priyasha Ramdin (2012) Factors Influencing The Adoption Of Internet Banking: A Case Study Of Commercial Banks In Mauritius	-To explore whether perceived ease of use and perceived usefulness in the TAM can influence the intention of customers to use internet banking in Mauritius. -To investigate the degree to which subjective norms and attitudes in the TRA can influence the adoption rate of internet banking. -To examine the influence of behavioural intentions in the TPB on the adoption rate of IB services. -To examine the extent to which "trust" and "security factors can affect the adoption of internet banking in	Questionnaire The questionnaires were further processed and analysed with the statistical programme SPSS, by using descriptive, and inferential analysis.	Internet banking adoption	- Perceived ease of use - Perceived usefulness - Subjective norms - Attitudes - Behavioural intentions - Security - Trust - awareness - emographic variables	Perceived ease of use and perceived usefulness have a direct influence on the adoption of internet banking in Mauritius. Results have also indicated that both trust and security aspects are deemed crucial factors to explaining internet banking adoption in Mauritius. Further examination of the inferential analysis highlighted that level of education and income level of respondents may be a major determinant in influencing the adoption of internet banking.	- Research should extend to banking executives and managers in order to allow a comparative analysis on the adoption of IB services in Mauritius. - Future qualitative studies could focus on specific behavioural intentions of adopters and non-adopters of internet banking. - The study can be extended to business customers, government bodies, and corporate entities. -There are factors such as user experience and the different features of the innovation theory influencing

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
	Mauritius". -To explore whether the level of awareness of IB services and demographic profile of customers can influence the adoption rate of internet banking.					the adoption of IB services can be supplemented in order to make the model more rounded and the research can be extended to other developing countries.
Norudin Mansor, Anita Md. Shariff And Noor Rohaya Abdul Manap (2012) Determinants Of Awareness On Islamic Financial Institution E-Banking Among Malaysian SMEs	a) To identify the significance and the relationship of identified variables as to the awareness of e-banking b) To study the degree of awareness among SMEs in service sector toward IFI e-banking services.	Questionnaires	THE AWARENESS OF e-banking IN ISLAMIC FINANCIAL INSTITUTION AMONG SMEs IN SERVICE SECTOR	- Promotion - Technology - Service Quality	The finding further demonstrated that variables such as promotion, technology and indicated almost similar moderate strength in terms of their relationship toward the creation of awareness among the SMEs.	-The result demonstrated from the selected independent variables although provides its importance, but still need further exploration on other dimensions in order to strengthen the awareness of e-banking among the SMEs. Factors such as accessibility, psychographic, security, perceived usefulness, ease of use, trust as been investigated by other researchers still remained importance. -should also explore the adoption of SMEs customers toward e-banking by examining the influence of awareness on intention than the possibilities of intention as the mediators in the causal relationship.
Dr. Hossein Rezaei Dolat Abadi (2012)	The objective of this study is to validate the TAM instrument in	Questionnaire	consumer attitude	- Perceived Enjoyment	There are some other factors except two main factors in TAM	The results clearly reflects this fact that in spite of finding e-banking

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
An Empirical Investigation Of The Level Of User's Acceptance Of E-Banking Among Some Customers Of Banks In Iran	the context of electronic banking, examining the factors that influence users' acceptance of e-banking taking to consideration their attitude in the use of the system.			- Perceived Credibility - Age/Income/Education - Customer Attitude - Perceived usefulness - perceived ease of use	(PU and PEOU) which can effect on customer attitudes and their intention to use electronic banking services.	system useful, convenient, and easy to use by customers, There is low level of trust in the security measure of e-banking technology and the ability of e-banking systems to protect privacy. Based on this point, advertising, and personal promotion of e-banking should emphasise the trustworthiness and reliability of the website in its message. It should illustrate the security features of the e-banking website that will allow customers to use it securely. Moreover, increasing people's awareness about its usefulness and ease of use through advertising can effect on enhancing the degree.
Silvance O. Abeka and Evance Ochieng Abeka (2012) Determinants Of Adoption Of Internet Banking By	The purpose of this paper is to identify the factors that influence corporate customers' adoption of internet banking services in Kenya, Uganda, Tanzania, and Rwanda.	Questionnaire (ANOVA)	- Adoption of internet banking by Trade Finance Customers	- Perceived Usefulness - Perceived Ease of Use - Organisational Support	The empirical results of this research give a good basis for making suggestions of issues that are good for bank management to take into consideration. First of all, clearly both users, and non-users think that the internet services are worthwhile and useful in handling banking	Banks should make their customer more aware of their new products or services, in this, internet banking, to encourage higher adoption rate. They can do so by having seminars, exhibitions, or giving free-trial periods to allow customers to evaluate their new inventions. Besides that, education, and

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
Trade Finance Customers In East Africa				- Bank Support	transactions. However, more variance in results could be detected among the users of the case system. This might imply that there are more expectations toward the functionalities in it. Those who already are familiar with using the service perhaps know more what is missing or additional features that would be even more useful to enhance their job performance.	publicity through mass media will also prove to be effective. Banks should offer both technical and non-technical support to their corporate customers as this is proved to be one of the most essential factor that influences corporate customers to adopt IB services. Internet banking sites should be made as user-friendly as possible as not many consumers are familiar with computer and the internet, especially the older, and uneducated generation. Providing online help and giving customer the choice of their preferred language will ease their transactions.
Akram Jalal, Jassim Marzooq And Hassan A. Nabi (2011) Evaluating The Impacts Of Online Banking	The main objective of this study is to focus on the importance of understanding the customer's perception about internet banking by investigating and measuring the impact of selected factors such as perceived usefulness (PU), perceived ease of use (PEOU), security and	Questionnaire with five-point Likert scale, is applied to 171 usable responses. Three factors are tested, that is perceived usefulness (PU), perceived ease of use (PEOU), security and privacy (PC).	Intention to use electronic banking.	- perceived usefulness - perceived ease of use - perceived credibility	Results indicate that all the elements for the three identified factors are important with respect to the users' adoption of e-banking services. Credibility factors (security and privacy) are the major sources of dissatisfaction, which have	1) Future study might involve testing the effects of other external factors such as service quality, speed and Computer Self-Efficacy on our considered factors (PU, PEOU, and PC). And the effects of the same
Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

Factors On Motivating The Process Of E-Banking	privacy (PC) and how they can influence the customer acceptance to conduct banking transactions via the internet, based on the empirical data collected from individual customers in Bahrain.				remarkably impacted users' satisfaction. In the meantime, perceived ease of use (PEOU) and perceived usefulness (PU) are sources of satisfaction. The results also disclose that security and privacy factors play an important part in determining the users' acceptance of e-banking services with respect to different segmentation of age group, income level, and level of education.	factors on internet banking adoption. 2) Banks need to offer awareness to their customers about transactions security and privacy to increase the trust of using the web system.. 3) Internet banking is gaining more popularity and becoming important in doing financial transactions, so Bank's managers have to improve their services to attract more customers. 4) Customers point view and their suggestions should be considered in any future survey.

Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

Nelson Jagero and Silvance Abeka (2011) Corporate Customers Usage Of Internet Banking In East Africa	Identify the factors that influence corporate customers' adoption of internet banking services in Kenya, Uganda, Tanzania, and Rwanda.	(quantitative) The method for collecting empirical data for the statistical analysis was customer survey. -Questionnaires were sent out to randomly selected Trade Finance customers of the case bank; (Kenya Commercial Bank) in Kenya,	Trade Finance Internet Services	-Perceived Usefulness - Organisational Support - Bank Support	The analysis reveals that corporate users are not motivated by the same factors as private users. In order to become internet banking customers, it is extremely important for corporate users to have a system that is easy to use and operate with full support from the bank. (Perceived usefulness, perceived ease of use, Organisational support, Bank support).	In general, Rwandans are the least experienced, and Ugandans have the least confident and lowest level of awareness of the system usage.
Ali Hussein Saleh Zolait (2010) An Examination Of The Factors Influencing Yemeni Bank Users Behavioural Intention To Use IB services	The purpose of this study was to examine the potential prominent factors relating to the adoption and use of the financial services of internet banking (IB).	The questionnaire was the instrument used for data collection and the major items of the survey were adapted from the prior literature review	Behavioural intention to use IB services	I: Intention, R: User Informational Based Readiness A: Attitude N: Subjective Norm C: Perceived Behavioural Control	The findings of this study indicate that the majority of the respondents are innovators and early adopters of IB. In addition, the relative advantages combined with compatibility represent the IB attributes that are of most interest to Yemeni bank customers followed by ease of use (EOU). The influence of both personal and media referents shows up as a prominent determinant of the SN.	Future studies should incorporate more respondents. The second limitation is the target population. The study concentrated only on certain regions in Yemen and, hence, may not be representative of the entire Yemeni population. Future studies should expand to other regions as well as other Middle East countries. In addition, it is proposed that comparative studies between developed and developing countries and between different regions of the world be

Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

				1: Relative Advantage/Compatibility 2: Ease of use 3: Observability 4: Trialability 5: Personal Norm 6: Mass Media Norm 7: Technology Facilitating Condition 8: Resource Facilitating Condition 9: Government Support 10: Self-Efficacy	conducted using the framework used in this study to further validate the existing findings.
Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

Sharaf Alkibsi (2010) Customer Perceptions Of Technology-Based Banking Service Quality Provided By Banks Operating In Yemen	A clear understanding regarding how to best implement, manage, and promote TBBS for success.	Questionnaires	TBBS	-Service Quality - self-service technologies	Findings revealed evidence that seven service quality dimensions—functionality, enjoyment, security, assurance, design, convenience, and customisation—suggested by Lin and Hsieh (2006) were significantly associated with customer satisfaction and behavioural intentions toward TBBS in Yemen.	The study includes a recommendation that bank leaders focus on service enjoyment and customisation to enhance customers' experience using TBBS. Additional research venues were discussed to improve self-service technologies within the banking industry in Yemen.
Padachi K and Seetanah B (2010) A Study On The Use IB Among SMEs In Mauritius	•Identify the push factors that have encouraged the SMEs to adopt internet banking and the barriers in the case of non-adoption. • Determine whether the sectors in which the SMEs operate do have a direct relationship with the use IB. • Determine the prospects of use IB in the future among current non-users. • Identify internet banking services most demanded by SMEs. • Investigate on the profile differences that exist between users and non-users of internet banking.	Questionnaire (Probit Model)	Using Internet Banking	subscription to internet package relationship with bank, age group, level of education, annual turnover, sector of operation)	- The results reveal that female SME owner/managers are more inclined to use internet banking. - Profiles and owner managers 'characteristics such as age group, good relationship with banks, high level of education.	- There are factors that determine the adoption of internet banking among SMEs is related to trust and security, awareness, convenience, and accessibility. - Internet banking services should be customised according to the banking requirements of the different categories of users (small, medium, and the larger size firms) - Security aspects are one of the factors that directly affect the adoption of internet banking and should thus be continually reviewed by the service providers.

Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

Rosidah Musa and Faridah Hassan (2009) Corporate Customers' Adoption Of Internet Banking: Case Of Klang Valley Business Firm In Malaysia	The main objective of this study is to identify the factors affecting the adoption of internet banking by corporate customer in the Klang Valley in Malaysia.	Survey questionnaire of 223 business firms selected from the telephone directory	intention to use internet banking	- Awareness - Ease of Use - Security - Cost - Reluctance to change - Accessibility	The results of this study show that four factors examined are significantly important to the adoption of internet banking. However, perceive ease of use and reluctant to change are found to be insignificant in determining its adoption. (Awareness, ease of use, Security, Cost, Reluctance to change, accessibility).	-Banks should make their customer more aware of their new products or services. -Banks should take security of their internet banking sites into serious consideration since fraud and websites hacking still haunt most of the customers. -Internet banking sites should be made as user-friendly as possible as not many consumers are familiar with computer and the internet, especially the older generation.
Dube Thulani (2009) Adoption And Use IB In Zimbabwe: An Exploratory Study	This paper sought to explore the extent of adoption and usage of internet banking by commercial banks in Zimbabwe as well as investigate the challenges they face in the adoption of this technology. An exploratory research design was used to achieve the envisaged aims of the study.	Questionnaire	Internet banking	-Compatibility with existing systems -Cost of implementation -Security concerns -Lack of expertise	The results showed that while the majority of the banks in Zimbabwe have adopted internet banking, usage levels have remained relatively low, as not many customers are using this innovation in Zimbabwe. Regarding the challenges faced by banks in the adoption of IB, compatibility with existing legacy systems, cost of implementation, and security concerns ranked	The banks need to increase their marketing efforts by initiating awareness programs to raise customer awareness and interest in internet banking. The main usage of IB has been for checking account balances, payment of bills, and funds transfers. Important perceived benefits of using internet banking were cost reduction, increased loyalty, and attracting new customers. The adoption process of
Author	**Objectives**	**Method**	**DV**	**IV**	**Finding**	**Suggested Future study**

				-Inadequate legislation -Consumer acceptance	high. The implications of the study are that banks in Zimbabwe should vigorously promote the usage of IB among customers while policy makers such as the Government and the Reserve Bank of Zimbabwe should increase investments targeted at infrastructure development so as to encourage banks and individuals alike to adopt the innovation.	IB by banks was fraught with several challenges such as compatibility with legacy systems, cost of implementation, and security concerns among others. The implication is that the government must, through the Reserve Bank of Zimbabwe (RBZ), increase investments in education, infrastructure development to enable more firms and consumers alike to adopt the innovation.
Tan, K. S., Chong, S. C., Lin, B., and Eze, U. C. (2009) Internet Based ICT Adoption: Evidence From Malaysian SMEs	investigate the innovative characteristics, benefits, and barriers influencing internet based ICT adoption among the SMEs.	Questionnaire	INTERNET BASED ICT ADOPTION	- Relative Advantage - Compatibility - Trialability - Observability - Complexity - ICT Security / Confidentiality - ICT Cost - Benefits - Barriers	The results suggest that internet based ICT adoption provides a low cost yet effective communication tool for customers. However, security continues to be a major barrier. Finding on cost as a barrier is mixed. The inferential statistics l	There is a certain need to create greater awareness among the SMEs on the importance of ICT adoption. This study contributes to providing various recommendations to the policy makers and SMEs in light of the findings. It is hoped that the suggestions shed some lights to the SMEs to further understand the importance and requirements for successful ICT adoption for business success.

Author	Objectives	Method	DV	IV	Finding	Suggested Future study
Junaidah Hashim (2007) ICT Adoption Among SME Owners In Malaysia	(1) to examine the ICT skills and innovation characteristics of SME owners in Malaysia, and (2) to establish the relationship among a number of constructs; namely, their ICT skills, use, adoption patterns, and adoption categories.	Questionnaire	ICT use	-ICT skills -ICT innovation - ICT workplace	The findings show that the level of ICT skills possessed by SME owners in Malaysia is poor, that their use of ICT is low, and that their adoption of ICT is slow and late, primarily because they find that ICT adoption is difficult.	an examination of the relationship between the IT skills of SME owners and the IT infrastructure and IT budget of their respective companies.

2.10 Gap Analysis

According to Nor (2013), Yemen banks face a significant challenge in terms of encouraging customers to conduct banking services online. According to Ali (2009), Al-swidi (2011), Alkibsi (2010), banks' consumers have a high perceived risk, distrust, lack of IB awareness and its benefits toward using IB, and they also have a low level of user knowledge in terms of security technologies and mechanisms applied in IB. There is a lack of research on the reasons for the low levels of intention and awareness by owners of SMEs toward IB services in Yemen. Understanding the predictors of customers' attitude is critical, as it is argued that this attitude has a strong, direct, and positive effect on owners of SMEs intentions to actually use the new technology. There are several studies that focused on these low levels of intention and awareness from the point of view of the individuals toward attitude, awareness, and intention to use IB services in Yemen (Zolait, 2009; Al-Ajam, 2013; Alkibsi, 2010; ISA, 2013; Alqaatary, 2013; Kadam, 2013; Sulaiman, 2009). The most important concepts of these studies are explained in the following paragraphs.

Alkibsi (2010; 2011) used a correlational descriptive and quantitative based study in order to determine if a set of technology-based banking service quality dimensions had an association with customer satisfaction and behavioural intentions toward technology-based banking services and IB in Yemen. He concluded with several solutions to improve self-service technologies in the banking system in the country.

Zolait (2008; 2010) examined the potential prominent factors relating to the intention to use and use of the financial services of IB. The study was carried out using a self-administered survey involving a convenience sample of 369 Yemeni bank customers. The survey revealed that the general predictors included advantage/compatibility, user's informational based readiness, attitude, observability, technology facilitating condition, perceived behavioural control, and self-efficacy. His model concluded that intention to use IB services in the country was relatively low. The model accounted for approximately 75% of the variation of a consumer's intention to use IB services in Yemen.

Al-Ajam (2013) also empirically examined the general factors that affected the acceptance of IB services by individuals in Yemen. His work implemented the Innovation Diffusion Theory on 1286 respondents in Yemen. Structural equation modelling was used for data analysis. His results revealed that perceived relative

advantage, perceived ease of use, perceived compatibility, and perceived trialability have a significant effect on Yemeni customers' acceptance toward IB.

ISA (2013) examined the same problem in the Yemeni economy, that most consumers do not consider using IB services to facilitate and manage their financial needs. His work examined the main factors influencing Yemeni consumers who are different from consumers in more developed countries in terms of their psychological, cultural, and behaviour toward both conventional banking and IB systems. Data were obtained via questionnaires from university students. Hypotheses were tested by means of factor analysis, correlation, and regression analysis. The study highlighted that the main relationship between service quality, banking legal framework, bank and advertisements are significant and positive on behavioural intentions, with the exception of cultural belief, which was significant but played a negative role in using the banking system in Yemen.

Padachi and Seetanah (2007) examined push factors and barriers affecting the use of IB among SMEs. They also examined sectoral differences in the use of IB, identified IB services mostly used by the Mauritian SMEs, and determined the prospects of use of IB in the future among current non-users. A questionnaire was administered to owner/managers of SMEs operating in diverse sectors of the economy. Their results revealed that female SME owner/managers are more inclined to use IB, and that factors that determine the use of IB among SMEs are related to trust and security, awareness, convenience, and accessibility. On the other hand, the internet services that are most widely used are inter-account funds transfer, payments by office cheque, receiving payments from customers, foreign transfer, request for the issue of current account statement and transactions related to savings/current or fixed deposit accounts. Among the current non-users, owner managers of the younger generation are the ones who are more likely to use IB in the future.

Jagero and Abeka (2011) also the factors that influence corporate customers' usage of internet banking services in Kenya, Uganda, Tanzania, and Rwanda. The study was carried out using questionnaires sent out to randomly selected trade finance customers of Kenya Commercial Bank. The hypotheses were empirically evaluated using trade finance customers of an East African bank as the target sample. The study involved 137 respondents from Kenya, Uganda, Tanzania, and Rwanda. Due to the quantitative nature of the study, the results are analysed with statistical measures. The analysis revealed that corporate users are not motivated by the same factors as private

users. In order to become internet banking customers, it is extremely important for corporate users to have a system that is easy to use and operate with full support from the bank.

Musa and Hassan (2009) summarised academic literature on IB drivers and found that there is a need to conduct research on corporate customer internet banking adoption behaviour. The empirical data were collected from a survey questionnaire of 223 business firms selected from the telephone directory in Klang Valley, Malaysia. This study examined the relationship between IB use and its six factors: awareness, ease of use, security, cost, reluctance to change, and accessibility. The results show that the four factors examined are significantly important for the use of IB.

Mansor *et al.*, (2012) explored the awareness of e-banking services offered by Islamic Financial Institution (IFI) among SMEs in the service sector. The study focused on promotion, technology, and service quality as independent variable. These are believed to be undertaking the premier role toward the awareness of this sector as measured by applications of e-banking in their daily transaction. It is further assumed that the application will enhance the effectiveness and efficiency in managing their business. Using a sample of 358 respondents, questionnaires were collected and analysed. Based on the analysis, 57% of the results are able to explain the role of all selected independent variables on their significant relationship with dependent variables while the remaining of 43% were unexplained. The finding further demonstrated that promotion, technology, and service quality indicated almost similar moderate strength in terms of their relationship toward the creation of awareness among the SMEs. However, promotion shows a relatively higher importance compared to the other two variables, as indicated by the result of correlation coefficient.

Jalal, Marzooq, and Nabi (2011) explored the impact of selected factors on the customers' intention to use internet banking in Bahrain. They conducted an empirical study using a questionnaire with a five-point Likert scale to 171 usable responses. Three factors tested are perceived usefulness (PU), perceived ease of use (PEOU), security and privacy (PC). Their results indicate that all the elements for the three identified factors are important with respect to the users' adoption of e-banking services. Credibility factors (security and privacy) are the major sources of dissatisfaction, which have remarkably impacted users' satisfaction. In the meantime, perceived ease of use (PEOU) and perceived usefulness (PU) are sources of satisfaction. And banks need to

offer awareness to their customers about transactions security and privacy to increase the trust of using the web system.

Abadi and Nematizadeh (2012) investigated the level of user's acceptance of electronic banking among some customers of banks in Iran. Extended TAM model was conducted as a conceptual framework. The survey instrument was employed to collect data. 188 questionnaires were analysed based on correlation and regression analyses and independent sample t-test using the statistical package for social sciences (SPSS). Results showed that customers have found e-banking system enjoyable, convenient, and easy to use; however, there is low reliability in the security measure of e-banking technology. Moreover, increasing people's awareness about its usefulness and ease of use through advertising can enhance the acceptance of electronic banking among some customers of banks in Iran.

Langton *et al.*, (2009) explored the extent of adoption and usage of internet banking by commercial banks in Zimbabwe as well as investigate the challenges they face in the adoption of this technology. An exploratory research design was used to achieve the envisaged aims of the study. Overall, the results showed that while the majority of the banks in Zimbabwe adopted IB, usage levels remained relatively low, as not many customers are using this innovation in Zimbabwe. Regarding of the challenges faced by banks in the adoption of IB, compatibility with existing legacy systems, cost of implementation, and security concerns ranked high. The implications of the study are that banks in Zimbabwe should vigorously promote the usage of IB among customers and the banks need to increase their marketing efforts by initiating awareness programs to raise customer awareness and interest in internet banking.

Abeka and Omondi (2012) identified the factors that influence corporate customers' adoption of IB services in Kenya, Uganda, Tanzania, and Rwanda. This study involved 472 trade finance customers. The hypotheses are empirically evaluated by using trade finance customers of an East African bank as the target sample. The analysis revealed that corporate users are not motivated by the same factors as private users. In order to become IB customers, it is extremely important for corporate users to have a system that is easy to use and operate with full support from the bank. Banks should make their customers more aware of their new products or services and should offer both technical and non-technical support to their corporate customers as this is proved to be one of the most essential factor that influences corporate customers to adopt IB services.

Tan *et al.,* (2009) investigated the innovative characteristics, benefits, and barriers influencing internet based ICT adoption among the SMEs. A questionnaire-based survey was used to collect data from 406 managers or owners of SMEs in the southern region of Malaysia. The results suggest that internet based ICT adoption provides a low cost yet effective communication tool for customers. However, security continues to be a major barrier. Finding on cost as a barrier is mixed. The inferential statistics reveal that relative advantage, compatibility, complexity, observability, and security are significant factors influencing internet based ICT adoption. There is a certain need to create greater awareness among the SMEs on the importance of ICT adoption.

Hashim (2007) examined the extent of ICT skills, use, and adoption among owners of SMEs in Malaysia; identified innovation characteristics and adopter categories among the owners; and established the relationship among these various constructs. The author surveyed 383 SME owners, using a survey instrument developed from the constructs used in the diffusion of innovation theory. The findings show that the level of ICT skills possessed by SME owners in Malaysia is poor, that their use of ICT is low, and that their adoption of ICT is slow and late, primarily because they find that ICT adoption is difficult. He suggested that future research examine the relationship between the IT skills of SME owners and the IT infrastructure and IT budget of their respective companies.

Ramdin *et al.,* (2012) investigated the factors influencing the adoption of IB services in Mauritius. Drawing from the TAM, TRA, TPB, and the extensive literature on demographic profiling of internet banking users, trust, and security aspects associated with adoption rate of IB, this paper combines various predetermined constructs in one model. The different constructs such as perceived ease of use, perceived usefulness, subjective norms, attitudes, behavioural intentions, security, and trust aspects, the level of awareness on IB services and demographic variables such as age, income, gender, and education into one integrated framework.

Previous research has not considered awareness as mediator. This gap motivated this study. Unlike previous research, this work will take into consideration owners of SMEs in Yemen in order to investigate several dimensions (technology, perceived usefulness, accessibility, trust, ease of use), and how they are related with the awareness and intention to use IB in Yemen. This work provides solutions to the mentioned gap by extending the TAM Davis 1989) to empirically investigate the factors that influence

owners of SMEs to use IB services in Yemen. The underlying model employed in this research will help to better comprehend the relationships of these variables with intention to use IB and, in order to attempt to provide assistance in the spreading of IB service usage by owners of SMEs, by offering solutions to enhance its intention to use IB services in Yemen, and improve the economy as a result.

SMEs make a significant contribution to the socio-economic and political infrastructure of developed and developing countries, as well as the nations in transition from command to market economies (Matlay and Westhead, 2004). SMEs perceive that risk is related to reliability and likelihood of system failure (Suh and Han, 2002). Safety and documentation in carrying out financial transactions are the major factors about which SMEs are concerned with. Customers are also worried that technology-based service delivery systems will not work as expected, and they lack confidence that problems can be solved quickly (Ainin *et al.,* 2005).

This is one of the main reasons why not only individuals' awareness and intention to use IB are relatively low, but SMEs' intention to use is low as well due to the reasons mentioned above, with the primary reason being the direct impact of the low levels of intention to use of Individuals the IB services.

2.11 CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

Figure 2.5 is formulated from the basis of the TAM. The figure shows the theoretical framework for this research. The original TAM consisted of perceived usefulness and ease of use as the main predictors for the attitudes, intention, and actual system used. However, the current study considers technology, perceived usefulness, accessibility, trust, and ease of use factors as the main predictors of attitude. There is a possibility of successful exploration with the inclusion of new predictor factors in the TAM to investigate the level of correctness of this theory in different contexts and situations (Davis, 1989). Thus, the investigation focuses on the awareness among SMEs in the service sector toward IB services in SMEs is expected to represent the new perspective of their attitude and perception of IB in Yemen.

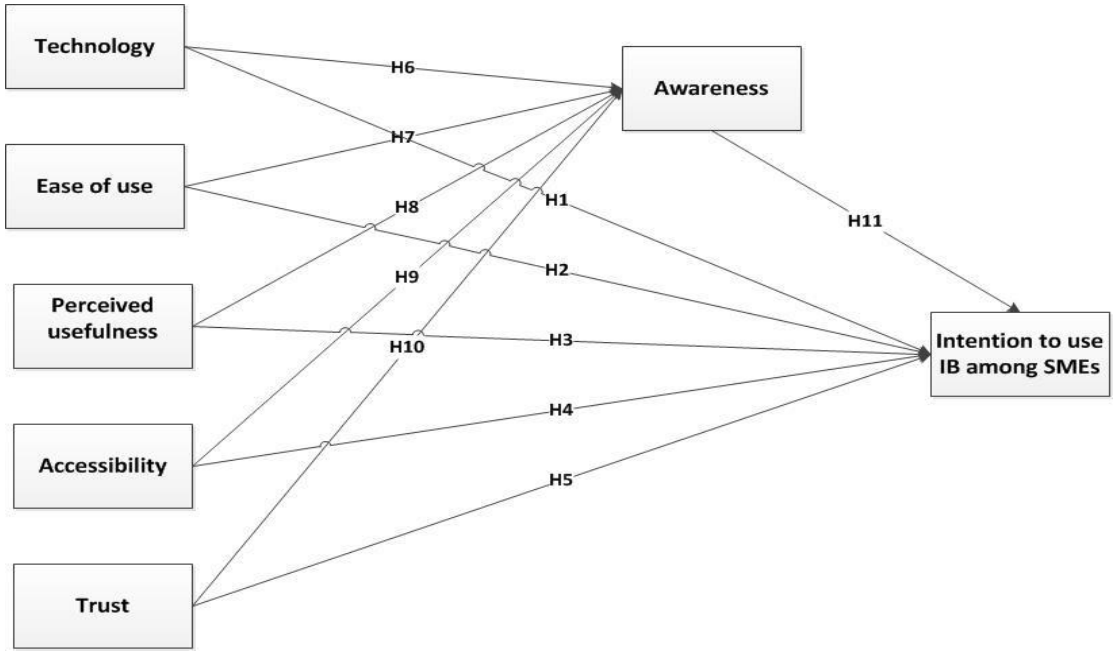

Figure 2. 5: Conceptual framework for this research

The awareness will be further investigated as to what extent the five independent variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) are indispensable in influencing its direction.

Previous literature indicated that there were no past studies that contained these five independent variables formed in one model to generate an effect on the awareness among SMEs. Earlier discussions of the importance for each variable provided evidence that was able to create awareness among SMEs, and has been proved by different researchers such as Lewison (1996), Shimp (1997), Futrell (1992), Kotler (2004) and Weisbord (1988) for the variable technology. This motivates this research, which will combine five factors and form them into one model to create more awareness among SMEs, and consequently improve the issue of the intention to use IB services in Yemen.

2.11.1 Technology on Intention to Use Internet Banking Among SME

Previous studies have shown that the intention to use technology by SMEs is still lower than expected (Mansor *et al.*, 2012; Chong, 2009; Mutula and Brakel, 2006). Several barriers and obstacles to intention to use technology have been identified, including lack of knowledge about the potential of technology, a shortage of resources such as financial expertise and lack of skills (Blackburn and Athayde, 2000; Cavalcanti, 2006; Ndubisi and Jantan, 2003; Utomo, 2001). Several studies have also focused on identifying the determinants that influence technology.

Mansor *et al.,* (2012) claimed that there is a significant relationship between technology and awareness of IB services in Malaysia. Additionally, they claimed that formulation needs to be tested, as there were numerous studies in the literature that are still debating about their relationship with IB.

There are significant positive relationships between relative advantage and internet based ICT (Chong, 2009). In contrast, significant negative relationships are posited between ICT cost and ICT use.

Several studies investigated a wider perspective of internet intention to use and found that environmental factors such as government intervention, public administration, and external pressure from competitors, suppliers, and buyers play a critical role in the intention to use and implementation of technology, especially in IB (Dube, 2009; Alam, 2009; Musa and Hassan, 2009). On the other hand, other studies focused on the organisational factors, such as organisation support, and management support. However, few studies focused on skills and use among the owners. Very little is understood about the determinants of technology intention to use among SME business owners.

In examining the organisational factors, for example, Lucchetti and Sterlacchini (2004) identified financial resources, technical skills, and firm characteristics as significant determinants of technology intention to use among SMEs. On the other hand, when Hashim (2003) investigate 95 small and medium business organisations of various types, they find that the major determinants of e-commerce use are intention to use attributes, such as relative advantages, compatibility, trial ability, observability, and organisational attributes, such as nature, size, and type of business. In a more recent study, Seyal *et al.,* (2007) revealed that management support, government support, and perceived benefits are significant predictors that influenced SMEs to use technology in the case of Brunei. Regarding technology use in Taiwan, Lin (2006) identified the following determinants as having influence on intention to use: organisational size, CEOs' characteristics, and CEOs' perception of relative advantage, compatibility, and complexity.

A limited number of studies have examined the relationship between technology skills and intention to use IB by individuals. Shiels *et al.,* (2003), for example, asserted that strong technology capability, including the specific ICT skills of small firm owners has significant influence on the use of ICT. Wainwright *et al.,* (2005) also added that managerial ICT skills, ICT knowledge, and ICT practices are important determinants

of whether technology is adopted or rejected by SMEs. Therefore, technology is strongly related to the awareness and intention to use IB services by individuals.

Based on the literature reviewed, this study offers the following hypothesis:

H1: Technology significantly affects the intention to use internet banking among SMEs.

2.11.2 Perceived Ease of Use on Intention to Use Internet Banking Among SMEs.

Extensive research over the past decade provides evidence of the significant effect of perceived ease of use on usage intention, either directly, or indirectly, through its effect on perceived usefulness (Agarwal and Prasad, 1999; Davis *et al.*, 1989; Hu *et al.*, 1999; Jackson *et al.*, 1997; Venkatesh, 1999, 2000; Venkatesh and Davis, 1996, 2000; Venkatesh and Morris, 2000). In order to prevent the "under-used" useful system problem, IB systems need to be both easy to learn and use. Information technology (IT) that is easy to use will be less threatening to the individual (Moon and Kim, 2001). This implies that perceived ease of use is expected to have a positive influence on users' perception of credibility in their interaction with the IB systems. This leads to the hypothesis that PEOU influence SMEs intention to use IB both directly and indirectly. This hypothesis is summarised as:

H2: Perceived ease of use significantly affects intention to use internet banking among SMEs.

2.11.3 Perceived Usefulness of Intention to Use Internet Banking Among SMEs.

There is extensive research in the IS community that provides evidence of the significant effect of perceived usefulness on usage intention (Agarwal and Prasad, 1999; Davis *et al.*, 1989; Hu *et al.*, 1999; Jackson *et al.*, 1997; Venkatesh, 1999, 2000; Venkatesh and Davis, 1996, 2000; Venkatesh and Morris, 2000). The ultimate reason individuals exploit IB systems is that they find the systems useful when carrying out their banking transactions. This leads to the hypothesis:

H3: Perceived usefulness significantly affects intention to use internet banking among SMEs.

2.11.4 The Effect of Accessibility on Intention to Use Internet Banking Among SMEs

Access to the internet is a prerequisite for the intention to use IB (Sathye, 1999). The more widespread the access to computers and the internet is, the greater the possibility of use IB. O, Connell (1996) revealed that lack of access to computers as one of the reasons for slow intention to use IB. Based on Daniel (1999), who conducted his study in the United Kingdom, lack of customer access to suitable personal computers as the main reason for low usage of electronic banking (or IB). In the same perspective, Ramsay and Smith (1999) revealed that accessibility is one of the main reasons for non-use IB.

Wai-Ching Poon (2008) identified 10 significant factors related to the users' adoption of IB services. Accessibility was the major source of dissatisfaction, which plays an important role in determining users' acceptance of IB services.

Musa and Hassan (2009) revealed that accessibility to computers and the internet have influenced their decision to use IB in Malaysia. The relationship between accessibility and IB use is significant and findings show that accessibility has a positive relationship with IB use intentions. One possible reason is due to the support by the government and the cheaper cost of computers and internet access for Malaysians, as most of the respondents already own computers and has internet access. Additionally, most Malaysians have a device that supports internet connectivity (e.g., smart phone, tablet, laptop, etc.) and internet access is available in most public areas (universities, schools, malls, restaurants, shops, etc.).

Aliyu *et al.* (2012) found that the construct accessibility mostly has a significant or direct impact on IB adoption, and it could be noted that accessibility is an important factor for electronic based banking adoption, but there are limited empirical studies that found these constructs to have insignificant effect on IB adoption. However, these prior studies on IB adoption factors have produced mixed results, which have culminated to the difficulty in articulating the IB adoption drivers.

The factor was inaccessibility, which mainly refers to respondents being incapable of connecting to an internet bank (Gerrard *et al.*, 2006). This may have been because they did not own a PC, did not subscribe to an internet service provider (ISP), or because the technical specification of their PC did not satisfy the requirements of internet banks (e.g., there was no modem component in the PC). A further group, who

presumably did not subscribe to a broadband service, commented that access would be far too slow for them. From this, it can be mentioned that inaccessibility was mainly due to respondents with no PCs, no internet connection, slow connection, or owning a PC that was incapable of connecting to the internet.

Based on the literature reviewed, this study offers the following hypotheses:

H4: Accessibility significantly affects the intention to use internet banking among SMEs.

2.11.5 Trust on the Intention to Use Internet Banking Among SMEs

The major factors contributing to trust in IB are privacy and security. This extends to electronic commerce (Wang *et al.,* 2003; Rotchanakitumnuai and Speece, 2003; Shih and Fang, 2004; Molla and Licker, 2001; Pikkarainen *et al.,* 2004; Cheng *et al.,* 2006). Wang *et al.,* (2003) argued that information privacy is vulnerable on the internet and can lead people away from using IB and online financial transactions.

As for security, it is a theme the dominates IT studies and development of It technologies. Secure websites that contain several security features help encourage people to engage in IB. As such, this research hypothesises that:

H5: Trust significantly affects the intention to use internet banking among SMEs.

2.11.6 The Effect of Technology on Awareness

In today's economic awareness and the globally competitive business world, technology becomes essential for every business, which uses this technology for performance and accuracy. In recent years, technology has become increasingly important to the evolution of the banking sector. One of the factors that drives the improvement in the quantum and quality of financial intermediation is more wide spread and more efficient use of information technology (Jamil and Kadam, 2013). Over the last two decades, financial institutions have increasingly come to rely on technology to support communication and information processing in all areas of their operations. In Yemen, the advances in technology and the complexity of the legacy system have caused several Yemeni banks to move into new business areas and have replaced the legacy system with a new system. The liberalisation and globalisation necessitated the need for the banking sector to adopt the latest techniques of IT, which results in new delivery channels for bank products and services to cut down cost, increase efficiency, and provide better and improved value added services.

Technology enables people to become more aware toward a product or service offered by a company or organisation (Mansor *et al.,* 2012; Weisbord, 1988). Mansor *et al.,* (2012) found that variables such as technology further demonstrate almost similar moderate strength of service quality in terms of their relationship toward the creation of awareness among the SMEs.

Thurasamy *et al.,* (2009) claimed that the Federation of the Malaysian Manufacturers (FMM) (www.fmm.org.my, 2001) identified three factors that were deemed to be the source of SMEs' IT usage problems: (I) Lack of awareness in the importance of IT in SMEs; (2) Low distribution of IT usage in SMEs; and (3) Business associations are not good role models in state of the art IT usage.

Based on the literature reviewed, this study offers the following hypothesis:

H6: Technology significantly affects awareness in IB.

2.11.7 The Effect of Ease of Use on Awareness

The variable ease of use has a positive effect on awareness, since it is, in the view point of consumers, a perception that if a product or service is easy to use, then more consumers will use it. However, if consumers view a particular product or service as difficult to use, they will not be motivated to use it. Therefore, it is critical that providers of any product or service, in this case, the service of internet banking (IB), make their service as easy to use as possible, so that customers are motivated to use it.

Cooper (1997) claimed that ease of use of a product or service is one of three important characteristics for adoption from the customer's perspective. There are several factors that are considered when talking about ease of use. For example, the website should be easy to use for individuals so that they will be motivated to use IB services. The user friendliness of domain names as well as the navigation tools available on websites is an important determinant for ease of use. The design of websites with the appropriate use of a suitable graphical user interface is also considered as an important determinant.

Web content and design have also been found to influence consumer satisfaction. Doll and Ajzen (1992) and Muylle *et al.,* (1999) found that product information content, the amount of product information, product information format, language(s) and layout features affect customer satisfaction. Malaysian banks are sensitive to this feature and are conveying their messages in all the country's major languages associated: Malay, Chinese, Tamil, and English. It is also worth noting that

proper navigation attributes and search facilities will certainly be helpful to individuals when they use the internet. In addition, the level of interactivity of the site will affect the individuals' perception of the user friendliness of the IB sites. This posited a similar effect in the following hypothesis:

H7: Ease of use significantly affects awareness in IB.

2.11.8 The Effect of Perceived Usefulness on Awareness

Perceived usefulness is, "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989; Davis *et al.*, 1989; and Mathieson, 1991). It was revealed to influence awareness, and intention to using retail banking services in a number of studies (Al-Sukkar, 2005; Liao and Cheung, 2002; Kolodinsky and Hogarth, 2001; Kolodinsky *et al.*, 2004; Ravi *et al.*, 2007; and Vatanasombut, Lgbaria, Stylianou and Rodger, 2008).

A decrease in the number of customers going to banks with an increase in alternative channels of distribution will minimise the queues in branches (Thornton and White, 2001). Increased availability and accessibility of more self-service distribution channels helps the bank administration reduce the expensive branch network and its associated staff overheads. Bank employees and office space that are released in this way may be used for other profitable ventures (Birch and Young, 1997). This ultimately leads to improved customer satisfaction and the institution's bottom line (Thornton and White, 2001). One of the major attractions in commercial use of the web is the ability to access information more easily. Daugherty *et al.*, (1995) pointed out that accessibility to service provider sites can create better levels of responsiveness to customers.

Furthermore, if the company website is easily accessible, customers can access information faster, encouraging them to continue connecting back to the firm website, so they can frequently check firm information. In addition, to make websites most accessible, firms have to pay particular attention to creating flexible ways to disseminate information resources to their customers (Lederer *et al.*, 2001). Liao and Cheung (2002) revealed that individual expectations regarding accuracy, security, transaction speed, user friendliness, user involvement, and convenience are the most important attributes in the perceived usefulness of IB.

H 8: Perceived usefulness significantly affects awareness in IB.

2.11.9 The Effect of Accessibility on Awareness

One of the major attractions in commercial use of the web is the ability to access information more easily. Daugherty *et al.*, (1995) claimed that accessibility to service provider sites can create better levels of responsiveness to customers. Furthermore, if the website is easily accessible, customers can access information faster, encouraging them to continue connecting back to the website, so they can frequently check information. To make websites most accessible, banks have to pay particular attention to creating flexible ways to disseminate information resources to their customers (Lederer *et al.*, 2001).

Using factor analysis to identify the factors affecting use of IB in Mauritius, the most significant factors are internet accessibility, convenience of use, and security concerns. Further analysis using cross tabulations relating selected factors and usage of IB facilities detected the presence of important statistical relationship between awareness, access to internet facility, length of banking relationship, people working in internet banking/finance sector, education level in the category 'postgraduate' and income group with the usage of IB (Padachi *et al.*, 2007).

Offering IB services contributes to the overall image of the bank through "the variety of services offered", "accessibility of these services", "enhanced level of security as perceived by the customers" and "its consistency with all the elements and actions that make up the reputation of the bank" (Flavián *et al.*, 2004).

A bank reputation is highly dependable on the consistency of all its elements and actions with the services provided. Offering services such as IB is of great value, and not only does it improve the image of the bank though its ability in providing a variety of services, but when that awareness through offers is combined with the accessibility of these services, it further enhances the security level in the presumption of the customers (Flavián *et al.*, 2004).

H9: Accessibility significantly affects awareness in IB.

2.11.10 the Effect of Trust on Awareness

Greenfield Online (1998) substantiated the importance of awareness of creating online trust. The study reported that reasons for non-purchase among those who never purchased online were payment security (75%), payment-clearing structure (46%), company credibility (36%), product return (36%), and absence of privacy policy (33%). And when asked what constitutes trust, online purchasers answered company awareness

(75%), brand familiarity (68%), offline presence and its performance (52%), and ratings by TV or magazines (41%). For the same question, online non-purchasers answered company awareness (71%), brand familiarity (71%), recommendation by friends or family (42%), and offline presence and its performance (38%). Thus, the awareness of the name of the company operating web sites should be considered as an essential ingredient for garnering trust toward online web sites.

Although there has been a dramatic rise in the number of internet users all round the world, security and trust issues still persist (Suh and Han, 2002). The background information fundamental to this study, therefore, includes the TAM, system security concepts, and trust and their effects on usage. Davis' (1989) work has shown that user acceptance of information technology (IT) is determined by two influential factors, which are perceived usefulness, and perceived ease of use. Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance performance while perceived ease of use refers to the degree to which a person believes that using a particular system would be free from effort. Perceived usefulness and perceived ease of use are known to positively affect the acceptance of IB services (Kasemsan and Hunngam, 2011). When the service is easier to use, and the consumer has awareness on how to use it, they will trust the service more. With trust, there is a positive effect on awareness (Yoon, 2002; Yusof and Ismail, 2010; Olivero and Lunt, 2004). Therefore, the following hypothesis was formulated:

H10: Trust significantly affects awareness in IB.

2.11.11 the Effect of Awareness on the Intention to Use Internet Banking Among SMEs

The exploration and understanding of awareness is critical to ensure that organisation or banking sector remains successful and competitive in the industry. There are various definitions given for understanding the concept of awareness. Referring to Kotler (2004), the concept of awareness attempts to explore how the customers establish the knowledge of the products or services and to what extent they are lacking of information about it. According to Hyytinen (2008), the term awareness refers to the extent individuals are able to associate the product or brand as an option to satisfying a problem but has little or no information about it, as argued by Sharon (1999).

Raising customer awareness of the wide range of customer products beside various alternatives that are made available by banking institutions is crucial to secure their competitiveness. Awareness may be defined as a knowing about the products offered (Mansor *et al.,* 2012). As suggested by Shimp (1997), the process of awareness involves familiarising individuals via advertising, promotion and other marketing communications method with the company brand, product and services, and informing people about its special features and benefits and showing how it is different in functional or symbolic sense to competitive brands. Besides that, a consumer who receives information from the mass media or through word of mouth will have individual awareness (Mansor *et al.,* 2012). In fact, the use of mobile devices has been found to be an effective and promising means of marketing communication that results in awareness (Pousttchi, 2006; Nysveen *et al.,* 2005).

The awareness on the risk associated with IB has also been explored. There were concerns on addressing the issue of privacy, security risk, and personal data security (Leppäniemi *et al.,* 2006; Tanakinjal *et al.,* 2010). This is important, as when perceived risk is low, it will normally result in trustworthiness of the service offered (Tanakinjal *et al.,* 2010). Although consumers are often faced with a particular degree of risk or uncertainty in using e-banking, however the risk element itself is not the main predictor of consumers' sensitivity (Kim, 2008). The significant relationship of awareness and usefulness is noticeable when consumers are able to gain acceptance and satisfaction with the transaction (Barwise and Strong, 2002; Wu and Wang, 2005; Kim, 2008).

Mansor *et al.,* (2012) demonstrated that variables such as promotion and technology indicated almost similar moderate strength in terms of their relationship toward the creation of awareness among SMEs. In this setting, Rogers and Shoemaker (1971) stressed that individuals are involved in a process of knowledge, belief, decision making, and confirmation before adopting a product or service. Similarly, Pikkarainen *et al.,* (2004) found that intention to use of IB will be determined by the level of information that a customer has about it and its likely benefits. Sathye (1999) added that low awareness of this concept is a critical reason for the non-use of this service. Banks are undertaking marketing campaigns to create awareness of their services and their likely benefits. Hence, it is hypothesised that:

H11: Awareness significantly affects intention to use internet banking among SMEs.

2.11.12 Awareness

In this work, awareness is a mediator that will be placed between the relationships of the variables that have an impact on the intention to use IB. Since there is a relationship between the five variables and the intention to use IB in Yemen, the mediator awareness acts as a third explanatory variable. The variables influence the mediator awareness, and, in turn, the awareness of SMEs in Yemen will influence the intention to use IB, which is the main aim of this work.

Padachi and Seetanah (2010) found that SMEs' use of IB was usually determined by the role of the relevant factors which highly influence the decision of SMEs. Among these factors are awareness, convenience, and accessibility. He added that there was awareness or some form of knowledge about IB and highlighted that 54.5 % of the population use IB. However, 45.5% of SMEs who are aware of it do not use these services, which suggests that awareness alone is not what is preventing most companies from using IB and that other factors also influence this decision. Therefore, it is suggested that awareness plays its role as a mediator with concentration of these other factors, it will help increase the percentage of SMEs to use IB.

From the literature reviewed and previous studies, and based on the analysis of the hypotheses and the factors with their relation to the intention to use IB, we examine the following hypotheses:

H12 ***Awareness mediates the relationship between technology and intention to use internet banking among SMEs.***

H13 ***Awareness mediates the relationship between ease of use and intention to use internet banking among SMEs.***

H14 ***Awareness mediates the relationship between perceived usefulness and intention to use internet banking among SMEs.***

H15 ***Awareness mediates the relationship between accessibility and intention to use internet banking among SMEs.***

H16 ***Awareness mediates the relationship between trust and intention to use internet banking among SMEs.***

2.12 Summary

This chapter aimed to provide an overview of various theories and models that have been used to understand and investigate knowledge regarding user intention to use of IS/IT. Among them, the TAM has been used extensively by IS researchers. In my

point of view the main reason was because of its specific focus on IS/IT usage, parsimony, and validity, and reliability of measuring instruments.

While compared to the related theories such as the TPB and TRA, the TAM has been believed to be the parsimonious, predictive, and robust. The model has been however criticised for being too simple and easy to be generalised to various IS/IT domains. Also, it is argued that TAM does not provide detailed understanding of the system usage behaviour. However, this simplicity can also be the strength of the TAM, as it is fairly easy to extend the model by adding factors from related research studies. This is shown by the numerous direct determinants and external variables that have been added to the model and the various technologies to which it has been applied.

The original TAM consisted of perceived usefulness and ease of use as the main predictors for the attitudes, intention, and actual system used. However, the current study considers technology, perceived usefulness, accessibility, trust, and ease of use factors as the main predictors of the attitudes. There is a possibility of successful exploration with the inclusion of new predictor factors in the TAM to investigate the level of correctness of this theory in different contexts and situations (Davis, 1989). Thus, the investigation focusing on the awareness among SMEs in the service sector toward IB services in SMEs is expected to represent the new perspective of their attitude and perception of IB in the case of Yemen.

Awareness has been investigated as to what extent the five independent variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) are significantly indispensable in influencing its direction. Previous literature indicated that there were no past studies that contained these five independent variables formed in one model to generate an effect on the awareness among SMEs. Earlier discussions of the importance for each variable provided the evidence that was able to create awareness among SMEs, and has been proved by different researchers, such as Lewison (1996), Shimp (1997), Futrell (1992), Kotler (2004), and Weisbord (1988) for the variable technology. This has bought up the motivation to carry out this research, which has combined five factors into one model in an attempt to create more awareness among SMEs, and consequently improve the issue of the intention to use IB services in the case of Yemen.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Methodology is critical to all academic research. It helps validate the means adopted to secure the research objectives. This research examines literature and employed a questionnaire to develop a conceptual model of SMEs' intention to use IB. This chapter articulates the methods adopted to achieve this and the suite of statistical analyses to examine the data.

The questionnaire is developed based on the scales and survey instruments validated by previous literature. This includes its wording. We use Structural Equation Modelling (SEM) using the Analysis of Moment Structures software to finalise the conceptual model. With the model, researchers can predict relationships between constructs in a hypothesised manner.

3.2 Research Design

The research problem and purpose have clearly stated that this study is primarily focused on testing an integrated model that identifies factors affecting the intention to use internet banking (IB). In the next stage, a descriptive research design will be used to describe the characteristics of the respondents and to determine the frequencies, percentages, mean, and standard deviations of the constructs used.

In this study, a quantitative data collection method and survey approach will be used to collect data on intention to use IB among owners of SMEs. Furthermore, a cross-sectional study employing a survey method for collecting the data will be used as it can be administered to a large sample easily (Churchill, 1995; Sekaran, 2000; Zikmund, 2000).

3.3 Population and Sampling

3.3.1 Population

Sampling selects a part (sample) from a larger group (population) from which to make inferences about the population (Creswell, 2009). This study adopted systematic random sampling (Cooper and Schindler, 2011, Creswell, 2009) to randomly

select 376 individuals. SME owners are targeted because of their knowledge, experience and been involved on business. According to recent statistics by the government of Yemen, there are 27.796 SMEs in the country (YMIT, 2014).

3.3.2 Sampling Method

According to Gay and Airasian (2000), the aim of the sampling method is to obtain information about the population by using the sample. The better the selected sample represents the population, the more the research results are generalisable to the population.

Probability sampling is a feature of quantitative research, while purposive sampling pertains to qualitative inquiries. Probability sampling is a tool to randomly select a large sample or certain strata of a population (Tashakkori and Teddlie, 2003). Its functions in quantitative research as a measure by which to determine how the selected sample represents the greater population.

Purposive sampling, on the other hand, works with individuals, groups, or institutions and serves as a tool to answer specific research questions (Maxwell, 2008).

3.3.3 Sampling Frame

Sampling is a mechanism through which a portion of the phenomenon or those affected by it are selected for study. It is selected to represent a larger population. For this research, the sample comprises those with a bank account. Thus, the SME owners who currently uses their accounts, or who use IB will be chosen.

Table 3. 1:
Population, sampling frame, and respondent selection

Population	Sampling frame	Respondent's basis of selection
27.796 SMEs	376 SMEs	SMEs owners

3.3.4 Sample Size

Sample size is critical in statistical analysis. Luck and Rubin (1987) explained that the more complex the analyses, the greater the sample required. Using SEM, the sample size of this study consists of a total of participant 376 owners of SMEs (Sekaran, 2003). The number of SMEs have been classified in terms of enterprise size and location as mentioned on Table 3.2.

Table 3. 2:
Number of SMEs

		Percentages
Enterprise	Large	0.51
	Medium	1.91
	Small	97.58
Total		100%
Location	Sana'a	18.06
	Taiz	13.93
	Rest of the cities	68.01
Total		100%

3.3.5 Sampling Techniques

Random samples provide the possibility for all members of the target population to be selected as a sample. It is of two types: truly random sampling or systematic sampling (Tashakkori and Teddlie, 2003; Teddlie and Yu, 2007). In truly random sampling, subjects are selected without reference to any factors. In contrast, systematic random sampling follows simple rules. Given the target population, this study adopted systematic random sampling method was therefore used in this study.

Therefore, in this study a survey has been conducted among owners of SMEs with sample of 10% (2.779) of total owners of SMEs can be achieved by selecting every tenth Owner of SMEs. Based on a list of SMEs owners and address, a random walk choosing every tenth owners based on the address were made. Respondents were then reach by personal email to these owners.

Table 3. 3:
Respondent selection by categories

Group	Percentage
Gender	
Male	84.8
Female	15.2
Total	100
Education	
Less than high school	.3
High school	4.3
Diploma	8.2
Bachelor	55.1
Postgraduate	32.2
Total	100

3.4 Data Collection Procedure

There are different methods to collect data (Cooper and Schindler, 2001; Sekaran, 2000; Zikmund, 2000). This study used an online questionnaire (Google Docs), which have been used by other researchers (Kuen *et al.*, 2009). A questionnaire offers versatility in determining the type of data collected, is speedy and cost effective.

3.5 Survey Questionnaire

Questionnaires are a cost-effective means to collect data. We included a covering letter introducing the research and giving assurances of confidentiality. Participation was voluntary with respondents having the right to withdraw. All participates need to be ages 18 and above. The contact details of the researcher were provided for further inquiries or follow up.

The questionnaire comprises three parts. Part one seeks background information on IB. Part two pertains to the respondents' demographic details. Part three comprises contains the questions pertaining to the actual research topic (Venkatesh and Davis, 1996). Questionnaire are administered personally or via post or electronic mail.

3.5.1 Development of Survey Questionnaire

The set of questionnaires were adopted from several researchers that have conducted research in this area, as mentioned on Table 3.4.

Table 3. 4:
A summary table of questionnaires sources by authors references

Construct	Items		Reference
intention to use (INT)	INT1	I intend to use internet banking as often as needed.	Davis (1989), Davis *et al.*, (1989), Davis (1993), Venkatesh and Davis (2000), Cheng *et al.*, 2006, and Moon and Kim (2001)
	INT2	I intend to continue using internet banking in the future.	
	INT3	Assuming I have access to internet banking systems, I will intend to use it.	
	INT4	Given that I may have access to internet banking in the future, I predict that I will use it.	
		I will strongly recommend others to use internet banking.	
	INT5	I would see myself using IB services for my banking transactions.	
	INT6		
Technology (TCG)	TCG1	I could complete my banking tasks using internet banking, even if I had never used a system like it before.	Compeau and Higgins, 1995a; 1995b; Venkatesh, 2003; Ong and Lai, 2006
	TCG2	I could complete my banking tasks using internet banking, if I could refer to the system manuals for reference.	
		I would attempt to complete tasks using internet banking, if I noticed others doing it successfully.	
	TCG3		

	TCG4	I could complete my banking tasks using internet banking, if there is built in help facility for assistance.	
	TCG5	I could complete my banking tasks using internet banking even if there was no one around to tell me what to do as I go.	
perceived of ease of use (PEOU)	EOU1	Learning to operate internet banking is easy for me.	Davis *et al.,* (1989), Venkatesh *et al.,* (2003)
	EOU2	I find it easy to get internet banking to do what I want it do.	
	EOU3	My interaction with internet banking is clear and understandable.	
	EOU4	I find internet banking flexible to interact with.	
	EOU5	It is easy for me to become skilful in using internet banking.	
	EOU6	Overall, I find internet banking easy to use.	
perceived usefulness (PRU)	PRU1	Using internet banking enhances the productivity of my banking activities.	Davis (1989), Davis *et al.,* (1989), Venkatesh *et al.,* (2003)
	PRU2	Using internet banking makes it easier to do my banking activities.	

	PRU3	Using internet banking enables me to accomplish banking activities quicker.	
	PRU4	Using internet banking improves my performance of banking activities.	
	PRU5	Using internet banking enhances my effectiveness of banking activities.	
	PRU6	Overall, I find internet banking useful for my banking activities.	
Accessibility (ACC)	ACC1	Internet banking is accessible.	Culnan (1984; 1985), Karahanna and Straub (1999) and Kim
	ACC2	My access to internet banking is unrestricted.	
	ACC3	I find it easy to get access to internet banking.	
Trust (TRS)	TRS1	I trust internet banking services as if it was a real bank.	Doney and Cannon (1997), Gefen (2000), McKnight *et al.*, (2002), and Gefen *et al.*,
	TRS2	I trust in the technology used by the bank.	
	TRS3	I have confidence in the security of the computer used for accessing internet banking.	
		I trust my internet service provider.	
	TRS4	Internet banking offers secure personal privacy.	
	TRS5	I trust the ability of internet banking to secure my privacy.	
	TRS6	I trust in the ability of internet banking to protect my privacy.	

	TRS7		
awareness (AWR)	AWR1	I think I have enough information about the services of internet banking.	Al-Somali *et al.*, (2009) and Jarvenpaa and Todd (1997)
	AWR2	I think I have enough information about the advantages of internet banking.	
	AWR3	I think I have enough information about the ways of opening account and using internet banking.	
		I think I have enough information on how to use internet banking.	
	AWR4	I think I obtain enough information about application procedure of internet banking.	
	AWR5	I think I obtain enough information about benefits and risks from using internet banking.	
	AWR6	In general, I have enough information about internet banking.	
	AWR7		

3.5.1.1 Questionnaire Content Development

This research collects the views of respondents on the research topic. Brief questions are used for all respondents, they are positive, and we avoid the use of leading questions (Cooper and Schindler, 2001; Frazer and Lawley, 2000; Zikmund, 2003). In addition, questionnaire content will be kept simple and easy to read and to comprehend, so that the respondents should not have difficulty to complete the questionnaire.

3.5.2 Response Formatting

The questions in the survey are related to owners of SMEs' perceptions and intention to use toward IB. We use closed ended and scaled-response formats (Alreck and Settle, 1995) to maintain focus on the theme of the research (Frazer and Lawley, 2000). Doing so also assist in removing the researcher's bias (Hair *et al.*, 2006).

It is critical to use easily understood and clear wording for accurate responses (Frazer and Lawley, 2000; Churchill, 1987).

3.5.3 Scale Development

Table 3.2 presents examples of the relationships between research questions, hypotheses, variables, scale development, and hypothesised relationship techniques used in this study.

The seven-point attitude rating scale will be used in this study with adaptation of the summated ratings method developed by Rensis Likert in 1932. The Likert scale requires participants to make a decision on their level of agreement with the given statement. The seven-point rating scale will be selected since it is the most popular scale and it has been applied in many studies conducted in the past in technology acceptance and IS literature (Davis, 1989; Moon and Kim, 2001; Venkatesh and Davis, 2000). Cox (1980), while reviewing 80 years of research, recommended that scale points between five and nine should be used, depending on the particular circumstances. Miller (1956), in his influential article, pointed out that the human brain has a span of apprehension capable of distinguishing about seven different items. Therefore, a seven-point Likert scale will be selected for this study based on its popularity, high reliability, and appropriateness to the nature of this study.

3.5.4 Operationalisation of Variables

The theoretical constructs operationalise and validate items from prior relevant research. The adapt items will be validated and wording changes will be tailored to the

instrument for the purposes of this study. The operationalisation of questionnaire items for each construct is described as follows;

3.5.4.1 Operationalisation of intention to use internet banking

The operationalisation of intention to use internet banking (INT), measured on a seven-point scale with 1 = strongly disagree and 7 = strongly agree, based on five items adapted from Davis (1989), Davis *et al.*, (1989), Davis (1993), Venkatesh and Davis (2000), Cheng *et al.*, 2006, and Moon and Kim (2001) as follows;

INT1. I intend to use internet banking as often as needed.

INT2. I intend to continue using internet banking in the future.

INT3. Assuming I have access to internet banking systems, I will intend to use it.

INT4. Given that I may have access to internet banking in the future, I predict that I will use it.

INT5. I will strongly recommend others to use internet banking.

INT6. I would see myself using IB services for my banking transactions.

3.5.4.2 Operationalisation of Technology

The operationalisation of technology, measured on a seven-point Likert scale with strongly disagree =1 and strongly agree = 7, based on five items that were adapted from the prior studies (Compeau and Higgins, 1995a; 1995b; Venkatesh, 2003; Ong and Lai, 2006). The adapted items as follows:

TCG1. I could complete my banking tasks using internet banking, even if I had never used a system like it before.

TCG2. I could complete my banking tasks using internet banking, if I could refer to the system manuals for reference.

TCG3. I would attempt to complete tasks using internet banking, if I noticed others doing it successfully.

TCG4. I could complete my banking tasks using internet banking, if there is built in help facility for assistance.

TCG5. I could complete my banking tasks using internet banking even if there was no one around to tell me what to do as I go.

3.5.4.3 Operationalisation Perceived Ease of Use

The operationalisation perceived of ease of use (PEOU) also on a seven-point scale (i.e. 1 = strongly disagree and 7 = strongly agree) and it based on six items that

were adapted from Davis (1989), Davis *et al.*, (1989), Venkatesh *et al.*, (2003). The adapted items are as follows;

EOU1. Learning to operate internet banking is easy for me.

EOU2. I find it easy to get internet banking to do what I want it do.

EOU3. My interaction with internet banking is clear and understandable.

EOU4. I find internet banking flexible to interact with.

EOU5. It is easy for me to become skilful in using internet banking.

EOU6. Overall, I find internet banking easy to use.

3.5.4.4 Operationalisation of Perceived Usefulness

The operationalisation of perceived usefulness (PRU) on a seven-point scale (with strongly disagree = 1 and strongly agree = 7) based on six items, which were adapted from Davis (1989), Davis *et al.*, (1989), Venkatesh *et al.*, (2003). The items are as follows;

PRU1. Using internet banking enhances the productivity of my banking activities.

PRU2. Using internet banking makes it easier to do my banking activities.

PRU3. Using internet banking enables me to accomplish banking activities quicker.

PRU4. Using internet banking improves my performance of banking activities.

PRU5. Using internet banking enhances my effectiveness of banking activities.

PRU6. Overall, I find internet banking useful for my banking activities.

3.5.4.5 Operationalisation of Accessibility

The operationalisation of accessibility (ACC) measured on a seven-point Likert scale with 1 = strongly disagree and 7 = strongly agree based on two items that were adapted from Culnan (1984; 1985), Karahanna and Straub (1999) and Kim (2006). The adapted items are as follows;

ACC1. Internet banking is accessible.

ACC2. My access to internet banking is unrestricted.

ACc3. I find it easy to get access to internet banking.

3.5.4.6 Operationalisation of Trust

The operationalisation of trust (TRS), on a seven-point scale with 1 = strongly disagree and 7 = strongly agree based on 10 items adapted from Morgan and Hunt (1994), Doney and Cannon (1997), Gefen (2000), McKnight *et al.*, (2002), and Gefen *et al.*, (2003). The items are as follows;

TRS1. I trust internet banking services as if it was a real bank.

TRS2. I trust in the technology used by the bank.

TRS3. I have confidence in the security of the computer used for accessing internet banking.

TRS4. I trust my internet service provider.

TRS5. Internet banking offers secure personal privacy.

TRS6. I trust the ability of internet banking to secure my privacy.

TRS7. I trust in the ability of internet banking to protect my privacy.

3.5.4.7 Operationalisation of Awareness

Operationalisation of awareness (AWR), on a seven-point scale with 1 = strongly disagree and 7 = strongly agree based on five items adapted from Al-Somali *et al.*, (2009) and Jarvenpaa and Todd (1997) the items:

AWR1. I think I have enough information about the services of internet banking.

AWR2. I think I have enough information about the advantages of internet banking.

AWR3. I think I have enough information about the ways of opening account and using internet banking.

AWR4. I think I have enough information on how to use internet banking.

AWR5. I think I obtain enough information about application procedure of internet banking.

AWR6. I think I obtain enough information about benefits and risks from using internet banking.

AWR7. In general, I have enough information about internet banking.

3.6. Pre-testing the Questionnaire

Pre-testing is an initial test of the validity of the questionnaire with a similar sample to identify problems and weaknesses. Feedback assists in improving the questionnaire so that when the real survey is conducted, the most accurate data are collected (Sekaran, 2003).

3.7 Data Analysis

To achieve this research objective, two different statistical software tools will be used. SPSS version 16.0 will be used for analysing the preliminary data. The Analysis Moment of Structures Software (AMOS version 16.0) for Structural Equation Modelling (SEM) will also be used for measurement model analysis and structural

model to test the proposed hypothesis. In the following subsections, descriptions and justifications for using these statistical software, and explanations to the techniques mentioned above are provided.

3.7.1 Preliminary Data Analysis

SPSS is used to analyse the quantitative data obtained from the survey questionnaire. This software package is widely accepted and used by numerous researchers in different academic disciplines and areas, including social sciences, business studies, and information systems research (Zikmund, 2003). Therefore, SPSS was applied to perform descriptive statistics such as frequencies, percentages, mean values, and standard deviations.

These analyses will be performed for each variable separately to summarise the demographic profile of the respondents in order to obtain preliminary information (Sekaran, 2000).

3.7.1.1 Missing Data

This study adopted the procedure recommended by Byrne (2001) for treating missing information. This includes determining the extent of data missing, identifying patters and selecting the best approach to deal with the issues.

3.7.1.2 Outliers

This research identifies outliers using a Likert scale with seven. Therefore, the strongly disagree or strongly agree responses are potential cases of outliers due to being placed on the extreme points of the scale.

3.7.1.3 Normality

In this study, the maximum acceptable limit of observation values up to ±1 for the skewers and up to ±3 for the kurtosis will be used. Next, the researcher will use factor analyses and structural equation modelling for inferential statistical analyses.

3.8 Factor Analysis

In this research, confirmatory factor analysis (CFA) will be performed for testing and confirming relationships between the observed variables under each hypothesised construct (Zikmund, 2003; Hair *et al.,* 2006). The next section explains CFA performed by using SPSS.

3.8.1 CFA

CFA belongs to class of methodology known as structural equation modelling (SEM) and will be undertaken in the current study utilising Analysis of Moment Structures 7.0 (Arbuckle, 2007). CFA, otherwise known as a measurement model in AMOS as it focuses solely on the link between latent variables and their corresponding relationship to observable variables, will be undertaken in order to examine the hypothesised relationship between cognitive deconstruction.

3.9 Structure Equation Modelling

SEM comprises a suite of statistical tools to measure how variables relate to each other (Hair *et al.,* 2006). It is best suited for this research which includes numerous independent-dependent relationships.Below are selected tools within SEM.

3.9.1 Measurement Model

CFA is a very important technique of SEM (Kline, 2005) and is generally applied when there is background knowledge of the underlying constructs and measurement items (Byrne 2001). It should be conducted after exploratory factor analysis (EFA) so that it can verify its scales (Hair *et al.,* 1998; Byrne, 2001). CFA uses goodness-of-fit (GOF) criteria and evaluate the validity and reliability of the model (Hair *et al.,* 2006).

3.9.1.1 GOF Indices

SEM uses absolute fit indices, incremental fit indices, and parsimonious fit indices (Hair *et al.,* 1998) to compare the proposed model with a baseline model (CFI; Hair *et al.,* 1998; Hair *et al.,* 2006).

3.9.1.2 Model Estimates

Standardised regression weight (factor loadings), and critical ratio (cr) estimates criteria are also used to evaluate the measurement model. The cut-off point for these estimates should be greater than 0.7; however, a value greater than 0.5 is also

acceptable (Churchill, 1979). The critical ratio values should be above 1.96 (Hair *et al.*, 1998; Byrne, 2001).

3.9.2 Reliability

In this study five items measured intention to use IB (IB), six measure PEOU, six for PU, as explained earlier. Items were tested for reliability by examining the consistency of answers (Nunnally, 1978).

3.9.3 Validity

Validity refers to how accurately the measures perform their tasks (Sekaran, 2000). It is the extent to which items reflect the construct (Hair *et al.*, 2006). According to When the theoretical construct and items are appropriate, then there is the basis for better validity.

3.9.4 Structural Model Evaluation and Hypothesis Testing

The structural model can be tested as a next stage to examine the hypothesised relationships between the latent constructs in the proposed model (Kline, 2005; Hair *et al.*, 2006). The structural model (hypothesised model) depicts the relationship among the latent constructs, as presented. In other words, it aims to specify which constructs directly indirectly influence the values of other constructs in the model (Byrne, 2001). Results of structural model testing are presented in next chapter.

Table 3. 5:
Examined Hypotheses in Structural Model

Code	Description	Path
Direct Effects of the Variables		
H1	Technology (TCG) has a positive effect on intention (INT)	TCG → INT
H2	Ease of Use (EOU) has a positive effect on intention (INT)	EOU → INT
H3	Perceived Usefulness (PRU) has a positive effect on intention (INT)	PRU → INT
H4	Accessibility (ACC) has a positive effect on intention (INT)	ACC → INT
H5	Trust (TRS) has a positive effect on intention (INT)	TRS → INT
H6	Technology (TCG) has a positive effect on awareness (AWR)	TCG → AWR
H7	Ease of Use (EOU) has a positive effect on awareness (AWR)	EOU → AWR

H8	Perceived Usefulness (PRU) has a positive effect on awareness (AWR)	PRU → AWR
H9	Accessibility (ACC) has a positive effect on awareness (AWR)	ACC → AWR
H10	Trust (TRS) has a positive effect on awareness (AWR)	TRS → AWR
H11	Awareness (AWR) has a positive effect on intention (INT)	AWR → INT
Indirect Effects of the Variables (Mediation Effects of Awareness)		
H12	Awareness (AWR) mediates the relationship between technology (TCG) and intention (INT)	TCG → AWR → INT
H13	Awareness (AWR) mediates the relationship between ease of use (EOU) and intention (INT)	EOU → AWR → INT
H14	Awareness (AWR) mediates the relationship between perceived usefulness (PRU) and intention (INT)	PRU → AWR → INT
H15	Awareness (AWR) mediates the relationship between accessibility (ACC) and intention (INT)	ACC → AWR → INT
H16	Awareness (AWR) mediates the relationship between trust (TRS) and intention (INT)	TRS → AWR → INT

3.10 Pilot Study

Thirty-one (31) questionnaires were distributed to owners of SMEs in Sanaa using an online survey, with some explanation about the survey, and to provide the contact information in case of need or for following up. The SMEs were selected randomly using the telephone directory. Basic statistical analysis was then conducted using SPSS. The next section presents a descriptive analysis of the usable data collected in the pilot survey using SPSS.

Table 3. 6:
Cronbach's Alpha Coefficients for all Constructs in Pilot Study

Construct	Cronbach's Alpha
Intention to use	.920
Technology	.953
Perceived ease of use	.964
perceived usefulness	.964
Accessibility	.954

Trust	.955
Awareness	.967

All of the measures used in the pilot study showed an adequate reliability with Cronbach's alpha values. Cronbach's alpha estimates above 0.70 are acceptable (Nunnally, 1978).

Table 3. 7:
Reliability Statistics

Cronbach's Alpha	N of Factors
.927	7

Table 3.7 showed that all of the measures used in the pilot study showed an adequate reliability with Cronbach's alpha values was 0.927 which is considered to be very good.

3.10.1 Reliability of the Instrument

This study's validity is tested as well by prior literature review serving as the source of questions, in the same vein factors analysis has been conducted and this type of analysis is a technique particularly suitable for handling a number of variables in establishing the correlations among these variables. The main purpose is to summarise the data contained in a large number of variables into a smaller number of factors. This technique examines the numerical nature and structure of the underlying factors, which are influencing the relations between the set of variables when it comes to the factor matrix, this is the coefficient table which is expresses the relations between the variables and factors included. These elements of the factor matrix are described as the "factor loadings, which can be seen clearly that all the items have good validity between0.697 and 0.951as shown in the table below.

Table 3. 8:
Instrument validity

Communalities		
	Initial	Extraction
I intend to use internet banking as often as needed.	1.000	.697
I intend to continue using internet banking in the future.	1.000	.858
Assuming I have access to internet banking systems, I will intend to use it.	1.000	.810
Given that I may have access to internet banking in the future, I predict that I will use it.	1.000	.759
I will strongly recommend others to use internet banking.	1.000	.838
I would see myself using IB services for my banking transactions.	1.000	.823
Using internet banking enhances the productivity of my banking activities.	1.000	.881
Using internet banking makes it easier to do my banking activities.	1.000	.821
Using internet banking enables me to accomplish my banking activities quicker.	1.000	.798
Using internet banking improves my performance of banking activities.	1.000	.924
Using internet banking enhances my effectiveness of banking activities.	1.000	.856
Overall, I find internet banking useful for my banking activities.	1.000	.875
Learning to operate internet banking is easy for me.	1.000	.886
I find it easy to get internet banking to do what I wanted it to do.	1.000	.853
My interaction with internet banking is clear and understandable.	1.000	.937
I find internet banking to be flexible to interact with.	1.000	.890
It is easy for me to become skilful at using internet banking.	1.000	.864
Overall, I find internet banking easy to use.	1.000	.935
I trust IB services as if it was a real bank.	1.000	.897
I trust in the technology used by the bank.	1.000	.896
I have confidence in the security of the computer used for accessing internet banking.	1.000	.816
I trust my internet service provider.	1.000	.846
Internet banking offers secure personal privacy.	1.000	.820
I trust the ability of internet banking to secure my privacy.	1.000	.878
I trust in the ability of internet banking to protect my privacy.	1.000	.911
I could complete my banking tasks using internet banking, even if I had never used a system like it before.	1.000	.835
I could complete my banking tasks using internet banking, if I could refer to the system manuals for reference.	1.000	.903
I would attempt to complete tasks using internet banking, if I noticed others doing it successfully.	1.000	.871
I could complete my banking tasks using internet banking, if there is built in help facility for assistance.	1.000	.903

I could complete my banking tasks using internet banking even, if there was no one around to tell me what to do as I go.	1.000	.887
Internet banking is accessible.	1.000	.903
My access to internet banking is unrestricted.	1.000	.940
I find it easy to get access to internet banking.	1.000	.951
I think I have enough information about the services of internet banking.	1.000	.888
I think I have enough information about the advantages of internet banking.	1.000	.866
I think I have enough information about the ways of opening account and using internet banking.	1.000	.782
I think I have enough information on how to use internet banking.	1.000	.921
I think I obtain enough information about application procedure of internet banking.	1.000	.948
I think I obtain enough information about benefits and risks from using internet banking.	1.000	.866
In general, I have enough information about internet banking.	1.000	.914

3.11 Summary

The aim of this chapter was to discuss and choose the appropriate methodology and to discuss statistical techniques used in this study. In the domain of methodology, two main research approaches were highly appreciated, namely positivist and interpretivist. The positivist approach is widely known as a scientific approach and is quantitative in nature while the interpretivist approach is commonly known as a qualitative approach. However, both philosophical approaches have positive and negative impacts on different context of research in one way or another but the main concern is the same. Both of these approaches were discussed in detail with the proper justifications for the selection of a particular research methodology.

This study adopted the quantitative (positivist) approach, as it was consistent with the topic. In fact, prior research suggested that the normal process under a positivistic approach is to study the literature to establish an appropriate theory and construct hypotheses. Therefore, this study was within the domain of the positivist approach rather than interpretivist approach, as the model was developed after thorough investigation of literature, hypothesised model was proposed (see chapter 2), in order to determine the main factors that effect on the intention to use internet banking.

In addition, the survey method was used because it was designed to deal more directly with the respondents' thoughts, feeling, and opinions, especially when collecting information regarding attitudes and beliefs is concerned. Moreover, a survey

approach offers more accurate means of evaluating information about the sample and enables the researcher to draw conclusions about generalising the findings from a sample to the population. Additionally, surveys methods are quick, economical, efficient, and can easily be administered to a large sample. In order to collect the data for this study, a questionnaire was developed. The question items were adopted from prior relevant research. The adapted items were validated, and wording changes were made to tailor the instrument for the purposes of this study. The question items and response categories were better developed to motivate the respondents to participate in the research. The researcher made utmost effort to keep the questions quite simple and easy to read and comprehend so that the respondents should not misunderstand them or they become disinterested in taking part in the study. The questionnaire was then administered to the users personally as well as sent to the potential participants by post and electronic mail.

Previous research suggests that a pre-test and pilot study are both essential parts of questionnaire survey design and must be conducted prior to the initial data collection phase or main survey in order to validate instrument and to ensure that the survey questionnaire is free of errors and ambiguities. Thus, one pre-test, and a pilot study was conducted prior to using the final survey questionnaire in the main study.

The main purpose of pre-testing and pilot study was to avoid confusion and misinterpretation as well as to identify and detect any errors and ambiguities. In addition, a pilot study was used to test the reliability of measurement items used in the questionnaire, most of the items showed adequate reliability.

SEM software package AMOS 16.0 was used in this research to explore statistical relationships between the test items of each factor and among the factors of independent variables (i.e. TCG, EOU, PRU, ACC, and TRS) with meditator variable (i.e. Awareness) and the dependent variable (i.e., intention to use).

This research applied a two-step approach in the SEM analysis as suggested by prior research. In my point of view, using two-step approach in the SEM analysis is helpful in order to get accurate result. In the first step, measurement model evaluation was achieved by examining unidimensionality, validity, and reliability of latent constructs using CFA. In the next step, the structural model was tested to examine the hypothesised relationships between the latent constructs in the proposed research model. Finally, results of the main study are presented next.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter describes the analysis conducted and displays the empirical results to examine the hypotheses of this research, using AMOS, and SPSS software. It comprises eight major subsections. Following the first section as introduction, the second section provides a general explanation of the survey respondents and sample profile.

The third section overviews the general assumptions in SEM. In the fourth section, the proposed latent constructs and their relative measurement items are presented.

Having done this, the fifth section presents the data screening. In this section, procedures used to purify the data through replacing missing values, removing outliers, and testing normality of data distribution are described.

The sixth section represents the measurement models' results through CFA used to assess the unidimensionality, reliability, and validity of the constructs. The descriptive results of the constructs are also represented in this section.

Section seven reports the results of structural models to test the hypothesised direct and indirect effects developed in this research.

Finally, the eighth section provides a summary of the data analysis results and the findings.

4.2 Respondent Profile

Table 4.1 represents the frequencies and percentages of the demographical variables.

Table 4. 1:
Respondent Profile

Group	Frequency	Percentage
Gender		
Male	319	84.8
Female	57	15.2
Age		

Less than 20 Years Old	3	.8
20-30 Years Old	169	44.9
31-40 Years Old	176	46.8
41-50 Years Old	27	7.2
51-60 Years Old	1	.3
Education		
Less than high school	1	.3
High school	16	4.3
Diploma	31	8.2
Bachelor	207	55.1
Postgraduate	121	32.2
Internet Use		
No	3	.8
Yes	373	99.2
Location		
Home	114	30.3
Work	90	23.9
School	10	2.7
Library	2	.5
Café	11	2.9
Others	149	39.6
Internet Use Duration		
< 1 Year	3	.8
1-2 Years	19	5.1
3-4 Years	88	23.4
5-6 Years	86	22.9
>6 Years	180	47.9
Internet Banking Use		
No	201	53.5
Yes	175	46.5

The table shows that among 376 respondents, the majority of participants was male (n=319, 84.8%) while the remaining were female (n= 57, 15.2%). Majority of the respondent were young adults aged 31-40 years (n=176, 46.8%) while those between 20-30 years of age were second highest in numbers (n=169, 44.9%). The findings show that the most of participants had bachelor qualifications (n=207, 55.1%) followed by those who had a postgraduate degree (n=121, 32.2%).

Results of participants' exposure to internet use by location and duration as well as use of IB are presented in Table 4.1 Results revealed that the highest percentage

(39.6%) of participants used the internet in other places, followed by internet use at home (30.3%) while the lowest percentage (0.5%) of participants used the internet at a library. The highest percentage (47.9%) of participants had used the internet for >6 years followed by with 5-6 years' experience.

4.3 Descriptive Analysis

We used covariance matrix as a descriptive function so that all of the variables could be included in the analysis. The scores were computed by parcelling the original measurement item scores. Parcels are sum or averages of several individual indicators or items based on their factor loadings on the construct (Coffman and Maccallum, 2005; Hair *et al.*, 2006).

Table 4.2 displays the means and standard deviation of the constructs, assessed on a 7-point Likert scale:

Table 4. 2:
Results of Descriptive Statistic for Latent Constructs

Variable	Mean	Standard Deviation
Technology (TCG)	4.274	1.370
Ease of Use (EOU)	4.651	1.367
Perceived Usefulness (PRU)	4.902	1.395
Accessibility (ACC)	4.623	1.425
Trust (TRS)	4.396	1.379
Awareness (AWR)	4.231	1.400
Intention (INT)	4.813	1.425

The mean was applied as a measure of central tendency, which indicated that mean values of all constructs were slightly above their midpoint level of 4 as indicated in Table 4.2. The phenomenon indicated that the consensus respondents' perception toward these variables were above the average.

The highest mean rating belonged to perceived usefulness (PRU) with the mean value of 4.902. The lowest mean rating belonged to awareness (AWR) with the mean value of 4.231.

The standard deviation was applied as a dispersion index to indicate the degree to which individuals within each variable differ from the variable mean. Among the studied variables, the individual values of accessibility (ACC) deviated the most from their relative mean (SD = 1.425). This standard deviation suggested reasonably high

variability in respondents' perception toward accessibility (ACC). In other words, the survey participants were most varying in this variable from each other. The lowest deviation from mean belonged to ease of use (EOU) with the standard deviation of 1.367.

Figure 4.1 gives a good illustration for the mean of all constructs together with their standard deviations.

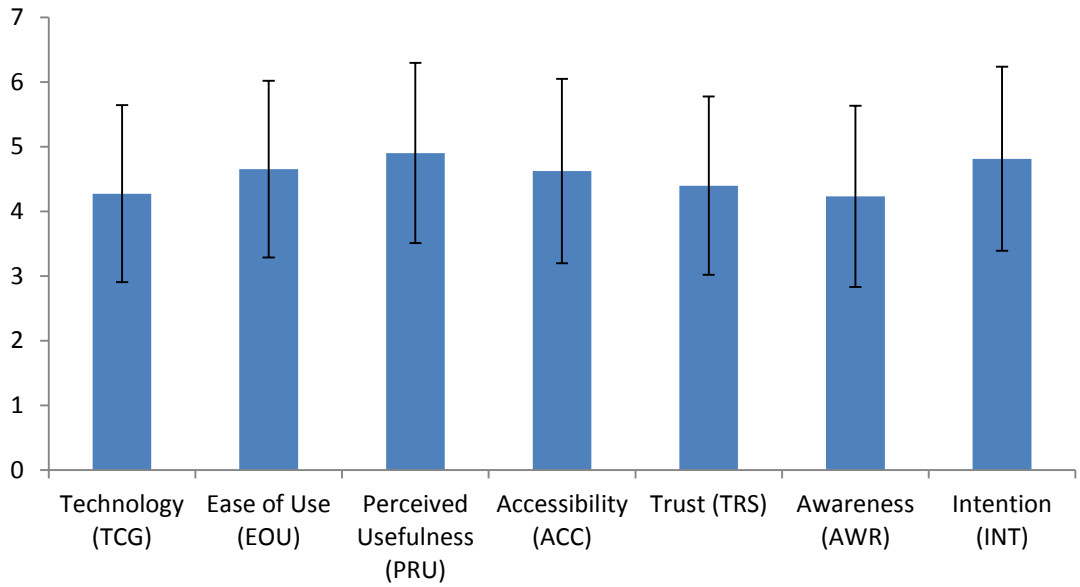

Figure 4. 1: Means and Standard Variations of All Constructs

4.3 Cross-Tabulation

A cross-tabulation is a joint frequency distribution of cases based on two or more categorical variables. Displaying a distribution of cases by their values on two or more variables is known as contingency table analysis and is one of the more commonly used analytic methods in the social sciences. However, this study was used cross-tabulation between seven factors namely Technology (TCG), Perceived Usefulness (PRU), Ease of Use (EOU), Accessibility (ACC), Trust (TRS), Awareness (AWR) and intention to use internet banking (INT) which contains of 47 items and the respondent's background namely gender, age, education, internet use, internet use duration.

Table 4. 3:
Cross-tabulation between all Variables and Gender

Gender		Intention to use	Perceived Usefulness	Ease of Use	Trust	Accessibility	Technology	Awareness
Female	Mean	4.9503	5.1287	4.6257	4.4327	4.4035	4.2351	4.1871
	N	57	57	57	57	57	57	57
Male	Mean	4.7884	4.8605	4.6583	4.3892	4.6583	4.2809	4.2388
	N	319	319	319	319	319	319	319
Total	Mean	4.8129	4.9012	4.6534	4.3958	4.6197	4.2739	4.2309
	N	376	376	376	376	376	376	376

It can be seen clearly that the mean values of all variables were slightly above their midpoint level of 3 as indicated in Table 4.3. The phenomenon indicated that the consensus respondents' perception toward these variables were above the average. The highest mean rating belonged to Perceived Usefulness (PRU) with female with the mean value of 5.128. The lowest mean rating belonged to awareness (AWR) with female with the mean value of 4.187.

The intention to use is higher among the female than the male despite the fact that the level of awareness on IB are lower in relation to the male. The female has higher perceived usefulness and trust on IB compared to the male group. Nevertheless, the female felt that IB is less accessible, not easy to use and involve difficult technology. Despite their deficiency compared to the male, the females are more receptive to the possibility to using IB in the future.

Table 4. 4:
Cross-tabulation between all Variables and Age

Age		Intention to use	Perceived Usefulness	Ease of Use	Trust	Accessibility	Technology	Awareness
Less than 20 Years Old	Mean	5.7778	5.0000	4.6667	5.0556	4.6667	5.2667	5.1111
	N	3	3	3	3	3	3	3
20-30 Years Old	Mean	4.6815	4.7387	4.5503	4.3540	4.4892	4.1929	4.1371
	N	169	169	169	169	169	169	169
31-40 Years Old	Mean	4.8438	4.9924	4.7273	4.3864	4.7405	4.3352	4.2443
	N	176	176	176	176	176	176	176
4150 Years Old	Mean	5.3951	5.3519	4.8086	4.6852	4.7037	4.2741	4.6790
	N	27	27	27	27	27	27	27
5160 Years Old	Mean	3.0000	3.8333	4.8333	3.3333	3.0000	4.2000	3.0000
	N	1	1	1	1	1	1	1
Total	Mean	4.8129	4.9012	4.6534	4.3958	4.6197	4.2739	4.2309
	N	376	376	376	376	376	376	376

It can be seen clearly that the mean indicated that all variables were slightly above their midpoint level of 3 as indicated in Table 0.0. The phenomenon indicated that the consensus respondents' perception toward these variables were above the average. The highest mean rating belonged to intention to use (INT) with those who are less than 20years old with the mean value of 5.77. The lowest mean rating belonged to

intention to use (INT), Accessibility (ACC) and awareness (AWR) with the mean value of 3.00.

The groups below 20 years old are the stronger supporter of IB because they believed in the usefulness and they trusted the system. The group of 41 to 50 years old are less likely to adopt IB in a near future because they were less aware, do not believe in their usefulness and do not trust the system.

Table 4. 5:
Cross-tabulation between all Variables and Education

Education		Intention to use	Perceived Usefulness	Ease of Use	Trust	Accessibility	Technology	Awareness
Less than high school	Mean	2.0000	4.0000	3.3333	4.0000	3.6667	4.8000	2.5000
	N	1	1	1	1	1	1	1
High school	Mean	4.5938	4.6458	4.3854	4.3854	4.7292	4.2875	3.9271
	N	16	16	16	16	16	16	16
Diploma	Mean	4.4677	4.4839	4.1989	3.9516	4.1290	3.7290	3.7849
	N	31	31	31	31	31	31	31
Bachelor	Mean	4.7697	4.7705	4.5596	4.2995	4.4493	4.2019	4.1337
	N	207	207	207	207	207	207	207
Postgraduate	Mean	5.0275	5.2727	4.9766	4.6791	5.0303	4.5306	4.5661
	N	121	121	121	121	121	121	121
Total	Mean	4.8129	4.9012	4.6534	4.3958	4.6197	4.2739	4.2309
	N	376	376	376	376	376	376	376

It can be seen clearly that the mean values of all variables were slightly above their midpoint level of 3 as indicated in Table 4.5. The phenomenon indicated that the consensus respondents' perception toward these variables were above the average. The highest mean rating belonged to Perceived Usefulness (PRU) with postgraduate with the mean value of 5.272. The lowest mean rating belonged to intention to use (INT) with Less than high school with the mean value of 2.00.

The intention to use IB is highest among postgraduate's holders who also have high awareness of IB. The groups with primary education background have the lowest intention to use IB because of their low awareness level of IB. The high school and

diplomas holders have relatively low awareness but relatively high intention to use IB. If awareness can be improved on these groups, the level of intention could be improved tremendously. The low education group also felt the constraint on the technology and ease of use causing the low intention to use IB.

Table 4. 6:
Cross-tabulation between all Variables and Internet Use Duration

Internet Use Duration		Intention to use	Perceived Usefulness	Ease of Use	Trust	Accessibility	Technology	Awareness
< 1 Year	Mean	2.7778	2.6111	3.3889	3.3333	3.4444	2.5333	3.3889
	N	3	3	3	3	3	3	3
1-2 Years	Mean	4.8947	4.7281	4.3421	4.1404	4.3684	4.5263	3.9474
	N	19	19	19	19	19	19	19
3-4 Years	Mean	4.6913	4.6136	4.3939	4.0909	4.2159	3.8886	3.8580
	N	88	88	88	88	88	88	88
5-6 Years	Mean	4.8508	4.9903	4.5930	4.4283	4.6589	4.2349	4.2132
	N	86	86	86	86	86	86	86
>6 Years	Mean	4.8796	5.0556	4.8630	4.5741	4.8444	4.4833	4.4657
	N	180	180	180	180	180	180	180
Total	Mean	4.8129	4.9012	4.6534	4.3958	4.6197	4.2739	4.2309
	N	376	376	376	376	376	376	376

It can be seen clearly that the mean values of all variables were slightly above their midpoint level of 3 as indicated in Table 4.6. The phenomenon indicated that the consensus respondents' perception toward these variables were above the average. The highest mean rating belonged to Perceived Usefulness (PRU) with more than 6 Years with the mean value of 5.055. The lowest mean rating belonged to intention to use (INT) with less than 1 Year with the mean value of 2.77.

The cross-tabulation revealed that the higher the exposure on internet, the higher will be the rate of awareness on Islamic banking. These leads to the higher rate of IB use rate intention. The low rate of the internet uses also lead to the handicapped in technology and the IB ease of use feeling. This had also caused the low intention of IB use. In conclusion, the exposure in internet will be an important determinant of the IB intention usage.

4.4 An Overview to SEM

SEM analyses encompass two major stages, the measurement model or CFA and the structural equation model. The measurement model (CFA model) is used to determine the links between manifest or observed and latent or unobserved variables. The measurement model could therefore be said to define the manner in which latent or unobserved variables are assessed in terms of the manifest variables (Ho, 2006). As suggested by Hair *et al*. (2006), individual CFA was performed for each of the constructs followed by the measurement model of study, which provided specifics, and evaluation based on the goodness-of-fit (GOF) indices and evidence of construct validity. This study employed the Maximum Likelihood Estimation (MLE) as the extraction technique. This is one of the most widely used estimation methods that allow testing of individual direct effects and error term correlation.

The main assumption in using MLE is the normal distribution of the data. As a general rule of thumb, the data may be assumed to be normally distributed if skew and kurtosis is within the range of -1 to +1, or -2 to +2 or even 3 (Schumacker and Lomax 2004). Byrne (2013) and Kline (2011) suggested using a cut-off point of less than 7 as an acceptable value for the kurtosis. She added that the data, which is skewed within the range of -2 to +2, Could be considered as being normally distributed.

As mentioned earlier, one of the main advantages of the SEM is its ability to assess construct validity of measurements. In this instance, construct validity refers to the accuracy of measurements (Hair *et al*., 2006). In SEM analyses, construct validity

is assessed by two main components, convergence validity, and discriminant validity. Convergent validity refers to the similarity in degree of variance between the items which are the indicators of a specific construct. The convergent validity could be measured by considering the size of factor loading (standardised regression weights), Average Variance Extracted (AVE), and construct reliability (CR) among sets of items in the construct. The factor loading estimates with values 0.5 or greater and extracted average variance of 0.5 or higher show adequate convergence among the items in the construct (Hair *et al.*, 2006).The AVE can be calculated by dividing the sum square of the standardised factor loading by the factor loading number. The construct reliability (CR) should be 0.6 or higher to show adequate internal consistency (Bagozzi and Yi., 1988). The CR is computed from the square sum of factor loading and sum of error variance terms for a construct.

CR can be calculated using the following formula (Hair *et al*., 2006, p. 777). The measurement items that represent each individual variable should also be verified through internal reliability analysis. Reliability is the degree to which a measure is error-free. To ensure that the items produce a reliable scale, Cronbach's alpha coefficient of internal consistency should be examined. The higher value of Cronbach's alpha refers to higher reliability, with a range from 0 to 1. Nunnally and Bernstein suggest that for a reliable scale, Cronbach's alpha should not be lower than 0.7 (Nunnally and Bernstein, 1994).

4.4.1 Discriminant validity

Refers to the issue of how truly distinct a construct is from other constructs. Discriminant validity can be assessed by comparing the square root of the AVE for two constructs and their square correlations. Evidence of discriminant validity is when the correlation between the two constructs is smaller than the square root of the AVE for each construct (Fornell and Larcker, 1981; Hair *et al*., 2006). Further, correlations between the factors should not exceed 0.85 (Kline, 2005).

The SEM is distinguished by the ability of its overall model fit and its ability to assess the construct validity of a proposed measurement theory in addition to being the tool required to check reliability (Hair *et al*., 2006; Ho, 2006). A number of goodness-of-fit indices exist for the assessment of the overall fit of individual construct CFA, measurements of overall CFA, and hypothesised structural models. The goodness-of-fit (GOF) indices provide the factors to investigate the level of coincidences in the

covariance matrix of the proposed model against the sample covariance matrix (Kline, 2010). In general, there are three categories of goodness-of-fit indices, namely a) absolute fit measures such as chi-square statistic, goodness-of-fit statistic (GFI), and RMSEA; b) incremental fit measures such as Tucker-Lewis Index (TLI), Normed Fit Index (NFI), Incremental Fit Index (IFI), and comparative fit index (CFI); and c) parsimonious fit measures such as Akaik Information Criterion (AIC) and Parsimonious Normed Fit Index (PNFI).

The chi-square ($\chi 2$) statistic is generally considered as one of the most important absolute fit indexes, is the tool for researchers seeking a non-significant value in support of their proposed model being able to significantly reproduce the sample covariance matrix. However, when the sample size increases, the $\chi 2$ statistic shows a significant p-value (Schumacker and Lomax, 2010). When the $\chi 2$ model fit index shows a significant p-value it does not mean that the proposed model cannot be interpreted or that it is completely unacceptable. The researcher can resort to using the other GOF indices. Goodness-of-Fit Index (GFI) is a non-statistical index ranging from 0 (poor fit) to 1(perfect fit) (Ho, 2006). GFI values of over 0.90 indicate a good fit (Hoyle, 1995). RMSEA is another absolute fit index which should be lower than 0.1 to indicate a good fit (Schumacker and Lomax, 2010). However, the RMSEA values of between 0.03 and 0.08 show a better fit model (Hair *et al*., 2006; Ho, 2006). For incremental fit indices such as TLI, NFI, IFI, and CFI, values range between 0 (poor fit) to 1 (perfect fit).

The values of 0.90 and above show that there is a good fit between the model and the data (Bagozzi and Yi., 1988; Byrne, 1998; Hair *et al*., 2006; Ho, 2006). Akaik Information Criterion (AIC) and the Parsimonious Normed Fit Index (PNFI) is normally used where comparison of the models with lower AIC values (near to 0) and higher value PNFI indicates a better fit and better parsimony (Ho, 2006). Hair *et al* (2006) proposed the use of three to four fit indices for adequate evidence of model fit, that these should ideally include one incremental index, one absolute fit measure, and the chi-square value and associated degrees of freedom. Therefore, in this study, absolute fit measures such as chi-square statistic, Relative chi-square ($\chi 2$/df), GFI, and RMSEA were used, and among the incremental fit indices TLI, IFI, and CFI were used to measure the level of model fit.

4.5 Construct Measures

The principal construct measures were based on existing instruments. Table 4.7 summarizes the measurement items of the research variables known as latent constructs.

Table 4. 7:
List of Constructs and Measurement Items

Latent Construct	Number of Items (40)
Technology (TCG)	5
Ease of Use (EOU)	6
Perceived Usefulness (PRU)	6
Accessibility (ACC)	3
Trust (TRS)	7
Awareness (AWR)	7
Intention (INT)	6

4.6 Data Screening

Data is screened to ensure it has been entered correctly, is complete, free from outliers, and determine whether variables are distributed normal.

4.6.1 Replacing Missing Values

Missing data occurs results from respondents not answering the questions or items. This is detected through screening all items. The results show minimal missing data and the missing information was substituted with the median responses for each item.

4.6.2 Removing Outliers

Outliers refer to observations that differ greatly from the standard observations (Hair *et al.,* 1998) and can affect the normality of the data and distort the findings. This research detected them using univariate (histograms, box-plots and standardised z-score) and multivariate detections (Mahalanobis D^2 distance).

4.6.2.1 Univariate Outliers

For univariate detection, besides examining histograms, and box-plots, each variable was examined for the standardised (z) score. According to Hair (1998) for large sample size above 200, Absolut (z) > 4 is evidenced of an extreme observation. The

standardised (z) scores of the 376 cases are summarised in Table 4.8 for the items in each constructs.

Table 4. 8:
Result of Univariate Outlier Based on Standardised Values

Construct	*Item*	**Standardised Value (Z-Score)**	
		Lower Bound	**Upper Bound**
Technology (TCG)	TCG1	-2.027	1.796
	TCG2	-2.098	1.754
	TCG3	-2.155	1.573
	TCG4	-2.038	1.734
	TCG5	-1.961	1.705
Ease of Use (EOU)	EOU1	-2.247	1.323
	EOU2	-2.403	1.554
	EOU3	-2.235	1.533
	EOU4	-2.384	1.579
	EOU5	-2.356	1.468
	EOU6	-2.243	1.459
Perceived Usefulness (PRU)	PRU1	-2.360	1.262
	PRU2	-2.546	1.401
	PRU3	-2.404	1.190
	PRU4	-2.539	1.442
	PRU5	-2.523	1.411
	PRU6	-2.460	1.287
Accessibility (ACC)	ACC1	-2.276	1.525
	ACC2	-2.384	1.513
	ACC3	-2.240	1.498
Trust (TRS)	TRS1	-2.125	1.400
	TRS2	-2.182	1.613
	TRS3	-1.892	1.698
	TRS4	-1.871	1.871
	TRS5	-2.120	1.664
	TRS6	-2.158	1.642
	TRS7	-2.052	1.593
Awareness (AWR)	AWR1	-2.034	1.655
	AWR2	-1.923	2.057
	AWR3	-2.000	1.708
	AWR4	-1.954	1.698
	AWR5	-1.954	1.879
	AWR6	-2.039	1.810
	AWR7	-1.975	1.516
Intention (INT)	INT1	-2.218	1.318
	INT2	-2.378	1.329
	INT3	-2.392	1.361
	INT4	-2.412	1.341
	INT5	-2.454	1.459
	INT6	-2.272	1.295

As shown in Table 4.8, the standardised (z) scores of the cases for the research variables ranged from -2.546 to 2.057, indicating that none of the variable exceeded the threshold of ±4. Thus, there is no any univariate outlier among the initial 376 cases.

4.6.3 Multivariate Outliers

The data were further examined by applying multivariate detection. Mahalanobis Distance has succeeded in identifying the multivariate outliers. Mahalanobis D-squared distances are generated for each case using AMOS regression with case number as the dependent variable and all non-demographic measures as independent variables. High D^2 / df value greater than **3.5** represents potential multivariate outlier (Hair *et al.*, 1998). As depicted in APPENDIX B, the results showed that the largest D^2 value is 61.306 (belong to case 310). Regarding the 87 exogenous and endogenous variables together with their relative estimation errors in this study (APPENDIX A), the maximum D^2 / df was equal to 0.705 (61.306 / 87) which was far below the cut-off 3.5. Therefore, it could be concluded that examination of D^2 values for all cases did not indicate the presence of multivariate outliers, meaning all observations were retained for analysis.

4.6.4 Assessment of the Data Normality

The normality test was conducted as the main pre-assumption of Maximum Likelihood Estimation to assess the normal distribution of the data of constructs. Table 4.9 demonstrates the results of normality test for all 40 items in the model.

Table 4. 9:
Assessment of Normality for Measurement Model

Construct	*Item*	*Skewness*	*c.r.*	*Kurtosis*	*c.r.*	*Distribution Statues*
Technology (TCG)	TCG1	-0.094	-0.74	-0.826	-3.271	Normal
	TCG2	-0.223	-1.765	-0.704	-2.785	Normal
	TCG3	-0.375	-2.965	-0.657	-2.602	Normal
	TCG4	-0.229	-1.813	-0.736	-2.913	Normal
	TCG5	-0.215	-1.705	-0.891	-3.525	Normal
Ease of Use (EOU)	EOU1	-0.429	-3.392	-0.786	-3.11	Normal
	EOU2	-0.427	-3.378	-0.443	-1.752	Normal
	EOU3	-0.406	-3.218	-0.569	-2.251	Normal
	EOU4	-0.391	-3.097	-0.473	-1.873	Normal
	EOU5	-0.383	-3.028	-0.639	-2.53	Normal
	EOU6	-0.532	-4.21	-0.525	-2.078	Normal
Perceived Usefulness (PRU)	PRU1	-0.698	-5.528	-0.354	-1.399	Normal
	PRU2	-0.436	-3.45	-0.654	-2.589	Normal
	PRU3	-0.669	-5.293	-0.297	-1.175	Normal
	PRU4	-0.603	-4.775	-0.347	-1.373	Normal
	PRU5	-0.552	-4.367	-0.383	-1.517	Normal
	PRU6	-0.614	-4.862	-0.345	-1.364	Normal
Accessibility (ACC)	ACC1	-0.469	-3.709	-0.639	-2.53	Normal
	ACC2	-0.205	-1.626	-0.849	-3.359	Normal
	ACC3	-0.321	-2.539	-0.653	-2.586	Normal
	TRS1	-0.524	-4.148	-0.578	-2.286	Normal
	TRS2	-0.28	-2.219	-0.628	-2.485	Normal

Trust (TRS)	TRS3	-0.158	-1.251	-0.777	-3.075	Normal
	TRS4	-0.144	-1.139	-0.857	-3.393	Normal
	TRS5	-0.273	-2.157	-0.683	-2.702	Normal
	TRS6	-0.175	-1.383	-0.698	-2.763	Normal
	TRS7	-0.211	-1.667	-0.793	-3.138	Normal
Awareness (AWR)	AWR1	-0.203	-1.608	-0.906	-3.587	Normal
	AWR2	0.177	1.399	-0.716	-2.833	Normal
	AWR3	-0.076	-0.605	-0.737	-2.918	Normal
	AWR4	-0.173	-1.366	-0.819	-3.242	Normal
	AWR5	-0.118	-0.933	-0.715	-2.831	Normal
	AWR6	0.003	0.021	-0.841	-3.328	Normal
	AWR7	-0.278	-2.203	-0.878	-3.477	Normal
Intention (INT)	INT1	-0.486	-3.846	-0.589	-2.331	Normal
	INT2	-0.54	-4.272	-0.597	-2.363	Normal
	INT3	-0.496	-3.928	-0.683	-2.705	Normal
	INT4	-0.718	-5.682	-0.125	-0.496	Normal
	INT5	-0.345	-2.73	-0.681	-2.697	Normal
	INT6	-0.61	-4.831	-0.544	-2.152	Normal

The result indicated that the skew and kurtosis of all 40 items were laid between ±2 and ±7 respectively. Therefore, it can be concluded that the data set of all items were well modelled by a normal distribution. As shown in Table 4.9, the skew ranged from -0.718 to 0.177 and the kurtosis ranged from -0.906 to -0.125.

4.7 Measurement Model (CFA) – Stage 1 of SEM

The measurement model in this study was made up of 40 items to measure 7 latent constructs, namely: technology (TCG), ease of use (EOU), perceived usefulness (PRU), accessibility (ACC), trust (TRS), awareness (AWR) and intention (INT). The initial CFA model was conducted for these constructs is displayed in APPENDIX A.

4.7.1 Standardised Loadings of the Model's Items

Table 4.10 represents the results of standardised factor loadings for all 40 items. Deleted items from the model and recalculated factor loadings for the remaining items.

Table 4. 10:
Discarded Items Due to Insufficient Factor Loadings

Construct	Item	First Factor Loading	Item Deleted	Second Factor Loading
Technology (TCG)	TCG1	0.81		0.81
	TCG2	0.841		0.841
	TCG3	0.771		0.771
	TCG4	0.847		0.847
	TCG5	0.841		0.841
	EOU1	0.88		0.88
	EOU2	0.806		0.806

Ease of Use (EOU)	EOU3	0.826		0.826
	EOU4	0.811		0.811
	EOU5	0.826		0.826
	EOU6	0.844		0.844
Perceived Usefulness (PRU)	PRU1	0.872		0.872
	PRU2	0.838		0.838
	PRU3	0.843		0.843
	PRU4	0.861		0.861
	PRU5	0.857		0.857
	PRU6	0.869		0.869
Accessibility (ACC)	ACC1	0.856		0.856
	ACC2	0.862		0.862
	ACC3	0.84		0.84
Trust (TRS)	TRS1	0.802		0.801
	TRS2	0.814		0.814
	TRS3	0.803		0.803
	TRS4	0.318	Deleted	
	TRS5	0.79		0.789
	TRS6	0.817		0.817
	TRS7	0.853		0.855
Awareness (AWR)	AWR1	0.846		0.845
	AWR2	0.313	Deleted	
	AWR3	0.808		0.81
	AWR4	0.856		0.857
	AWR5	0.819		0.818
	AWR6	0.791		0.791
	AWR7	0.871		0.871
Intention (INT)	INT1	0.835		0.835
	INT2	0.866		0.866
	INT3	0.859		0.859
	INT4	0.835		0.835
	INT5	0.847		0.847
	INT6	0.872		0.872

The results of assessing the standardised loadings of the model's items showed that the factor loading of TRS4 and AWR2 was 0.318 and 0.313 respectively. Both of these values were less than the cut-off 0.5. Therefore, these two items were removed from their relative constructs. The revised model with 38 remaining items was again tested to ensure whether the factor structure remained stable (Table 4.10). As the result, the second standardised factor loadings for all items were more than 0.5, ranged from 0.771 to 0.880.

4.7.2 Goodness-of-Fit Indices

The overall results of the CFA indicate that the second measurement model adequately fitted the data (Table 4.11). The chi-square was 811.733, df = 644, p=.000. The results showed that the chi-square (χ^2) was significant at 0.05 level. However, the absolute fit index of minimum discrepancy chi-square can be ignored if the sample size obtained for the study is greater than 200 (Hair Jr, Anderson, Tatham, and William, 1995; Joreskog and Sorbom, 1984).

The value of GFI was 0.901, which is above cut-off 0.9 recommended by Hoyle (1995). After adjustment for the degrees of freedom relative to the number of variables, the adjusted GFI (AGFI) was 0.886 which was above the cut-off point of 0.80 as recommended by Chau and Hu (2001). It indicated that the model predicts 88% of the variances and covariance in the survey data. Based on the CFI, TLI, and IFI indices with values more than the cut-off value of 0.9 (i.e., 0.986, 0.984 and 0.986 respectively) the model had good fit of data (Bagozzi and Yi., 1988; Byrne, 1998; Hair *et al.*, 2006; Ho, 2006). Further, the RMSEA was 0.026 which was below the threshold 0.1 as recommended by Schumacker and Lomax (2010). Additionally, the Relative NORMEDCHISQ value was 1.260, less than 5 which showed the good fit of the model (Bagozzi and Yi., 1988). Given that the modified model fits the data adequately, no any adjustments are required.

The results of the goodness-of-fit indices of the measurement model with 38 remaining items are represented in Table 4.11.

Table 4. 11:
GOF Indices of Measurement Model with 38 Remaining Items

Fit index	**Modified model**	**Recommended values**	**Source**
Df	644		
Chi-Square ($\chi^{2)}$	811.733		
p-value	0.000	> 0.05	
NORMEDCHISQ (χ^2/df)	1.260	≤ 5.00	Bagozzi and Yi (1988)
GFI	0.901	≥ 0.90	Hoyle (1995)
AGFI	0.886	≥ 0.80	Chau and Hu (2001)
CFI	0.986	≥ 0.90	Bagozzi and Yi (1988) Byrne (1998)
TLI	0.984	≥ 0.90	Hair *et al.*, (2006) Ho (2006)

IFI	0.986	≥ 0.90	Hair *et al*,. (2006) Ho (2006)
RMSEA	0.026	≤ 0.10	Schumacker and Lomax (2010)

4.7.3 Reliability and Convergent Validity

After establishing construct unidimensionality, we assess for reliability using Cronbach's alpha, construct reliability (CR) and average variance extracted (AVE), while for validity we use convergent and discriminant validity.

Table 4. 12:
Results of Cronbach Alpha and Convergent Validity

Construct	*Item*	**Factor Loading**	**Average Variance Extracted (AVE)[a]**	**Composite Reliability (CR)[b]**	**Internal Reliability Cronbach Alpha**
Technology (TCG)	TCG1	0.81	0.677	0.913	0.912
	TCG2	0.841			
	TCG3	0.771			
	TCG4	0.847			
	TCG5	0.841			
Ease of Use (EOU)	EOU1	0.88	0.693	0.931	0.931
	EOU2	0.806			
	EOU3	0.826			
	EOU4	0.811			
	EOU5	0.826			
	EOU6	0.844			
Perceived Usefulness (PRU)	PRU1	0.872	0.734	0.943	0.943
	PRU2	0.838			
	PRU3	0.843			
	PRU4	0.861			
	PRU5	0.857			
	PRU6	0.869			
Accessibility (ACC)	ACC1	0.856	0.727	0.889	0.888
	ACC2	0.862			
	ACC3	0.84			
Trust (TRS)	TRS1	0.801	0.662	0.921	0.921
	TRS2	0.814			
	TRS3	0.803			
	~~TRS4~~	0.318[c]			
	TRS5	0.789			
	TRS6	0.817			
	TRS7	0.855			
Awareness (AWR)	AWR1	0.845	0.693	0.931	0.931
	~~AWR2~~	0.313[c]			
	AWR3	0.81			

	AWR4	0.857			
	AWR5	0.818			
	AWR6	0.791			
	AWR7	0.871			
Intention (INT)	INT1	0.835	0.727	0.941	0.941
	INT2	0.866			
	INT3	0.859			
	INT4	0.835			
	INT5	0.847			
	INT6	0.872			

[a]: AVE = (summation of the square of the factor loadings)/ {(summation of the square of the factor loadings) + (summation of the error variances)}.

[b]: Composite reliability = (square of the summation of the factor loadings)/ {(square of the summation of the factor loadings) + (square of the summation of the error variances)}.

[c]: denotes for discarded item due to insufficient factor loading below the cut-off 0.5

The number of deleted items (2 deleted items) was relatively low compared to the total items in the constructs (40 items). Furthermore, their removal did not significantly change the content of the constructs as they are conceptualised. As shown in Table 4.12, the remaining indicators have high factor loadings ranging from 0.771 to 0.880 indicating that the meaning of the factors has been preserved by these indicators.

Table 4.12 also shows that the AVE, which reflects the overall amount of variance in the indicators accounted for by the latent construct, was above the cut-off 0.5 for all constructs as suggested by Nunnally and Bernstein, 1994, ranged from 0.662 to 0.734.

The composite reliability values, which depict the degree to which the construct indicators indicate the latent construct, exceeded the recommended value of 0.6 for all constructs as recommended by Bagozzi and Yi (1988), ranging from 0.889 to 0.943.

The Cronbach's alpha values, which describe the degree to which a measure is error-free, range from 0.888 to 0.943 which were above the threshold of 0.7 as suggested by Nunnally and Bernstein (1994). Therefore, the achieved Cronbach's alpha for all constructs was considered sufficiently error-free.

4.7.4 Discriminant Validity

The discriminant validity was examined to assess how truly distinct a construct is from other constructs. In the case of discriminant validity, the correlations between factors in the measurement model do not exceed 0.85 as recommended by Kline (2005). The validity was checked based on comparisons of the correlations between constructs

and square root of the AVE for a construct (Fornell and Larcker, 1981). Table 4.13 represents the discriminant validity of the measurement model with 38 remaining items.

Table 4. 13:
Discriminant validity of Measurement Model with 38 Remaining Items

	TCG	**EOU**	**PRU**	**ACC**	**TRS**	**AWR**	**INT**
Technology (TCG)	**0.822**						
Ease of Use (EOU)	0.493	**0.833**					
Perceived Usefulness (PRU)	0.595	0.532	**0.857**				
Accessibility (ACC)	0.603	0.535	0.557	**0.853**			
Trust (TRS)	0.555	0.553	0.658	0.591	**0.813**		
Awareness (AWR)	0.550	0.562	0.600	0.550	0.575	**0.832**	
Intention (INT)	0.445	0.466	0.584	0.518	0.549	0.553	**0.852**

Note: Diagonals represent the square root of the AVE while the other entries represent the correlations.

The association between the 7 latent constructs ranged from 0.445 to 0.658, which were below the threshold 0.85. Table 4.13 shows how the correlations were below the square root of the AVE demonstrating good discriminant validity between these factors (Kline, 2005).

The final measurement scale to assess the latent constructs and their relative items was reliable and valid. Figure 4.2 depicts the final measurement model with standardised factor loadings for the 38 remaining items.

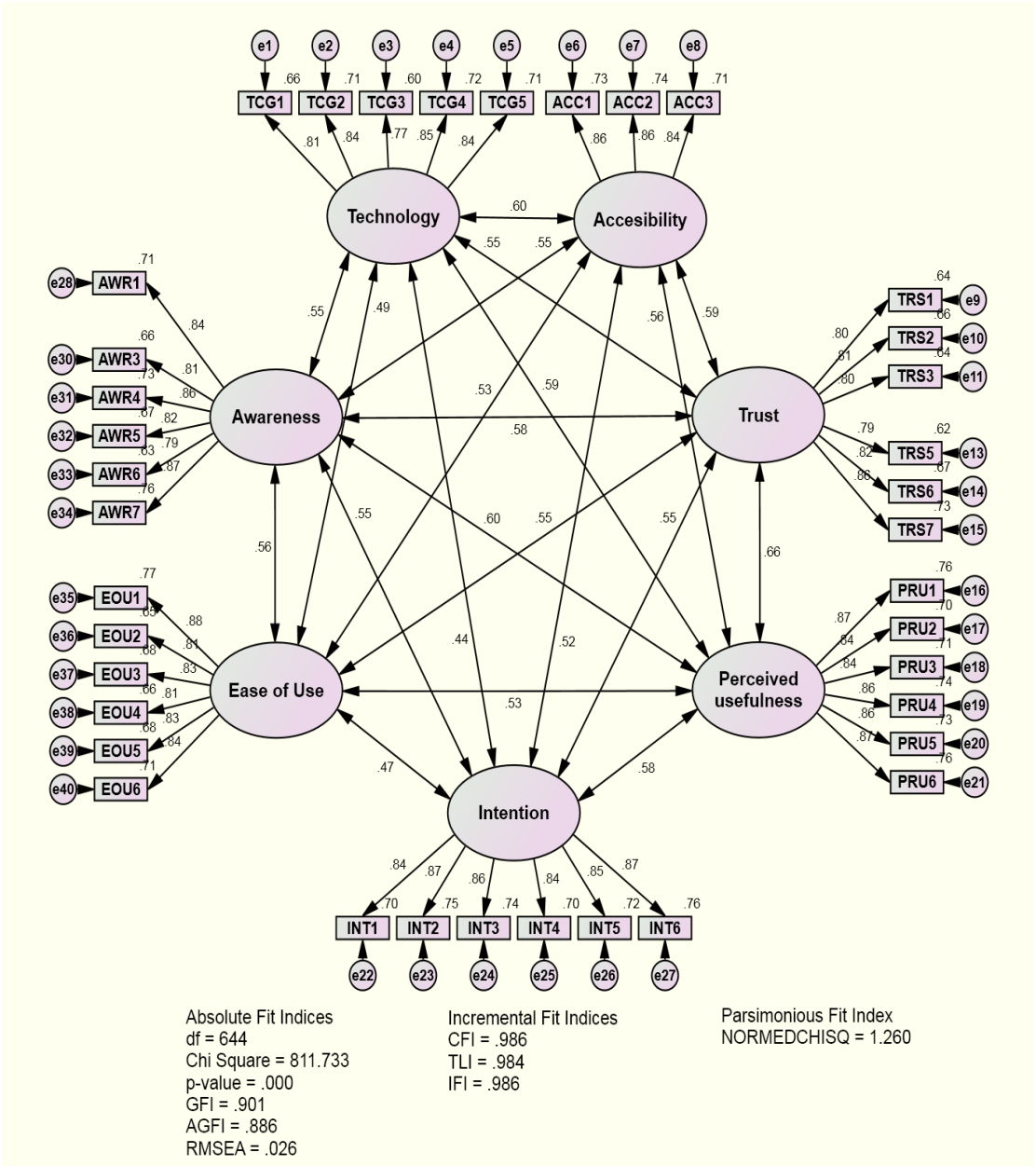

Figure 4. 2: Final Measurement Model with 38 Remaining Items

4.8 Structural Models - Stage 2 of SEM

In the structural model, the relationships between technology (TCG), ease of use (EOU), perceived usefulness (PRU), accessibility (ACC), trust (TRS), awareness (AWR) and intention (INT) were examined. Further, the mediating effects of awareness (AWR) on the effects of technology (TCG), ease of use (EOU), perceived usefulness (PRU), accessibility (ACC) and trust (TRS) on intention (INT) were evaluated. Therefore, 11 hypothesised direct effects and 5 hypothesised indirect effects described in Table 3.5 were examined in the structural model. Figure 4.3 illustrates structural model in AMOS graph.

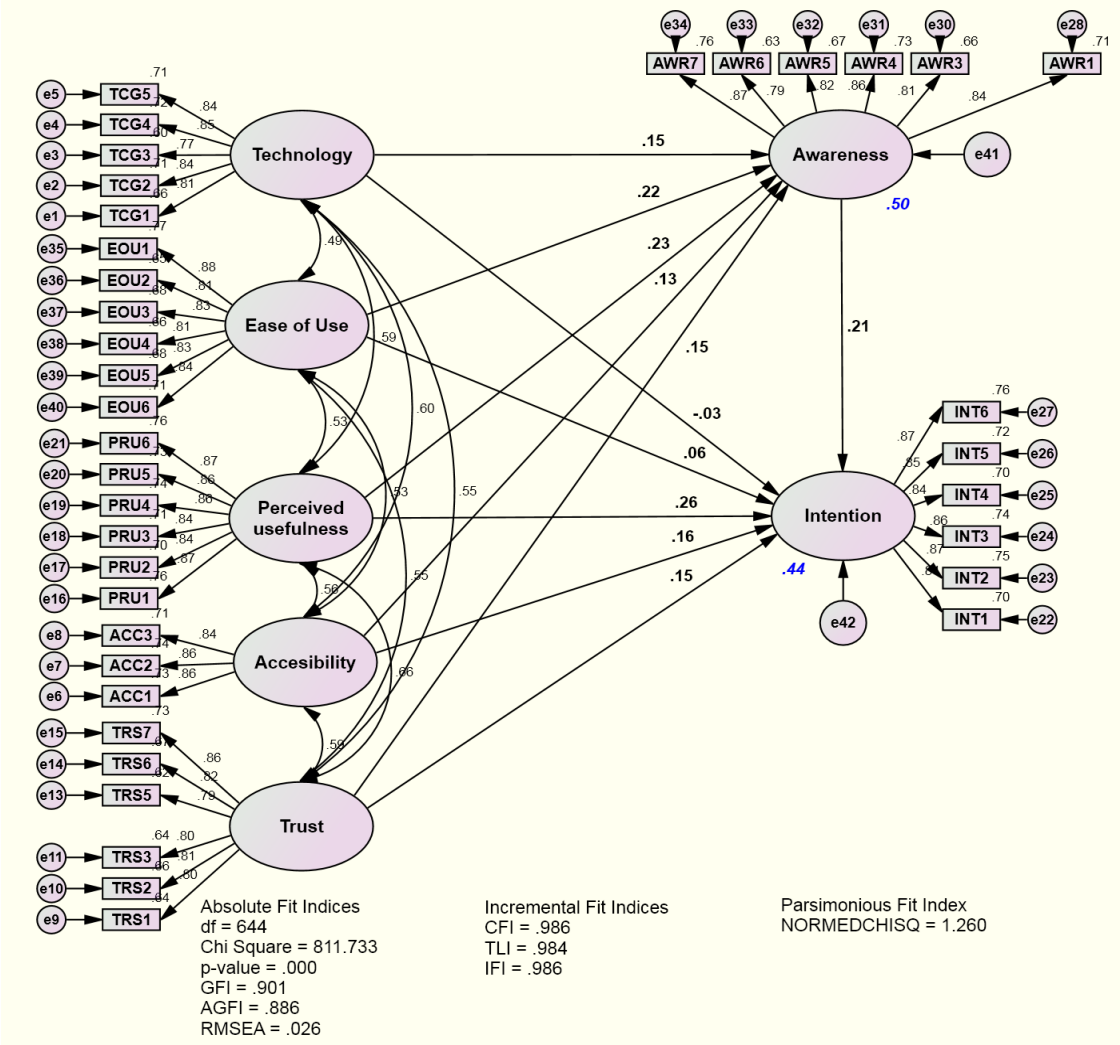

Figure 4. 3: Structural Model

An examination of goodness-of-fit indices indicates that the structural model adequately fitted the data: Chi-Square = 811.733, df = 644, p=0.000, GFI = 0.901, AGFI = 0.886, CFI = 0.986, TLI = 0.984, IFI = 0.986, RMSEA = 0.026 and NORMEDCHISQ = 1.260. Although the chi-square statistic is statistically significant, this is not deemed unusual given the 376 sample size (Bagozzi, Yi, and Phillips 1991).

The values of R^2 for awareness (AWR) and intention (INT) were 0.50 and 0.44 respectively. This indicates, for example, the error variance of intention is approximately 56% of the variance of intention itself. In other word, 44% of variations in intention are explained by its six predictors (i.e., technology, ease of use, perceived usefulness, accessibility, trust, and awareness). Overall findings showed that both scores of R^2 value satisfy the requirement for the 0.30 cut-off value (Quaddus and Hofmeyer, 2007).

4.8.1 Direct Effects of the Variables

The coefficient parameters estimates were then examined to test the hypothesised effects of the variables which were addressed in Table 3.5. The results of testing the hypotheses in the structural model are portrayed in Figure 4.4.

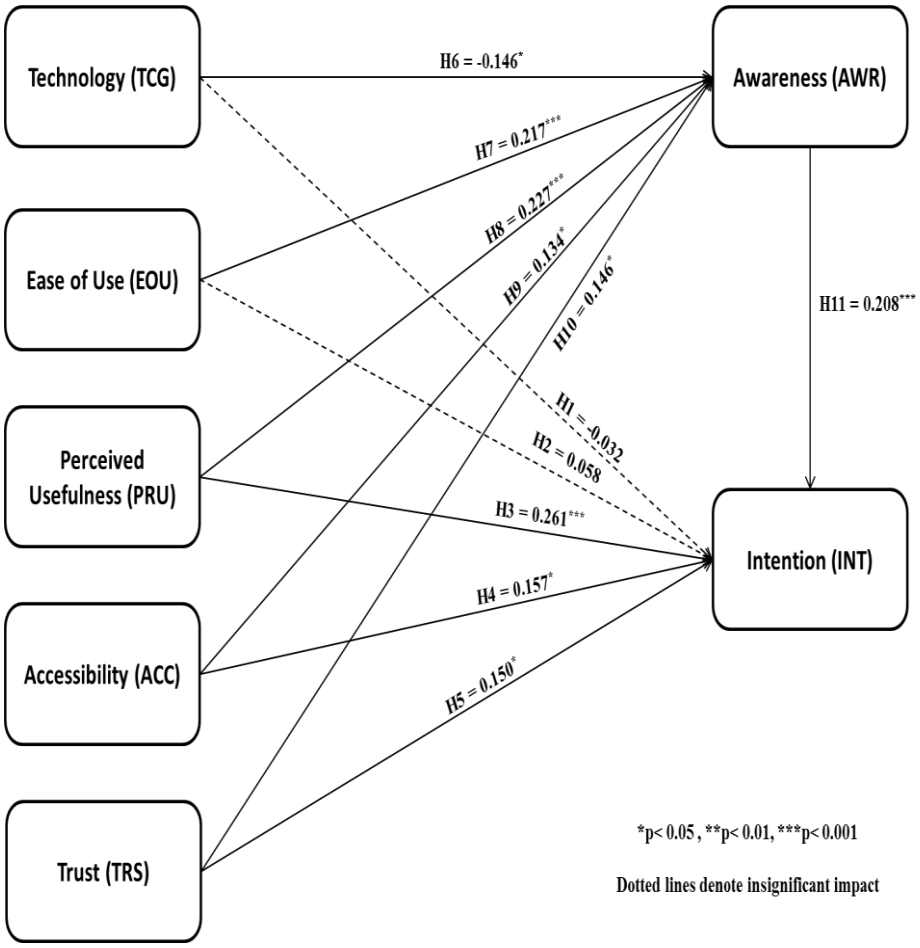

Figure 4. 4: Hypothesised Results of Structural Model

The standardised regression weight and the results of examining hypothesised effects are displayed in Table 4.14.

Table 4. 14:
Examining Results of Hypothesised Effects of the Variables

Path	Unstandardised Estimate		Standardised Estimate	C.R.	P-value	Hypothesis Result
	Estimate	S.E.	Beta (β)			
TCG → INT	-0.031	0.063	-0.032	-	0.617	H1) Rejected
EOU → INT	0.06	0.06	0.058	0.995	0.32	H2) Rejected
PRU → INT	0.241	0.062	0.261***	3.86	0.000	H3) Supported
ACC → INT	0.156	0.066	0.157*	2.373	0.018	H4) Supported
TRS → INT	0.147	0.066	0.15*	2.226	0.026	H5) Supported
TCG → AWR	0.149	0.062	0.146*	2.393	0.017	H6) Supported
EOU → AWR	0.23	0.059	0.217***	3.872	0.000	H7) Supported
PRU → AWR	0.216	0.06	0.227***	3.584	0.000	H8) Supported
ACC → AWR	0.136	0.065	0.134*	2.113	0.035	H9) Supported
TRS → AWR	0.147	0.065	0.146*	2.255	0.024	H10) Supported
AWR → INT	0.202	0.061	0.208***	3.295	0.000	H11) Supported

*p< 0.05, **p< 0.01, ***p< 0.001

As shown in Table 4.14, with the exception of the effects of technology (TCG) and ease of use (EOU) on the intention (INT) which were statistically insignificant, all other paths were statistically significant as their p-values were below the standard significance level of 0.05. Therefore, the hypotheses: H3, H4, H5, H6, H7, H8, H9, H10, and H11 were supported.

Conversely the hypotheses H1 and H2 were rejected. The following section discusses the results of path analysis in relation to the above hypotheses in the research structural model:

H1) Technology (TCG) has a positive effect on intention (INT)

As shown in Table 4.14, the results showed no significant relationship between the technology (TCG) and intention (INT); β = -0.032, C.R. = -0.501, p= 0.617. Thus, H1 was rejected.

H2) Ease of Use (EOU) has a positive effect on intention (INT)

The results showed no significant relationship between the ease of use (EOU) and intention (INT); β = 0.058, C.R. = 0.995, p= 0.32. Thus, H2 was rejected.

H3) Perceived Usefulness (PRU) has a positive effect on intention (INT)

As shown in Table 4.14, the C.R and p-value of perceived usefulness (PRU) in predicting intention (INT) were 3.86 and 0.000 respectively. It means that the probability of getting a critical ratio as large as 3.86 in absolute value is 0.000. In other words, the regression weight for perceived usefulness (PRU) in the prediction of intention (INT) is significantly different from zero at the 0.001 level (two-tailed). Thus, H3 was supported. Further, the standardised estimate of Beta was 0.261, indicating a positive relationship. It means, when perceived usefulness (PRU) goes up by 1 standard deviation, intention (INT) goes up by 0.261 standard deviations.

Further, it was found that perceived usefulness (PRU) is the most important determinant of intention (INT) among the 6 predictors with the highest regression weight 0.261.

H4) Accessibility (ACC) has a positive effect on intention (INT)

The C.R and p-value of accessibility (ACC) in predicting intention (INT) were 2.373 and 0.018 respectively. It means that the probability of getting a critical ratio as large as 2.373 in absolute value is 0.018. In other words, the regression weight for accessibility (ACC) in the prediction of intention (INT) is significantly different from zero at the 0.05 level (two-tailed). Thus, H4 was supported. Further, the standardised estimate of Beta was 0.157, indicating a positive relationship. It means, when accessibility (ACC) goes up by 1 standard deviation, intention (INT) goes up by 0.157 standard deviations.

H5) Trust (TRS) has a positive effect on Intention (INT)

The C.R and p-value of trust (TRS) in predicting intention (INT) were 2.226 and 0.026 respectively. It means that the probability of getting a critical ratio as large as 2.226 in absolute value is 0.026. In other words, the regression weight for trust (TRS) in the prediction of intention (INT) is significantly different from zero at the 0.05 level (two-tailed). Thus, H5 was supported. Further, the standardised estimate of Beta was 0.15, indicating a positive relationship. It means, when trust (TRS) goes up by 1 standard deviation, intention (INT) goes up by 0.15 standard deviations.

H6) Technology (TCG) has a positive effect on awareness (AWR)

The C.R and p-value of technology (TCG) in predicting awareness (AWR) were 2.393 and 0.017 respectively. It means that the probability of getting a critical ratio as large as 2.393 in absolute value is 0.017. In other words, the regression weight for technology (TCG) in the prediction of awareness (AWR) is significantly different from zero at the 0.05 level (two-tailed). Thus, H6 was supported. Further, the standardised estimate of

Beta was 0.146, indicating a positive relationship. It means, when technology (TCG) goes up by 1 standard deviation, awareness (AWR) goes up by 0.146 standard deviations.

H7) Ease of Use (EOU) has a positive effect on awareness (AWR)

The C.R and p-value of ease of use (EOU) in predicting awareness (AWR) were 3.872 and 0.000 respectively. It means that the probability of getting a critical ratio as large as 3.872 in absolute value is 0.000. In other words, the regression weight for ease of use (EOU) in the prediction of awareness (AWR) is significantly different from zero at the 0.001 level (two-tailed). Thus, H7 was supported. Further, the standardised estimate of Beta was 0.217, indicating a positive relationship. It means, when ease of use (EOU) goes up by 1 standard deviation, awareness (AWR) goes up by 0.217 standard deviations.

H8) Perceived Usefulness (PRU) has a positive effect on awareness (AWR)

The C.R and p-value of perceived usefulness (PRU) in predicting awareness (AWR) were 3.584 and 0.000 respectively. It means that the probability of getting a critical ratio as large as 3.584 in absolute value is 0.000. In other words, the regression weight for perceived usefulness (PRU) in the prediction of awareness (AWR) is significantly different from zero at the 0.001 level (two-tailed). Thus, H8 was supported. Further, the standardised estimate of Beta was 0.227, indicating a positive relationship. It means, when perceived usefulness (PRU) goes up by 1 standard deviation, awareness (AWR) goes up by 0.227 standard deviations.

Further, it was found that perceived usefulness (PRU) is the most important determinant of awareness (AWR) among the 5 predictors with the highest regression weight 0.227.

H9) Accessibility (ACC) has a positive effect on awareness (AWR)

The C.R and p-value of accessibility (ACC) in predicting awareness (AWR) were 2.113 and 0.035 respectively. It means that the probability of getting a critical ratio as large as 2.113 in absolute value is 0.035. In other words, the regression weight for accessibility (ACC) in the prediction of awareness (AWR) is significantly different from zero at the 0.05 level (two-tailed). Thus, H9 was supported. Further, the standardised estimate of Beta was 0.134, indicating a positive relationship. It means, when accessibility (ACC) goes up by 1 standard deviation, awareness (AWR) goes up by 0.134 standard deviations.

H10) Trust (TRS) has a positive effect on awareness (AWR)

The C.R and p-value of trust (TRS) in predicting awareness (AWR) were 2.255 and 0.024 respectively. It means that the probability of getting a critical ratio as large as 2.255 in absolute value is 0.024. In other words, the regression weight for trust (TRS) in the prediction of awareness (AWR) is significantly different from zero at the 0.05 level (two-tailed). Thus, H10 was supported. Further, the standardised estimate of Beta was 0.146, indicating a positive relationship. It means, when trust (TRS) goes up by 1 standard deviation, awareness (AWR) goes up by 0.146 standard deviations.

H11) Awareness (AWR) has a positive effect on intention (INT)

As shown in Table 4.14, the C.R and p-value of awareness (AWR) in predicting intention (INT) were 3.295 and 0.000 respectively. It means that the probability of getting a critical ratio as large as 3.295 in absolute value is 0.000. In other words, the regression weight for awareness (AWR) in the prediction of intention (INT) is significantly different from zero at the 0.001 level (two-tailed). Thus, H11 was supported. Further, the standardised estimate of Beta was 0.208, indicating a positive relationship. It means, when awareness (AWR) goes up by 1 standard deviation, intention (INT) goes up by 0.208 standard deviations.

4.8.2 Indirect Effects of the Variables (Mediation Effects of Awareness)

Mediation analysis was used to determine the mediation effects of awareness (AWR) as mediating variable on the effects of technology (TCG), ease of use (EOU), perceived usefulness (PRU), accessibility (ACC) and trust (TRS) as independent variables on intention (INT) as the dependent variable (i.e., H12, H13, H14, H15, and H16 respectively).

Furthermore, the indirect effects of the independent variables on the intention (INT) through awareness (AWR) were also examined.

The statistics behind mediation are correlation. Mathieu and Taylor (2006) suggested a decision tree framework to test the covariance relationships among three variables: an independent variable (IV), a potential mediating variable (M) and a dependent variable (DV). The illustration of this framework.is shown in Figure 4.5.

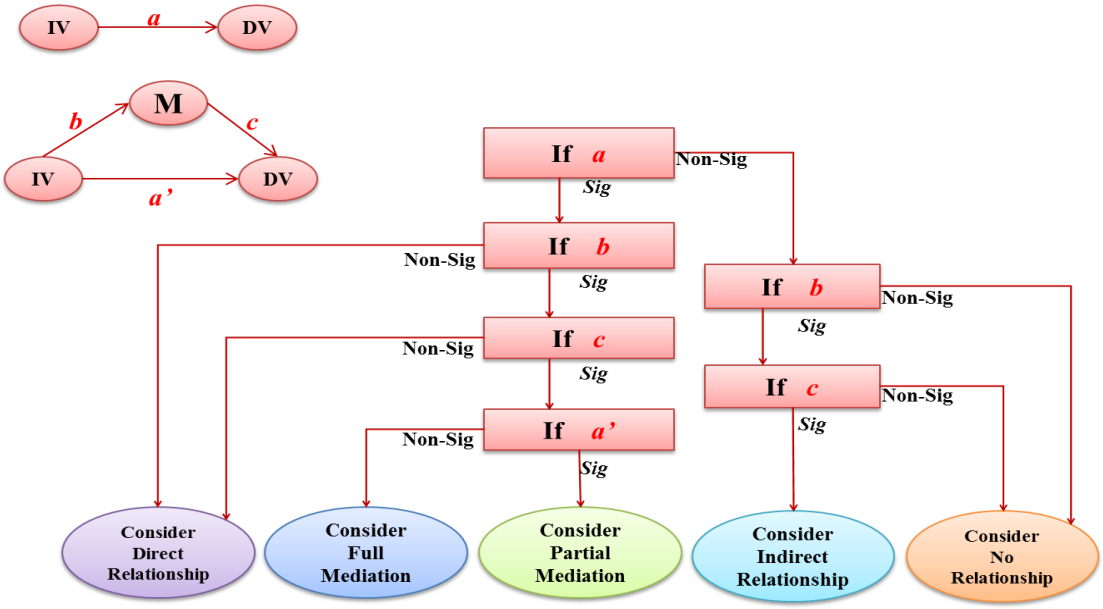

Figure 4. 5: Decision tree for evidence supporting different intervening effects
(Source: Mathieu & Taylor, 2006)

Upon significant relations among the three variables (paths a, b and c), once the direct effect of IV on DV in the multiple regression (path a') is not statistically significant, then the mediating variable act as a full mediator. Otherwise, the mediation can be considered as partial mediation. In absence of full or partial mediation, the relationships between IV and DV comprise to direct, indirect, or no any relationship.

The independent variable has non-significant indirect effect on dependent variable through mediating variable in the absence of significant effect in path "a" and presents of significant effects in path "b" and "c". The independent variable has only a direct effect on dependent variable in the present of significant effect in path "a" and a none significant effect in path "b" or "c". There would be no any relationship between independent variable and dependent variable in the absence of significant relationship in path "a" and then absence of significant relationship in the paths "b" or "c".

The SEM technique is claimed to be preferable to regression techniques for testing mediation because SEM permit modelling of both measurement and structural relationships and yield overall fit indices (Browne *et al.*, 1993; Garver and Mentzer, 1999). This research employed the bootstrapping approach with 2000 samples (Bagozzi and Yi, 1988) to assess the mediating effects of awareness (AWR).

The significance of the regression coefficients between the independent variables, mediating variable, and dependent variable was examined to determine the occurrence of the mediation effect and its mediating degree. Therefore, the coefficient

parameters estimate was tested to determine whether awareness (AWR) mediates the relationships between the five independent variables and intention (INT) as dependent variable.

Thus, five hypotheses (i.e., H12, H13, H14, H15 and H16) depicted in Table 3.5 were examined in this section. The results of examining these hypotheses are displayed in Table 4.15 with the standardised effects of different paths.

Table 4. 15:
Results of Examining Mediation Effects of Awareness (AWR) Using Bootstrapping

DV = Intention (INT)	**Independent Variable (IV)**				
M = Awareness (AWR)	**Technology (TCG)**	**Ease of Use (EOU)**	**Perceived Usefulness (PRU)**	**Accessibility (ACC)**	**Trust (TRS)**
Total	-.001(sig:0.950)	.104(sig:0.092)	.308**(sig:0.001)	.185*(sig:0.017)	.181*(sig:0.016)
Effect of Direct	-.032(sig:0.632)	.058(sig:0.349)	.261**(sig:0.002)	.157*(sig:0.029)	.150*(sig:0.046)
Effect of Indirect	.030*(sig:0.022)	.045**(sig:0.004)	.047**(sig:0.002)	.028*(sig:0.045)	.030*(sig:0.023)
Effect of Effect of IV on M (path b)	.146*(sig:0.037)	.217**(sig:0.002)	.227**(sig:0.001)	.134*(sig:0.045)	.146*(sig:0.035)
Effect of M on DV (path c)	.208**(sig:0.005)	.208**(sig:0.005)	.208**(sig:0.005)	.208**(sig:0.005)	.208**(sig:0.005)
Mediation Path	TCG→AWR→I	EOU→AWR→I	PRU→AWR→I	ACC→AWR→I	TRS→AWR→I
	NT	NT	NT	NT	NT
Mediation Effect	No	No	Yes	Yes	Yes
Degree of Mediation	---	---	Partial	Partial	Partial
Hypothesis Result	H12) Rejected	H13) Rejected	H14) Supported	H15) Supported	H16) Supported

*p< 0.05, **p< 0.01, ***p< 0.001

As shown in Table 4.15, awareness (AWR) partially mediates the effects of perceived usefulness (PRU), accessibility (ACC) and trust (TRS) on intention (INT). Thus hypotheses H14, H15, and H16 were supported. Conversely the awareness (AWR) could not mediate the effects of technology (TCG) and ease of use (EOU) on the intention (INT). Therefore, the hypotheses H12, and H13 were rejected.

The following section discusses the results of the mediation analysis and indirect effects:

H12) Awareness (AWR) mediates the relationship between technology (TCG) and intention (INT)

As shown in Table 4.15, the result showed that there was no significant relationship between technology (TCG) and intention (INT) in the absence of awareness (AWR), with the standardised total effect of -0.001 and the p-value of 0.950. Thus, the total effect of customer technology (TCG) as IV on intention (INT) as DV without the inclusion of awareness (AWR) as M was statistically insignificant.

This relation was still insignificant after including awareness (AWR) into the model, with the standardised direct effect of -0.032 and the p-value of 0.632. Thus, the direct effect of technology (TCG) as IV on intention (INT) as DV with the inclusion of awareness (AWR) as M was statistically insignificant.

As depicted in Table 4.15, the effects of technology (TCG) as IV on awareness (AWR) as M (path b) was statistically significant at 0.05 level, with the standardised effects of 0.146.

The effects of awareness (AWR) as M on intention (INT) as DV (path c) was statistically significant at 0.01 level with the standardised effects of 0.208.

These results indicated that awareness (AWR) could not mediate the relationship between technology (TCG) and intention (INT). This is because of insignificant total effect of technology (TCG) on the intention (INT) without the inclusion of awareness (AWR). Thus the hypothesis H12 was rejected.

Nevertheless, the result revealed that technology (TCG) had a significant indirect positive effect on intention (INT) through awareness (AWR) with the standardised indirect effect of 0.030 and the p-value of 0.022.

H13) Awareness (AWR) mediates the relationship between ease of use (EOU) and intention (INT)

As shown in Table 4.15, the result showed that there was no significant relationship between ease of use (EOU) and intention (INT) in the absence of awareness

(AWR), with the standardised total effect of 0.104 and the p-value of 0.092. Thus, the total effect of customer ease of use (EOU) as IV on intention (INT) as DV without the inclusion of awareness (AWR) as M was statistically insignificant.

This relation was still insignificant after inclusion awareness (AWR) into the model, with the standardised direct effect of 0.058 and the p-value of 0.349. Thus, the direct effect of ease of use (EOU) as IV on intention (INT) as DV with the inclusion of awareness (AWR) as M was statistically insignificant.

As depicted in Table 4.15, the effects of ease of use (EOU) as IV on awareness (AWR) as M (path b) was statistically significant at 0.01 level, with the standardised effects of 0.217.

The effects of awareness (AWR) as M on intention (INT) as DV (path c) was statistically significant at 0.01 level with the standardised effects of 0.208.

These results indicated that awareness (AWR) could not mediate the relationship between ease of use (EOU) and intention (INT). This is because of insignificant total effect of ease of use (EOU) on the intention (INT) without the inclusion of awareness (AWR). Thus the hypothesis H13 was rejected.

Nevertheless, the result revealed that ease of use (EOU) had a significant indirect positive effect on intention (INT) through awareness (AWR) with the standardised indirect effect of 0.045 and the p-value of 0.004.

H14) Awareness (AWR) mediates the relationship between perceived usefulness (PRU) and intention (INT)

As shown in Table 4.15, the result showed that there was a significant relationship between perceived usefulness (PRU) and intention (INT) in the absence of awareness (AWR), with the standardised total effect of 0.308 and the p-value of 0.001. Thus, the total effect of perceived usefulness (PRU) as IV on intention (INT) as DV without the inclusion of awareness (AWR) as M was statistically significant at 0.01 levels.

This relation was still significant even after inclusion awareness (AWR) into the model, with the standardised direct effect of 0.261 and the p-value of 0.002. Thus, the direct effect of perceived usefulness (PRU) as IV on intention (INT) as DV with the inclusion of awareness (AWR) as M was statistically significant at 0.01 levels.

As depicted in Table 4.15, the effects of perceived usefulness (PRU) as IV on awareness (AWR) as M (path b) was statistically significant at 0.01 level, with the standardised effects of 0.227.

The effects of awareness (AWR) as M on intention (INT) as DV (path c) was statistically significant at 0.01 level with the standardised effects of 0.208. These results indicated that awareness (AWR) mediates the relationship between perceived usefulness (PRU) and intention (INT). The degree of mediation was partial since the paths a, a', b, and c were all statistically significant. The phenomenon supported the hypothesis H14.

Further, the result revealed that perceived usefulness (PRU) had a significant indirect positive effect on intention (INT) through awareness (AWR) with the standardised indirect effect of 0.047 and the p-value of 0.002.

H15) Awareness (AWR) mediates the relationship between accessibility (ACC) and intention (INT)

As shown in Table 4.15, the result showed that there was a significant relationship between accessibility (ACC) and intention (INT) in the absence of awareness (AWR), with the standardised total effect of 0.185 and the p-value of 0.017. Thus, the total effect of accessibility (ACC) as IV on intention (INT) as DV without the inclusion of awareness (AWR) as M was statistically significant at 0.05 level.

This relation was still significant even after inclusion awareness (AWR) into the model, with the standardised direct effect of 0.157 and the p-value of 0.029. Thus, the direct effect of accessibility (ACC) as IV on intention (INT) as DV with the inclusion of awareness (AWR) as M was statistically significant at 0.05 level.

As depicted in Table 4.15, the effects of accessibility (ACC) as IV on awareness (AWR) as M (path b) was statistically significant at 0.05 level, with the standardised effects of 0.134.

The effects of awareness (AWR) as M on intention (INT) as DV (path c) was statistically significant at 0.01 level with the standardised effects of 0.208.

These results indicated that awareness (AWR) mediates the relationship between accessibility (ACC) and intention (INT). The degree of mediation was partial since the paths a, a', b, and c were all statistically significant. The phenomenon supported hypothesis H15.

Further, the result revealed that accessibility (ACC) had a significant indirect positive effect on intention (INT) through awareness (AWR) with the standardised indirect effect of 0.028 and the p-value of 0.045.

H16) Awareness (AWR) mediates the relationship between trust (TRS) and intention (INT)

As shown in Table 4.15, the result showed that there was a significant relationship between trust (TRS) and intention (INT) in the absence of awareness (AWR), with the standardised total effect of 0.181 and the p-value of 0.016. Thus, the total effect of trust (TRS) as IV on intention (INT) as DV without the inclusion of awareness (AWR) as M was statistically significant at 0.05 level.

This relation was still significant even after inclusion awareness (AWR) into the model, with the standardised direct effect of 0.150 and the p-value of 0.046. Thus, the direct effect of trust (TRS) as IV on intention (INT) as DV with the inclusion of awareness (AWR) as M was statistically significant at 0.05 level.

As depicted in Table 4.15, the effects of trust (TRS) as IV on awareness (AWR) as M (path b) was statistically significant at 0.05 level, with the standardised effects of 0.146.

The effects of awareness (AWR) as M on intention (INT) as DV (path c) was statistically significant at 0.01 level with the standardised effects of 0.208.

These results indicated that awareness (AWR) mediates the relationship between trust (TRS) and intention (INT). The degree of mediation was partial since the paths a, a', b, and c were all statistically significant. The phenomenon supported the hypothesis H16.

Further, the result revealed that trust (TRS) had a significant indirect positive effect on intention (INT) through awareness (AWR) with the standardised indirect effect of 0.030 and the p-value of 0.023.

4.9 Summary of the hypothesis testing

Table 4. 16:
Summary of Examining Results of Hypothesised Effects of the Variables

Hypothesis	Beta (β)	P-value	Hypothesis Result
Technology significantly affects the intention to use internet banking among SMEs.	-0.032	0.617	H1) Rejected
Perceived ease of use significantly affects intention to use internet banking among SMEs.	-0.032	0.32	H2) Rejected
Perceived usefulness significantly affects intention to use internet banking among SMEs.	0.261***	0.000	H3) Supported
Accessibility significantly affects the intention to use internet banking among SMEs.	0.157*	0.018	H4) Supported
Trust significantly affects the intention to use internet banking among SMEs.	0.15*	0.026	H5) Supported
Technology significantly affects awareness in IB.	0.146*	0.017	H6) Supported
Ease of use significantly affects awareness in IB.	0.217***	0.000	H7) Supported
Perceived usefulness significantly affects awareness in IB.	0.227***	0.000	H8) Supported
Accessibility significantly affects awareness in IB.	0.134*	0.035	H9) Supported
The Effect of Trust on Awareness.	0.146*	0.024	H10) Supported

The Effect of Awareness on the Intention to Use Internet Banking among SMEs.	0.208***	0.000	H11) Supported

*p< 0.05, **p< 0.01, ***p< 0.001

4.10 Summary of Chapter Four

In this research, data analysis was conducted in two major phases. The first phase involved a preliminary analysis of the data. This process is crucial to ensure that the data adequately meet the basic assumptions in using SEM. In general, the data set of all items was normally distributed and was free from failure, missing values, and univariate and multivariate outliers. The second phase applied the two stages of SEM. The first stage included the establishment of measurement models for the latent constructs in the research. After confirming the unidimensionality, reliability, and validity of the constructs in the first stage, the second stage developed to test the research hypotheses through developing the structural models.

Accordingly, a structural model was developed to examine 11 hypothesised direct effects (i.e., H1 to H11), and 5 hypothesised indirect / mediating effects (i.e., H12 to h16). These were done by conducting the path analysis using AMOS and testing the significant of the path coefficients for each hypothesised path.

The results indicated that the effects of technology (TCG), ease of use (EOU), perceived usefulness (PRU), accessibility (ACC) and trust (TRS) on awareness (AWR) were statistically significant and positive. It was also found that perceived usefulness (PRU), accessibility (ACC)

Trust (TRS) and awareness (AWR) had significant positive effects on intention (INT).

Thus, hypotheses H3, H4, H5, H6, H7, H8, H9, H10, and h11 were supported while hypothesis h1 and H2 were rejected.

The mediation analysis results indicated that awareness (AWR) partially mediates the effects from perceived usefulness (PRU), accessibility (ACC) and trust (TRS) on the intention (INT).

Therefore, the hypotheses H14, H15, and H16 were supported while hypotheses H12 and h13 were rejected.

CHAPTER FIVE

DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

5.1 Introduction

This chapter concludes the thesis. By way of summary, it attempts to draw broad conclusions based on the detailed information provided by the various analyses of the collected data and reviewed literature

The data were collected to examine how SME owners in Yemen responded to IB. The purpose of this research was to gain an understanding of the role of awareness as mediating factor in the intention to use internet banking among SME in Yemen. The researcher has addressed the issues of

1. To examine the role of awareness in predicting intention to use internet banking in Yemen.
2. To investigate the role of technology on the intention to use IB.
3. To investigate the role of ease of use on the intention to use IB.
4. To investigate the role of perceived usefulness on the intention to use IB.
5. To investigate the role of accessibility on the intention to use IB.
6. To investigate the role of trust on the intention to use IB.
7. To deliberate the implications for theoretical development and practice concerning consumers banking in Yemen.

5.2 Summary of the Results

The objectives of this study were to evaluate the empirical relationship between the owners of SMEs' awareness with the five variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) and intention to use IB. Awareness was a mediator between the relationships of the variables that have an impact on the intention to use IB (IB). The questions in this study investigated the relationship between owners of SMEs' awareness, with the five variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) and intention to use IB as perceived by owners of SMEs.

Hypothesis H1 was rejected. The results from the study showed there was no statistically significant relationship between technology and intention to use IB among SMEs. Hypothesis H2 was rejected. The results showed there was no statistically

significant relationship between perceived ease of use and intention to use internet banking among SMEs. Hypothesis H3 was largely supported. The results showed there was a statistically significant relationship between perceived usefulness and intention to use internet banking among SMEs. Hypothesis H4 was largely supported. The results showed there was a statistically significant relationship between accessibility and intention to use internet banking among SMEs. Hypothesis H5 was largely supported. The results showed there was a statistically significant relationship between trust and intention to use internet banking among SMEs.

Hypothesis H6 was largely supported. The results showed there was a statistically significant relationship between technology and awareness. Hypothesis H7 was largely supported. The results from the study showed there was a statistically significant relationship between effect of ease and awareness. Hypothesis H8 was largely supported. The results showed there was a statistically significant relationship between perceived usefulness and awareness. Hypothesis H9 was largely supported, as there was a statistically significant relationship between accessibility and awareness. Hypothesis H10 was largely supported. The results showed there was a statistically significant relationship between trust and awareness. Hypothesis H11 was largely supported. The results showed there was a statistically significant relationship between awareness and intention to use internet banking among SMEs.

Hypothesis H12 was rejected. The results showed awareness cannot mediate the relationship between technology and intention to use. Hypothesis H13 was rejected. The results showed awareness cannot mediate the relationship between ease of use and intention to use. Hypothesis H14 was supported. The results showed awareness partially mediates the relationship between perceived usefulness and intention to use. Hypothesis H15 was supported. The results showed awareness partially mediates the relationship between accessibility and intention to use internet banking. Hypothesis H16 was supported. The results showed awareness partially mediates the relationship between accessibility and intention to use internet banking.

5.3 Discussion of the Results

Based on the proposed research design used in the study, 900 respondents were invited to participate in the research; however, 376 respondents fully completed the questionnaire for the study, thus corresponding to a 41.08% response rate. That is because of the fact that many SMEs shutdown due to the ongoing war in Yemen started

in 2014 until present. As noted in chapter 3, only the completed responses were used in the study. The sample size was deemed sufficient since it met the minimum required sample size of 376 independent cases. A key criterion for the study required that the target sample frame was practicing SME owners based in Yemen. The participants' responses were captured using an online survey tool (GOOGLE DOC) utilising the demographic questionnaire.

The demographic questionnaire contained 7 items including, gender, age, education level, internet usage, location of using internet, years of using internet, internet banking usage. The dependent variable questionnaire involved 6 items designed to measure the intention to use internet banking, while the mediator variable questionnaire involved 7 items designed to evaluate awareness using a 7 point Likert scale, and the independent variables questionnaire involved 27 items designed to evaluate 5 factors (technology, perceived ease of use, perceived usefulness, accessibility, trust) and using a 7-point Likert scale. After the survey responses for the study were completed and collected, the data was first downloaded into an Excel file, and then imported into AMOS for analysis.

Descriptive statistics were used to analyse and explain the data, and the alternative hypotheses were tested based on a significance level of $p < .05$ or $p = .05$, in order to provide statistical inferences. The results gathered from the study were used to establish whether there was a statistically significant relationship between the owners of SMEs 'awareness, with the five variables (technology, perceived usefulness, accessibility, trust, perceived ease of use) and intention to use internet banking.

5.4 Hypotheses Testing

5.4.1 Technology on Intention to Use Internet Banking Among SMEs

In the proposed model, this researcher hypothesised that technology will have a positive effect on the intention to use internet banking among SME (H1). The parameter estimate results (H1: TCG → INT; $\beta = -0.032$, CR-value = -0.501, $p = 0.617$) for the above hypothesis was statistically found not significant. This hypothesis was therefore rejected. This finding suggests that the technology do not affect in intention to use internet banking among SME. Although, previous research studies empirically identified the presence of significant relationship between technology and the intention to use internet banking (Chong, 2009; Mansor *et al.*, 2012; Lin (2006); Wainwright *et al.*, 2005; Shiels *et al.*, 2003).

The most likely explanation for this inconsistent result between the TCG and INT may lie in the nature of the factors classification. It should be noted that previous studies identified a technical communications, technical skills and IT technology as factors variables, while in this research, the term of technology is defined as the capabilities that are offered to organisations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes (Attaran, 2003).

5.4.2 Perceived Ease of Use on Intention to Use Internet Banking

In the research model, this proposed hypothesised that perceived ease of use will have a positive effect on the intention to use internet banking among SME (H2). The parameter estimate results (H2: EOU → INT; $\beta = 0.058$, CR-value = 0.995, $p = 0.32$) for the above hypothesis was statistically found not significant. This hypothesis was therefore rejected. This finding suggests that the 'perceived ease of use' does not influence SME owners' intention to use internet banking. This hypothesis was drawn from TAM model, as applied by (Davis *et al.,* 1989) and other research studies on technology acceptance (Adams *et al.,* 1992; Davis *et al.,* 1989; Igbaria *et al.,* 1997; Lee *et al.,* 2001). Although, these research studies empirically identified the presence of significant relationship between 'the ease of use' and 'intention to use internet banking'.

The most likely explanation for this inconsistent result with the PEOU may lie in the nature of the target system being investigated. It should be noted that previous TAM studies have mainly been conducted with office automation tools such as Word, Excel, and so on (e.g., Davis, 1989; Davis *et al.*, 1989; Igbaria *et al.*, 1997; Lee *et al.*, 2001; Taylor and Todd, 1995; Mathieson, 1991).Compared to office automation tools, an intention to use internet banking among SME is more complex in nature as it involves monetary transactions. Online banking transactions may require SME owners' complete confidence in the privacy and confidentiality of online security. Therefore, it can reasonably be concluded that a user's assessment of the usefulness of an intention to use internet banking among SME cannot be influenced solely by the ease of use of these systems. Nevertheless, while studying acceptance of technology by physicians, Hu et al. (1999). The main reason for this hypothesis to be rejected could be the absence of knowledge, IT literacy among people in Yemen and insufficient training for users. Therefore, it is advisable to encourage the users to use internet banking by providing them with some incentives; it will lead to a more positive result.

5.4.3 Perceived Usefulness on Intention to Use Internet Banking

In the research model, the proposed hypothesis is that perceived usefulness will have a positive effect on the intention to use internet banking among SME (H3). The parameter estimate results (H3: PRU → INT; β = 0.261, CR-value = 3.86, p = 0.000) for the above hypothesis was found both positive and statistically significant. This suggested existence of a positive effect of perceived usefulness on the intention to use internet banking among SME. As such, this hypothesis was accepted.

This hypothesis was drawn from TAM and as explained in chapter two, the TAM posits that perceived usefulness was important factor that affects the behavioural intention toward the acceptance of new information systems (Davis *et al.,* 1989; Mathieson, 1991). In line with previous studies, our findings concluded with the significant influence of the perceived usefulness on intention to use IB.

5.4.4 The Effect of Accessibility on Intention to Use Internet Banking Among SMEs

The model in this research hypothesised that accessibility will have a positive effect on the intention to use internet banking among SME (H4). The parameter estimate results (H4: ACC → INT; β = 0.157, CR-value = 2.373, p = 0.018) the hypothesised was statistically significant, this hypothesis was supported. These results suggest that the accessibility has a significantly positive effect on the intention to use internet banking among SME, which implies that accessibility is an important factor that determines for the intention to use internet banking.

This result is in agreement with the findings of previous research (Sathye, 1999; Musa and Hassan, 2009; Aliyu *et al.*, 2012; Gerrard *et al.*, 2006). As mentioned earlier, the research model in this study proposed that accessibility would have an effect on the intention to use internet banking among SME which.

This study provided empirical evidence to support the proposition that accessibility effects on the intention to use internet banking among SME. Thus, it can safely be concluded, that the more accessible an intention to use internet banking among SME, so less effort is required to use it, which would subsequently help increase its acceptance by potential SME owners.

5.4.5 The Trust on the Intention to Use Internet Banking Among SMEs

The model in this research hypothesised that trust will have a positive effect on the intention to use internet banking among SME (H4). The parameter estimate results

(H5: ACC → INT; β = 0.15, CR-value = 2.226, p = 0.026) the hypothesis was statistically significant, and thus supported. These results suggest that trust has a significantly positive effect on the intention to use IB among SME, which implies that trust is an important factor that determines for the intention to use IB. The results indicated that trust was a strong predictor of the intention to use IB among SMEs.

5.4.6 The Effect of Technology on Awareness

The model in this research hypothesised that technology will have a positive effect on awareness (H6). The parameter estimate results (H6: TCG → AWR; β = 0.146, CR-value =2.393, p = 0.017) means that the hypothesis was statistically significant, meaning it is supported. This result is in agreement with the findings of previous research (Mansor *et al.*, 2012; Hibberd, 2007; Marriott, 2007; Thurasamy *et al.*, 2009). As mentioned earlier, the research model in this study proposed that technology would have an effect on awareness. This study has therefore provided empirical evidence to support the proposition that technology effects on the awareness.

5.4.7 The Effect of Ease of Use on Awareness

In the research model, the hypothesis that perceived ease of use will have a positive effect on the awareness (H7) has estimate results (H7: EOU → AWR; β = 0.217, CR-value = 3.872, p = 0.000) which is statistically significant and means the hypothesis is supported. These results suggest that the perceived ease of use has a significantly positive effect on the awareness, which implies that perceived ease of use is an important factor that determines awareness. This finding is in accordance with the findings of previous research studies (Cooper, 1997; Doll and Ajzen, 1992; Muylle *et al.*, 1999).

5.4.8 The Effect of Perceived Usefulness on Awareness

In the research model, this hypothesis that perceived usefulness will have a positive effect on the awareness (H8) has statistically significant results (H8: PRU → AWR; β = 0.227, CR-value = 3.584, p = 0.000) meaning it is supported. These results suggest that the perceived usefulness has a significantly positive effect on awareness, which implies that perceived usefulness is an important factor that determines awareness. These findings are in accordance with the findings of previous research studies (Al-Sukkar, 2005; Liao and Cheung, 2002; Kolodinsky and Hogarth, 2001;

Kolodinsky *et al.*, 2004; Ravi *et al.*, 2007; and Vatanasombut, Lgbaria, Stylianou and Rodger, 2008).

5.4.9 The Effect of Accessibility on Awareness

In the research model, the hypothesis that accessibility will have a positive effect on the awareness (H9) had statistically significant results (H9: PRU → AWR; $\beta = 0.227$, CR-value = 3.584, $p = 0.000$) meaning the hypothesis is supported. These results suggest that accessibility has a significantly positive effect on awareness, which implies that accessibility is an important factor that determines awareness. These findings are in accordance with the findings of previous research studies (Padachi *et al.*, 2007).

5.4.10 the Effect of Trust on Awareness

In the research model, the hypothesis that trust will have a positive effect on awareness (H10) has statistically significant results (H10: TRS → AWR; $\beta = 0.146$, CR-value = 2.255, $p = 0.024$), meaning the hypothesis is supported. These results suggest that trust has a significantly positive effect on awareness, which implies that trust is an important factor that determines awareness. These findings are in accordance with the findings of previous research studies (Yoon, 2002; Yusof and Ismail, 2010; Olivero and Lunt, 2004).

5.4.11 The Effect of Awareness on the Intention to Use Internet Banking Among SMEs

In the research model, the hypothesis that awareness will have a positive effect on the intention to use internet banking among SMEs (H11) had statistically significant parameter estimate results (H11: AWR → INT; $\beta = 0.208$, CR-value = 3.295, $p = 0.000$), meaning the hypothesis is supported. These results suggest that awareness has a significantly positive effect on the intention to use internet banking among SMEs, which implies that awareness is an important factor that determines the intention to use internet banking among SMEs. These findings are in accordance with the findings of previous research studies (Pikkarainen *et al.*, 2004; Howcroft *et al.*, 2002; Sathye, 1999).

5.4.12 Awareness Mediates the Relationship between Technology and Intention to Use Internet Banking Among SMEs

The result showed that there was no significant relationship between technology and intention to use IB in the absence of awareness, and that the direct effect of

technology as an independent variable on intention as a dependent variable, with the inclusion of awareness as mediator, was statistically insignificant. Thus hypothesis H12 was rejected. This result emphasises that 'awareness of SME owners' is not sufficient to increase the technology and to boost the rate for the 'intention to use IB'. It has been observed that there is a variety of awareness level that may be applicable for dealing with the many challenges faced by IB management. The main reason for this hypothesis to be rejected could be the absence of technology background among users even though technology becomes more affordable and internet banking access seems increasingly jump, but they are limited number of users who are well trained and have knowledge about technology. In other words awareness and other factors such as providing latest technology, good facilities and training among users play an important role to enhance the intention to use internet banking.

5.4.13 Awareness Mediates the Relationship Between Ease of Use and Intention to Use Internet Banking Among SMEs.

The results show that there was no significant relationship between ease of use and intention to use IB in the absence of awareness, and the direct effect of 'ease of use' as independent variable on 'intention to use IB' as dependent variable with the inclusion of 'awareness' as mediator was statistically insignificant. Thus hypothesis H13 was rejected. This result emphasises that 'awareness' of SME owners is not sufficient to increase the 'ease of use' and to increase the rate for 'intention to use IB'. It has been observed that there is a different types of ease of use that may be applicable for dealing with the many obstacles faced by IB management. The main reason for this hypothesis to be rejected could be the absence of knowledge, inadequate workshops opportunity and insufficient facilities for users. Therefore, it is advisable to encourage the users to use internet banking by providing them with some incentives. As a result, If awareness, providing latest technology and good facilities are available in parallel with the awareness program, it will lead to a more positive result.

5.4.14 Awareness Mediates the Relationship Between Perceived Usefulness and Intention to Use Internet Banking Among SMEs.

These results indicated that awareness mediates the relationship between perceived usefulness and intention to use. The degree of mediation was partial since the paths all statistically significant. The phenomenon supported hypothesis H14.

This study provides an integrated model for achieving an intention to use IB among SME, which can be also applied for explaining other factors that increase the rate of intention to use IB. The significance of this research is that it contributes to a better understanding about the mediating role of awareness between perceived usefulness and intention to use IB. This study showed that awareness is a critical factor that affects intention to use IB.

5.4.15 Awareness Mediates the Relationship Between Accessibility and Intention to Use Internet Banking Among SMEs.

In the proposed model, the hypothesis that awareness mediates the relationship between accessibility and intention to use IB among SMEs (H15) showed that there was a significant relationship between accessibility and intention to use IB in the absence of awareness. These results indicated that awareness fully mediates the relationship between accessibility and intention to use IB. This study suggested that awareness play an important function in increasing the relationship between the accessibility and intention to use IB.

5.4.16 Awareness Mediates the Relationship Between Trust and Intention to Use Internet Banking Among SMEs.

The result showed that there was a significant relationship between trust and intention in the absence of awareness. This relation was still significant even after including awareness into the model, the effects of trust as independent variable on awareness as mediator was statistically significant.

The effects of awareness as mediating intention as the dependent variable was statistically significant. These results indicated that awareness mediates the relationship between trust and intention. The degree of mediation was statistically significant. The phenomenon supported hypothesis H16. Further, the result revealed that trust had a significant indirect positive effect on intention through awareness with the standardised indirect effect.

5.5 Implications of Research Findings

The implications of the findings of this research are presented under theoretical implications and managerial implications Table 5.1 depicts a summary of theoretical and managerial implications.

Table 5. 1:
Summary of research implications

Theoretical	Managerial
This study applies an amalgamated TAM model in a new context of the intention to use IB by owners of SMEs in a developing economy.	The research offers important insights for banks and IB system designers so that they can improve IB services.
This study provided an integrated model for the intention to use IB by owners of SMEs and extended literature on technology acceptance in developing nations.	Awareness in IB is highly influential in IB Intention to use and therefore should be emphasised.
This study attempted to minimise the paucity of the studies in the domain of intention to use internet banking by owners of SMEs from the perspective of a developing country.	This study emphasises the importance of secure services for IB and to develop trust and confidence in the system.
	This study suggested that awareness is important determinant to intention to use internet banking by owners of SMEs, thus management, and designers take into consideration this factor to develop intention to use IB.

5.5.1 Theoretical Implications

The results of this study have a number of significant theoretical implications. First, this research applied an extended TAM model in a new context of the intention to use IB by owners of SMEs. The results suggest that the proposed model of the intention to use IB by owners of SMEs demonstrates a considerable explanatory and predictive power.

The model for intention to use IB helps explain other online acceptance and usage behaviour such as online shopping or electronic commerce and contributes to the literature on web-based transactional systems.

Third, previous studies on TAM mostly focused on the impact of core constructs i.e. perceived usefulness and perceived ease of use on the intended behaviour toward

technology. However, little research focused on awareness. The present study, by investigating effects of external variables on awareness, highlights how awareness is formed, which in turn increases the intention to use new information systems such as an online banking system.

5.5.2 Managerial Implications

The findings of this research have many managerial implications for different stakeholders such as the banks and designers of IS. The unprecedented increase in e-commerce and its benefits (e.g. communications, distribution, and online transactions) are compelling different organisations and companies to develop systems that provide users access, anytime, and anywhere, to perform online transactions using the internet. Given the large investment in developing new information systems, an understanding of the factors influencing owners of SMEs' intention to use IB is useful for the banks so they can prioritise their resources in an effective way. For example, (awareness) was found to be the most significant factor that has a strong impact on owners of SMEs 'intention towards using of IB systems.

In addition, trust and accessibility were found to exert a significant impact on the awareness. In order to increase of awareness, banks could organise motivational sessions and educate owners of SMEs about potential threats to the security and privacy of themselves and their transactions, and provide solutions (e.g. free security software) to avoid such threats. This would help to reinforce owners of SMEs' trust in the banks and online banking channels. In addition, banks could help build owners of SMEs' trust by offering an undertaking (i.e. statement of guarantee: depending on the situation) that they would indemnify monetary losses incurred by any unauthorised access.

This would boost owners of SMEs' confidence in the banks and in online transaction channels and would speed up the rate of intention to use of IB systems. On the other hand, there appears to be a role for designers and developers of internet banking; such that, internet banking designer and developers must ensure that they design websites that provide owners of SMEs 'a secure service to perform online transactions. In addition, as this research has suggested, owners of SMEs 'positive judgment and confidence in their abilities to use internet technology in general would favourably influence on their awareness. In order to increase technology skills, IT teams could organise technology training sessions and awareness seminars to increase computer skills and internet and increase confidence of owners of SMEs of the systems

because people who demonstrate higher technology skills are more readily prepared to perform online transactions.

5.6 Respondents Background Impact on Intention to Use Internet Banking Among SMEs

In the same vein the study has shown that the females have higher intention to use, higher perceived usefulness and higher trust on IB compared to the male group thus, Banks have to be prepared clear strategy on how to reach to males and convince them about the benefits of using IB while at the same time capitalise the women customers to generate the immediate support. Banks also should be aware of gender behaviour to be successful in the market and in gaining competitive advantages.

The study's results also showed that IB intention usage rate rises as the exposure on internet increases for both males and females. The more educated the customers the more likely that they will adopt IB.

Banks should be aware of the importance of education level which also plays an important role for determining the intention to use of IB as the cross-tabulation analysis result revealed that the intention to use IB is highest for those who have postgraduates' qualification.

Age is another important factor to consider. The research revealed that those who are below 20 years old have high awareness of IB and are likely to adopt IB.

Therefore, some different strategies should be created based on gender, age and education to meet the individual requirement using different approaches, such as enhanced face-to-face communication with the banks' representatives or design banks' online communities so that customers (male and female) can access them, and their decisions and behaviour, especially females, can be influenced by other's opinions. Banks should use the public media channels, such as TV and newsletters, to increase the awareness so that the customers' intention can be enhanced and improved, ultimately leading to increase the rate of intention to use IB.

5.7 Implications of the Study Results

5.7.1 Technology and Intention to Use Internet Banking Among SME

This study has provided useful information and valuable insights to the relationship between technology and intention to use among SME. However, this study revealed a negative relationship with technology which is inconsistent with the previous studies. Previous studies have identified a technical communications and technical skills

and IT technology as variable factors. While in this research, technology is defined as the capabilities that are offered to organisations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes (Attaran, 2003).

Additionally, this study recommended that the capabilities that are offered to organisations by technology, information, and knowledge to individuals and processes should be prepared as early as possible so that they may positively influence the intention to use IB among SMEs. Moreover, the technology capabilities should be prepared with as much detail as possible, including during the design process and throughout its phases.

5.7.2 Perceived Ease of Use on Intention to Use Internet Banking Among SMEs

Perceived ease of use was found to have a negative effect on the intention to use IB among SME. The reason is that effort saved by improved perceived ease of use cannot enable people to do a better job or accomplish more at work, thus do not enhancing their job performance. Other things being equal, the easier a certain IT (i.e., internet banking) can be learned or used, the more useful it will be perceived. Therefore, the higher perceived ease of utilising a particular IB among SME makes it more likely that the individual will have a negative feeling toward using it.

5.7.3 Perceived Usefulness on Intention to Use Internet Banking Among SMEs

Perceived usefulness has an influence on intention to use IB. The results confirmed that there is a significant relationship between perceived usefulness and intention to use IB and this finding is in line with the study of Harper (1997).

The key role of perceived usefulness on the intention to use IB demonstrates that it is crucial that the design and layout of the IB interface enables SME owners to easily locate the information content they require when using IB services. Owners of SMEs should take into account that web content information richness plays a crucial role in shaping owners SME' decisions to use IB services. Therefore, providing information on IB services can further empower owners of SMEs to use IB in Yemen. Banking institutions should provide customers with more financial control, convenience, and further enable them to perform their transactions quickly, effectively, and efficiently compared to the traditional banking landscape.

5.7.4 The Effect of Accessibility on Intention to Use Internet Banking Among SMEs

This study investigated the factors that influence the intention to use IB for the case of the emerging Yemeni economy. It analysed intention to use IB services among SMEs and investigated the relative importance of elements such as accessibility and influence on the intention to use of IB among SMEs. It allows SME owners to access their bank accounts from any location, at any time. Many authors argued that the accessibility of IB is an important factor for consumers. Accessibility was often researched related to ATM machines (e.g., how easy it is to access them) and to mobile banking applications (e.g., if the mobile network is accessible and available).

5.7.5 The Effect of Trust on the Intention to Use Internet Banking Among SMEs

This research provides banking institutions with significant information on the various aspects that need to be highlighted in their banking communication strategies to increase the intention to use IB services. Banking institutions need to stress on trust in IB. The research provides valuable insights for the banking industry and urges reshaping their e-marketing strategy in relation to IB services in Yemen. The research findings revealed that secured web contents and design are key tools to increase the intention to use IB.

5.7.6 The Effect of Technology on Awareness

Technology is one of the factors that will make people aware of products and services offered by banks, companies, or organisations. With rapidly advancing technologies especially in the product and services provided by banks or other sectors, people become more aware about their product and services that were offered (Weisbord, 1988) and are poised to develop relationship marketing in consumers' live, while offering mass product choice and customising services at the personnel level (Banerjjee, 2008). Clark (1992) described that the pressures on public sector services to become more aware of profitability and competition requires an emphasis on service quality.

5.7.7 The Effect of Perceived Ease of Use on Awareness

This study shows that perceived ease of use is very important in the creation of awareness toward online services. Therefore, bank management must facilitate activities in order to be carried out continuously in efficient ways. The variable

perceived ease of use has a positive effect on awareness, since it is, in the viewpoint of consumers, a perception that if a product or service is easy to use, then more consumers will use it. However, if consumers view a particular product or service as difficult to use, they will not be motivated to use it. Therefore, it is critical that providers of any product or service, in this case, the service of internet banking (IB), make their service as easy to use as possible, so that customers are motivated to use it.

5.7.8 The Effect of Perceived Usefulness on Awareness

Perceived usefulness is the awareness of an individual regarding using a new system that helps her/him to achieve gains in their work performance. Perceived enjoyment is the individual awareness that by using a new system or technology he/she will have pleasure. Moreover, if a person aware that usefulness facilities are greater than the effort required to use the internet then he/she will use the internet for internet banking. Utilitarian (extrinsic) and hedonic (intrinsic) factors are the two important factors that affect internet banking intention. Utilitarian value is review of financial benefits and costs whereas hedonic value is a review of experiential costs and benefits (Lee and Over by, 2006). This research revealed that perceived usefulness significantly affects awareness.

5.7.9 The Effect of Accessibility on Awareness

One of the major attractions in commercial use of the web is the ability to access information more easily. Daugherty *et al.,* (1995) claimed that accessibility to service provider sites can create better levels of responsiveness to customers. Furthermore, if the website is easily accessible, customers can access information faster, encouraging them to continue connecting back to the website, so they can frequently check information. In addition, to make websites most accessible, banks have to pay particular attention to creating flexible ways to disseminate information resources to their customers (Lederer *et al.*, 2001).

SME owners should be able to connect to IB but some designers, developers, and information technology types are unaware of what can be done to make technology accessible and inclusive to users. Awareness and accessibility significantly enhance use of IB.

5.7.10 The Effect of Trust on Awareness

In the social psychology realm, trust is defined as, "perceptions about others' attributes and a related willingness to become vulnerable to others" (Rogers, 2003). In this sense, SME owners might not use IB because they lack trust in IB. In addition, this study indicated that trust played a significant role in influencing individuals' awareness to use IB services. IB was identified as the most important future challenge in e-banking while customer trust, privacy, and awareness are recognised as challenges of great importance. A significant number of banks surveyed technical issues such as costs of site maintenance, internet pricing as challenges of less importance in Yemen.

5.7.11 The Effect of Awareness on the Intention to Use Internet Banking Among SMEs

It was found out that IB awareness has a significant role in increasing the intention of using IB, considering this finding, it can be concluded that IB awareness is very important in IB especially its direct positive effect on the intention. Moreover, the relation of these variables gives further summary of the emerging issues and the implications of IB in Yemen as described in the current study. It is expected that the IB will continue to evolve as banks continue to venture into rapidly changing and emerging technologies to enable them expand their customer horizon through differentiated products, increased customer awareness and choices, and enhanced security.

5.7.12 Awareness Mediates the Relationship Between Technology and Intention to Use Internet Banking Among SMEs.

This study emphasised that awareness of SME owners is insufficient to increase the technological capabilities to boost the intention to use IB. It has been noted that awareness in IB is very important for dealing with the many challenges faced by SME owners. This study showed that technology does not require any awareness to be implemented by the SME owners in order to function effectively. Moreover, banks should be aware about that awareness does not play an important role to increase the relationship between technology and intention to use internet banking but still there is a need for SME owners to be responsible for using the technology toward achieving the desired outcome.

5.7.13 Awareness Mediates the Relationship Between Perceived Ease of Use and Intention to Use Internet Banking Among SMEs

This study emphasised that awareness of SME owners is insufficient to increase the ease of use to boost the rate for the intention to use IB. It has been noted that awareness in internet banking is very important to dealing with the many challenges faced by SME owners. This study shows that a perceived ease of use does not require any awareness to be implemented by the SME owners in order to function effectively. Moreover, banks should be aware that awareness does not play an important role to increase the relationship between perceived ease of use and intention to use IB but there is a need for SME owners to be responsible for the intention to use IB.

5.7.14 Awareness Mediates the Relationship Between Perceived Usefulness and Intention to Use Internet Banking Among SMEs

This study provided an integrated model for achieving intention to use IB, which can be applied to explain other factors that increase the rate of intention to use IB. The significance of this research is that it contributes to a more in depth and better understanding about the mediating role of awareness between perceived usefulness and intention to use IB. This study showed that awareness is the imperative exploration on the mechanism of individuals to gain knowledge of a particular product or service and to what degree there is a lack of their information about it.

This study recommends that low awareness of this concept is a critical reason for the non-intention to use of this service. That "shy away" or rejection from IB is explained by the absence of awareness of the service and its benefits (Howcroft *et al.*, 2002). However, banks are undertaking marketing campaigns to create awareness of their services and their likely benefits. Suganthi *et al.*, (2000) supported this notion by stating that there is a rise in promotional efforts done by banks to generate a greater awareness of IB and its paybacks in the context of Malaysia. Therefore, awareness is an important element that needs to be considered before adopting any innovative products (Guiltinand and Donnelly, 1983).

5.7.15 Awareness Mediates the Relationship Between Accessibility and Intention to Use Internet Banking Among SMEs

In this research, accessibility is defined as the ability of users to access information and services on the web, and is dependent on numerous factors. These include the content format, hardware, software and settings, internet connection,

environmental conditions and a user's abilities and disabilities (Godwin-Jones 2001; Hackett and Parmanto, 2009).

This study provided an integrated model for achieving intention to use IB, which can also be applied to explain other factors that increase the rate of intention to use IB. It was found that the most significant factors are internet accessibility, convenience of use, and security concerns. Further analysis using cross tabulations relating selected factors and usage of IB facilities detected the presence of important statistical relationship between awareness, access to internet facility, and intention to use IB.

5.7.16 Awareness Mediates the Relationship Between Trust and Intention to Use Internet Banking Among SMEs

This study showed that awareness is the imperative exploration on the mechanism of individuals to gain trust of a particular product or service. Trust is one of the most important factors affecting SME owner's intention to use IB in Yemen. Banks in Yemen should ensure that security and privacy of IB systems are regularly upgraded, while customers should be advised that their systems are secure and personal information is absolutely protected.

5.8 Research Contributions

This study focused on the intention to use IB by SMEs and investigated the factors affecting the intention to use IB services, which were considered as independent variables in this research (technology, perceived usefulness, accessibility, trust, and ease of use).

From the perspective of SMEs, the researcher also expected organisations that depend on e-commerce or present their products or services via the internet to benefit from the results of this study after gaining knowledge about the factors that influence customers' intention to use new technologies. As well, this study could contribute to help organisations such as banks, insurance companies, airline companies, and health sectors to understand the factors that influence individuals' behaviours regarding the awareness and intention to use technological services. Moreover, This research was conducted to understand the 'low awareness' and 'acceptance of Internet banking' in Yemen and whether that has caused the low 'intention to use IB'. It was experimented by putting 'awareness' as a mediating factor and wished to find out if 'awareness' could be a good mediating factor in the 'intention to use IB'. This research study has filled the gap in the literature by assessing the specific and empirical relationship between owners

of SMEs' 'awareness' and 'intention to use IB' in Yemen. It has examined the role of 'awareness' as a mediating variable between the dependent and independents variables. Several dimensions (technology, perceived usefulness, accessibility, trust and ease of use) and their relationships with 'the intention to use IB' and 'awareness' toward IB in Yemen was examined closely.

Furthermore, the availability of financial information via the internet was beneficial to organisations seeking and planning to conduct e-commerce in Yemen, if local banks could not provide online transactions that are necessary for e-commerce, e-government, e-services, and other online activities of those organisations.

From the perspective of banks, it was essential for banks to acquire a better comprehension of the reasons SMEs refuse to use new technologies in order to predict how owners of SMEs respond to innovation. Consequently, they could motivate non-user to intention to use of information technology-based innovations by changing the technological characteristics and processing to satisfy their demands.

From the perspective of the government, IB was an innovation and the result of this study might be used to improve the banking sector and enhance the quality of IB services in the future. It was also predicted to contribute to improving the economy in Yemen, since the banking sector was a stepping-stone to achieve that goal.

This study recommended that low 'awareness' was a critical reason for the 'non-intention to use' IB service. That "shy away" or rejection from IB was explained by the absence of 'awareness' of the service and its benefits (Howcroft *et al.,* 2002). However, banks were undertaking marketing campaigns to create 'awareness' of their services and their likely benefits. Suganthi *et al.,* (2000) supported this notion by stating that there was a rise in promotional efforts done by banks to generate a greater 'awareness of IB' and its paybacks in the context of Malaysia. Therefore, 'awareness' was an important element that needs to be considered before adopting any innovative products (Guiltinand and Donnelly, 1983).

5.9 Limitations

As with any research, there are limitations to this study. Although IB in Yemen is not a new innovation, it is still in its infancy. The current research is limited to SMEs with bank accounts in Yemen, and limited to owners of SMEs with online access to computer technology and email, and who agreed to participate voluntarily. This methodology was consistent with the data collection procedure for the study. Another

limitation in this study was self-selection. Therefore, the data collected from the study was limited only to the responses acquired from those SMEs owners who chose to participate in the study. By design, self-selection and voluntary research participation were consistent with the ethical considerations of the study, the Belmont Report (1979) principles, and the research requirements upheld within the research community.

5.10 Future Research

This thesis was developed an integrated model that provided a systematic approach to understand intention to use IB by owners of SMEs. Several beneficial areas for future research, however, remained to be explored. For example, results of the current study were limited to intention to use IB. Future research might apply or replicate this study in other online domains, such as online shopping, or e-commerce environment. This would be valuable in establishing the external validity of the model.

In addition, it would be interesting for future research to test and explore the model developed for this study in other cultural settings, like other Asian or Western developed countries. This would be valuable in providing evidence concerning the robustness of research model across different cultural settings. It was understood that the robustness of the model may vary across different cultural settings and thus needed to be empirically tested (Mao and Palvia, 2006).

The data for this study was collected using online questionnaire surveys (Google Doc), future research was needed to obtain longitudinal data to investigate what factors would influence owners of SMEs to use IB. Prior literature was indicated that individuals' perceptions were formed with the passage of time, experience and continuous feedback from surroundings (e.g. Venkatesh and Davis, 2000; Davis *et al*., 1989). Thus, it was expected that future research would inspect the findings of this research with more in depth investigations using longitudinal data.

Another direction for further research could be the selection of dependent variable to measure the IS acceptance. For example, this study used intention to use as dependent variable to measure the intention to use IB, although it was consistent to prior research (Davis, 1991; Gefen and Straub, 2000; Jarvenpaa *et al.*, 2000; Shih, 2004), future research was needed to measure actual usage of internet banking rather than intention to use and other possibility could be taken under consideration for the future researcher to study awareness as moderator which could play a vital role to boost and open a certain avenues to increase the usage of internet banking.

5.11 Conclusions

This research developed and tested a structural model for intention to use internet banking and use. The proposed model in this study was based on the model of technology acceptance and relevant constructs from the information systems and e-commerce acceptance research streams. The model was then tested against data from 376 internets banking users from Yemen, using sophisticated statistical software packages, such as SPSS version 16.0 and AMOS version 16.0.

The current study investigated the effect of owners of SMEs (i.e. Awareness), and (technology, perceived ease of use, perceived usefulness, accessibility, trust) toward intention to use internet banking by extending the TAM, which provides a conceptual framework to explain an individual's intention to use internet banking based on owners of SMEs. TAM model postulates that individual's beliefs of awareness are primary determinants to intention to use internet banking. The present research proposed a conceptual model that incorporated the awareness among small and medium enterprises in the service sector toward internet banking. The results of this research provide empirical support for the extended model of the TAM.

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Appendix A: Questionnaire

A Covering Letter

Dear Respondent,

This survey is being carried out as part of my PhD dissertation to understand the intention to use internet banking, and identify the factors affecting its acceptance. Please answer the questions freely. You cannot be identified from the information you provide.

The questionnaire should take about 10 - 15 minutes to complete. Please answer the questions in the space provided. Also, do not spend too long on any question. Your first thoughts are usually your best!

Even if you feel the items covered may not apply to you, please do not ignore them. Your answers are essential in building an accurate picture of the issues that are important to identify factors affecting intention to use IB.

WHEN YOU HAVE COMPLETED THE QUESTIONNAIRE PLEASE RETURN IT TO THE CONTACT WHO SUBMITED IT TO YOU

I hope you find completing the questionnaire enjoyable, and thank you for taking the time to help. If you have any queries or would like further information about this research, please contact me: Phone number: 0176883612 Email: mazen.aldubai@gmail.com

Thank you for your cooperation

Consent:

I wish to be identified in the report ☐ YES ☐NO

I have read the above information and I agree to participate in this study.

Please Tick the box

Signature_____

Date:_____

Part 1: Background Information (Internet usage)

1 -Have you used the Internet before? Yes ☐ No ☐

2-Where do you use the internet? (i.e. location of internet use) ☐ At home ☐ At work ☐ At school/university ☐ In Library ☐ Internet café ☐ All of the above

3-For how many years have you been using internet? ☐ < 1 ☐ 1-2 ☐ 3-4 ☐ 5-6 ☐ >6

4.Have you ever used internet banking? ☐ Yes ☐ No

Part 2: Personal Information (Please tick the relevant box)

5- Age ☐ Less than 20 ☐ 20-30 ☐ 31-40

	☐ 41-50	☐ 51-60	☐ More than 60
6-Gender	☐ Male	☐ Female	
7-Education	☐ Less than high school	☐ High school	☐ Diploma
	☐ Bachelor	☐ Postgraduate	

Part 3: Please indicate your level of disagreement/ agreement with the following: using a rating scale of 1 to 7 (1=Strongly Disagree; 7 = Strongly Agree)

8- I intend to use internet banking as often as needed.	1	2	3	4	5	6	7
9- I intend to continue using internet banking in the future.	1	2	3	4	5	6	7
10- Assuming I have access to internet banking systems, I will intend to use it.	1	2	3	4	5	6	7
11- Given that I may have access to internet banking in the future, I predict that I will use it.	1	2	3	4	5	6	7
12- I will strongly recommend others to use internet banking.	1	2	3	4	5	6	7
13. I would see myself using IB services for my banking transactions.	1	2	3	4	5	6	7
14- Using internet banking enhances the productivity of my banking activities.	1	2	3	4	5	6	7

15- Using internet banking makes it easier to do my banking activities.	1	2	3	4	5	6	7
16- Using internet banking enables me to accomplish my banking activities quicker.	1	2	3	4	5	6	7
17- Using internet banking improves my performance of banking activities.	1	2	3	4	5	6	7
18- Using internet banking enhances my effectiveness of banking activities.	1	2	3	4	5	6	7
19- Overall, I find internet banking useful for my banking activities.	1	2	3	4	5	6	7
20- Learning to operate internet banking is easy for me.	1	2	3	4	5	6	7
21- I find it easy to get internet banking to do what I wanted it to do.	1	2	3	4	5	6	7
22- My interaction with internet banking is clear and understandable.	1	2	3	4	5	6	7
23. I find internet banking to be flexible to interact with.	1	2	3	4	5	6	7
24- It is easy for me to become skilful at using internet banking.	1	2	3	4	5	6	7
25- Overall, I find internet banking easy to use.	1	2	3	4	5	6	7
26- I trust IB services as if it was a real bank.	1	2	3	4	5	6	7
27- I trust in the technology used by the bank.	1	2	3	4	5	6	7
28- I have confidence in the security of the computer used for accessing internet banking.	1	2	3	4	5	6	7
29- I trust my internet service provider.	1	2	3	4	5	6	7
30- Internet banking offers secure personal privacy.	1	2	3	4	5	6	7
31- I trust the ability of internet banking to secure my privacy.	1	2	3	4	5	6	7
32- I trust in the ability of internet banking to protect my privacy.	1	2	3	4	5	6	7

33. I could complete my banking tasks using internet banking, even if I had never used a system like it before.	1	2	3	4	5	6	7
34- I could complete my banking tasks using internet banking, if I could refer to the system manuals for reference.	1	2	3	4	5	6	7
35- I would attempt to complete tasks using internet banking, if I noticed others doing it successfully.	1	2	3	4	5	6	7
36- I could complete my banking tasks using internet banking, if there is built in help facility for assistance.	1	2	3	4	5	6	7
37- I could complete my banking tasks using internet banking even, if there was no one around to tell me what to do as I go.	1	2	3	4	5	6	7
38- Internet banking is accessible.	1	2	3	4	5	6	7
39- My access to internet banking is unrestricted.	1	2	3	4	5	6	7
40- I find it easy to get access to internet banking.	1	2	3	4	5	6	7
41- I think I have enough information about the services of internet banking.	1	2	3	4	5	6	7
42- I think I have enough information about the advantages of internet banking.	1	2	3	4	5	6	7
43. I think I have enough information about the ways of opening account and using internet banking.	1	2	3	4	5	6	7
44- I think I have enough information on how to use internet banking.	1	2	3	4	5	6	7
45- I think I obtain enough information about application procedure of internet banking.	1	2	3	4	5	6	7
46- I think I obtain enough information about benefits and risks from using internet banking.	1	2	3	4	5	6	7

47- In general, I have enough information about internet banking. 1 2 3 4 5 6 7

APPENDIX B

Observations farthest from the centroid (Mahalanobis Distance)

Number of variables in the model = 87

Max (D^2) / (no. variables) = 61.306 / 87 = 0.705 which is < 3.5 → No Multivariate Outliers

Observation number	Mahalanobis d-squared	p1	p2
310	61.306	.017	.998
9	61.062	.018	.990
187	60.467	.020	.980
344	59.768	.023	.974
317	59.638	.024	.942
220	56.573	.043	.999
74	56.173	.046	.999
210	55.529	.052	.999
170	54.637	.061	1.000
192	54.317	.065	1.000
300	54.013	.069	1.000
276	53.382	.077	1.000
284	53.224	.079	1.000
131	53.088	.081	1.000

Observation number	Mahalanobis d-squared	p1	p2
147	53.059	.081	1.000
154	53.036	.081	.999
125	52.982	.082	.998
213	52.967	.082	.997
10	52.695	.086	.997
328	52.634	.087	.995
335	52.522	.089	.993
316	52.394	.091	.991
136	51.682	.102	.998
331	50.901	.116	1.000
54	50.901	.116	1.000
46	50.358	.126	1.000
194	50.326	.127	1.000
57	50.295	.128	1.000
14	49.655	.141	1.000
110	49.626	.142	1.000
248	49.218	.151	1.000
285	49.041	.155	1.000
216	48.878	.158	1.000
104	48.855	.159	1.000
280	48.667	.164	1.000

Observation number	Mahalanobis d-squared	p1	p2
304	48.594	.165	1.000
369	48.492	.168	1.000
240	48.434	.169	1.000
140	48.427	.169	1.000
190	48.403	.170	1.000
279	48.317	.172	1.000
5	48.286	.173	1.000
293	48.185	.176	1.000
359	48.094	.178	1.000
253	48.055	.179	.999
196	47.676	.189	1.000
66	47.673	.189	1.000
233	47.645	.190	.999
106	47.386	.197	1.000
94	47.145	.203	1.000
51	47.106	.205	1.000
351	47.049	.206	1.000
358	47.040	.206	1.000
325	46.981	.208	.999
301	46.978	.208	.999
115	46.880	.211	.999

Observation number	Mahalanobis d-squared	p1	p2
286	46.791	.214	.999
101	46.747	.215	.999
132	46.743	.215	.998
371	46.558	.221	.999
58	46.485	.223	.999
319	46.471	.223	.998
320	46.435	.224	.997
343	46.346	.227	.997
100	46.245	.230	.997
305	46.163	.233	.997
134	46.148	.233	.996
126	46.089	.235	.995
25	45.992	.238	.995
251	45.896	.241	.996
168	45.729	.246	.997
222	45.558	.252	.998
268	45.487	.254	.998
362	45.486	.254	.996
193	45.349	.259	.997
263	45.341	.259	.996
121	45.305	.260	.995

Observation number	Mahalanobis d-squared	p1	p2
313	45.255	.262	.994
342	45.246	.262	.992
184	45.113	.267	.993
330	44.960	.272	.995
107	44.913	.274	.994
113	44.616	.284	.998
307	44.454	.290	.998
79	44.394	.292	.998