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# IMPROVING THE LIBYAN CUSTOMERS' TRUST AND ACCEPTANCE FOR ONLINE BANKING TECHNOLOGY

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## List of Abbreviations

ATMs	Automated Teller Machines
BCD	Bank of Commerce and Development
CBL	Central Bank of Libya
EU	Ease of Use
IDT	Innovation Diffusion theory
LPSBs	Libyan public specialist banks
LPCBs	The Libyan public commercial banks
LD	Libyan Dinar
OB	Online Banking
PBC	Perceived Behavioural Control
PU	Perceived Usefulness
SOCBs	State-Owned Commercial Banks
SOEs	State Owned Enterprises
SSL	Secure Socket Layer
SWIFT	System World-wide Interbank Financial Telecommunication
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
TRI	Technology Readiness of Index
MRA	Multiple Regression Analysis
UON	Use Online banking for most of my banking Needs
DME	Do not require a lot of Mental Effort
CTW	Confident in my use of the Transactions on my online banking Website

IBU	Influence my Behavior; think that I must Use online banking
WUT	Will only be Used for the purpose of the original Transaction
DUT	Does not allow Unauthorized changes to a Transaction
POB	Provides Online Banking
SOB	Secure access to Online Banking
FOC	Fair with its Online banking Customers
TBS	Trust online Banking for its Safety
IBT	Trust Internet as a reliable medium for Banking Transactions
KUO	Knowledge to Use Online banking
SEO	Significant Risk Equal to a significant Opportunity
HEG	High Potential for loss equal to High potential for Gain
INR	If I provide Information over the Internet, I can never be sure if it really gets to the Right place
HBC	the Human touch is very important when doing Business with a Company
SFO	It is Safe to do any kind of Financial business Online
GN	Gender
AG	Age

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# Dedication

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# Abstract

The technology of online banking for customers refers to several types of banking activities through which bank customers can get information and carry out most retail banking services. Libyan banks continue to conduct most of their banking transactions using traditional methods. Given the prevalence of online technology adoption by the banking industry in developed countries, reasons for the lack of such innovation in developing countries such as Libya is of interest in any consideration of technological innovation.

The online banking technology usage rate in Libya is at present very minimal, despite the fact that Libya is one of the wealthiest countries in Africa as it is a major oil producer and one of the Europe's biggest North Africa oil suppliers (Touati, 2008). The Libyan banking industry is now lagging behind and in extreme need of essential change to enhance its banking system, as it has been continuously criticised for its inadequate and inefficient services.

Unreliable national telecommunications infrastructure, lack of education between bank customers, lack of technological knowledge among bank staff and customers, and the distance between bank branches and their headquarters were slowing the development of Libyan banking system. These processes require extensive and comprehensive study of online banking related factors in order to achieve customers' trust and acceptance in online banking technology. The aim of this research is to develop a framework to guide government official for increasing customer trust and acceptance for online banking.

After providing literature on online banking, this study considers a framework and tests various factors that might act to determine whether a given technology is likely to be trusted and accepted by the customers of the banking industry in a developing country such as Libya.

Data was collected using quantitative and qualitative research methods. The questionnaire survey was distributed to more than 200 Libyan customers of the Bank of Commerce and Development (BCD) and they were analysed quantitatively by

descriptive and statistical (correlation and regression) analysis. The data was qualitatively validated with interviews and content analysis. The data was based on customers' perceptions of factors that might affect their decisions as to whether or not to trust online banking technology in Libya. The study thus addresses the question: How can the level of Libyan bank customers' trust of online banking be improved?

The results of the analysis of this enquiry and findings from a comprehensive literature review enabled the theoretical framework for customers' trust and acceptance improvement to be developed. As the main outcome of the study, this framework consists of acceptance which includes (relative advantages, ease of use), trust and risk, and online banking issues which includes (security issues, technical and legal support issues, reputation issues, privacy issues, transactional/operation issues). Moreover, technology readiness and demographic characteristics (age, gender) are proposed as having a moderating effect on the relationship between intention and the challenges that might affect customers' trust and acceptance. These components of the framework have been subject to necessary validation. Thus, if implemented with a conscious effort to address all the mitigating factors, online banking has the potential to bring substantial corporate benefits to both banks and their customers.

This research also has significant implications for other research and practical analysis of online banking customers by providing a comprehensive database and established knowledge based on essential theory; this could be used as a resource for practitioners and potential more detailed research, the government officials will also be of interest to the framework for their banking future policies regarding customers' trust and acceptance. In conclusion, while the aim and objectives of this research were accomplished by providing a framework for the improvement of trust and acceptance of online banking technology by Libyan bank customers, the study has identified the potential limitations of the research and recommendations for future research.

# **Chapter 1: Introduction**



## **1.1 Background to the Study**

The new financial system has brought up new concepts, structures and strategies for retail banking, and banks across the world are now facing new prospects and challenges. Internet the driving engine of the new economy has given birth to online banking, a new and increasingly popular way of banking for most customers nowadays (Mukherjee & Nath, 2007). Online banking for customers refers to several types of banking activities through which bank customers can get information and carry out most retail banking services. Online banking services such as balance reporting, inter-account transfers, bill payment can be done by the bank customers simply through a telecommunication network without leaving their homes or offices (Danial, 1999; Mols, 1998; Sathye, 1999; Sudhan & Varadharajalu , 2012). The usage of online banking provides information of products and services through network or telecommunications technologies, leading to establishment of digital value (jones et al, 2000; Kim et al, 2010).

Due to the fact that banking services are almost informational (Bradely and Stewart, 2002; Woldie et al, 2008) and can be easily computerized and automated (Porter & Millar, 1985). Most banks consider the technology of online banking as a means for customers trust and satisfaction, and service quality improvement (Robinson, 2000; Miguel-Dvila et al, 2010).

Online banking technology is quite a new aspect (Moenaert & Lievens, 2000), and several online banking descriptions have been cited in the literature. Nevertheless, banking technology researchers and practitioners (e.g., Pikkarainen et al, 2004; Keyes, 1999; Daniel, 1999; Lassar, et al., 2005; Sayar and Wolfe, 2007) agree that the concept of online banking technology refers to the system that enables banks to offer their customers access to their accounts to transact business and obtain information via electronic communication channels; these channels are, Telephone banking, Home banking, Automated Teller Machines ATMs and Internet banking.

The need for the online banking technology in the banking industry is an important. According to (Ismail and Osman 2012; Nehmzow 1997), traditional banking methods (e.g., back office processes and tasks such as: file details of bank customers, process

paperwork, sorting cheques and cash handling, from both the bank and customers' perspective), has become the most costly way to bank. In addition Kerem (2003) stated that the complex requests of bank customers such as, bill payments, cash withdrawals, loan applications and cheque clearings was huge task for traditional banks, thus there was a clear need for customers to trust and accept technology to automate back office duties.

According to Robinson (2000), the use of computer systems in the banking industry enable banks to transfer, record and store financial information inexpensively, thus the overall result will help to drive a reduction in banking costs (Cooper, 1994).

Jayawardhena & Foley (2000) argue that the fundamental reasons for the online banking technology are the transactions-processing cost and time savings. It has been proven that online banking technology is the cheapest delivery channel for banking products once trusted and accepted (Sathye, 1999; Robinson, 2000). Moreover, the technology creates new market places and opportunities for banks. It reduces physical trade difficulties, increases market access and trade efficiency (Seitz & Stickel, 1998). From the customer's perspective, the online banking system has additional convenience, functionality and accessibility (Mols et al, 1998). Bank customers argue that branch banking takes much more time and efforts, and the costs of banking services are dramatically reduced when they are accessed through online banking channels compared to at a branch (Sohail and Shanmugham, 2003). At the same time online banking technology brings with it a number of challenges such as technology cost, privacy, legal and security issues (Davis et al, 1989; Sathye, 1999; Zhen and Cheng 2010).

The trust and acceptance level in online banking technology vary from one culture to another across the world. For example, the trust and acceptance level of online banking technology in USA, Western Europe and Asian Pacific countries seems very high, whereas in developing countries it is very low especially in the Arab region (Aladwani, 2001; Touati 2008) (see chapter 2, pp.21).

Banks in developing countries have recently acknowledged the benefits of online banking technology in improving their productivities, efficiencies and customers trust. However, some banks in developing countries such as Libya have struggled to

provide their customers with online banking technology within its existing banking system (Khalfan & Akbar, 2006; Touati, 2008; Abukhzam and Lee, 2010).

This is not primarily because they are unable to afford the technology, but rather, are due to customer's trust and acceptance factors preventing them from trusting IT in general, and online banking technology in particular (Khalfan & Alshawaf, 2004).

Arabic academic researchers (e.g., Aladwani, 2001; Kamel & Hassan, 2003; Khalfan & Alshawaf, 2004; Touati, 2008; Abukhzam & Lee, 2010) pointed to a mixture of lack of basic technological infrastructure, low level of computer literacy and education, lack of technology trust and awareness among bank customers, shortage of IT skilled personnel, technology investment costs and IT language differences have all been found to make online banking unattractive in developing countries in general and Libya as Arab country in particular.

In reviewing literature in the wider domains of online banking and technology trust, it seems that prior research studies have primarily concentrated on technology adoption from the individuals within organisational structure- bank managers and their employees - and limited consideration has been given to the individuals outside the organisational structure – bank customers. Thus most studies have covered the trust and acceptance in online banking and related factors rather broadly from the customer's point of view and little detailed attention has been paid to the factors that influence the online banking trust and acceptance from the perspective of bank customer (Mols, 1998; Luhmann, 2000).

Thus, perception and attitude of bank customers' about the trust and acceptance of online banking will be studied in this research. As Davis et al (1989) argues that customers build up trust, attitude and feeling about the new technology, and that feeling could direct them to the acceptance or rejection of the proposed technology. As it is been revealed early in this section, Customers may have different feeling or attitude related to their cultures and as this study is focusing on Libyan customers, the next parts of this chapter will overview Libyan banking environment and online banking technology in Libya.

## **1.2 Overview of Libya**

Libya, is situated in the African continent and Arab regions; more specific in the north of Africa bordering the Mediterranean Sea to the north, Egypt to the east, Sudan, Chad and Niger to the south, and Algeria and Tunisia to the west. Libyan's area is over 1.759.540 square kilometres with a coastline of 1770 kilometres and has an estimated population of 5,670,688 million people in 2006 (Wikipedia, 2008a; CBL, 2007). The capital of Libya is Tripoli.

The Libyan banking system is wholly state-owned (CBL, 2007). It encompasses fifteen main commercial and Commercial and investment banks; the Central Bank of Libya (CBL), Al Amaan Bank, Bank of Commerce and Development (BCD), Commercial Bank of Libya, Gumhouria Bank, Libyan Agricultural Bank, Libyan Arab Foreign Bank, National Agricultural Bank of Libya, National Commercial Bank of Libya, Sahara Bank, Umma Bank, Wahda Bank and Al Wafa Bank (Wikipedia, 2008b; CBL, 2007). These banks are the main source of credit in the Libyan market and play an important role in the economy and social life in Libya.

### **1.2.1 Technology Level in Libyan Banking Industry**

The level of technology in the Libyan banking industry in general is limited, and is still in its early stages (Economic Forum, 2007). The development of Libyan banks faced many obstacles in the past ten years. The international sanction that was imposed against Libya, which lasted nearly eleven years from 1992 to 2003, had a significant impact on the Libyan economy in general, and the banking system in particular was isolated from communicating with other advanced banking systems and access to modern information technologies (Touati, 2008). Other reasons include the unreliable national telecommunications infrastructure, lack of education between bank customers, lack of technological knowledge among bank staff and customers, and the distance between bank branches and their headquarters were slowing the development of Libyan banking system (Danowitz et al, 1995).

Recently, to keep up with the rest of the world, Libya has been trying to introduce online banking facilities to promote the use of efficient services to customers, and for them to be competitive and to encourage the trade with foreign investors (CBL,

2007). This can only be achieved by the trust of modern banking technology such as online banking technology (Danowitz et al, 1995).

Recently and as an exceptional circumstance, Libya faced a conflict in 2011 for more than eight months which, results finally to the change in the regime was in power for more than four decades. Now the country is returns gradually to be a stable. Banks and other financial institutions work in exceptional circumstances, Shortage of money, few hours opening and less security provided.

### **1.2.2 Libyan Banking Customers**

Bank customers are those people who use or deal with the bank and they benefit from using the bank services and technology.

The Libyan banking Customers can be divided into three types regarding their educational, technology, Internet, and online banking knowledge which are: (Human Development Report, 2009)

- Illiterate customers (this type of people usually includes elderly people, aged over 60 Years);
- Educated customers without computer knowledge (this group usually comprises of customers aged ( 25-46);
- Educated customers with computer knowledge and have no access to online banking (this group of customers can be the same as the previous group (25-46).

According to the scale showed by the Human Development Report (2009), Libya is number 60 in the word in term of poverty with 13,4% of 5 Million of population, which may indicates that there is an important number of people who may not be considered in term of online banking development. Moreover, adult illiteracy rate for people aged 15 and above is not as bad if compared to the fast growing population and the country's speed of development in different aspects such as education, IT, and banking systems (Touati, 2008).

In summary, the banking technology usage rate in Libya is at present very minimal, despite the fact that Libya is one of the wealthiest countries in Africa as it is a major oil producer and one of the Europe's biggest North Africa oil suppliers (Touati, 2008). The Libyan banking industry is now lagging behind and in extreme need of

essential change to enhance its banking system, as it has been continuously criticised for its inadequate and inefficient services (Libyan Investment, 2004). These processes require extensive and comprehensive study of online banking related factors in order to achieve customers' trust in online banking technology.

Customers in Libya also needs to be looked at, as they characterised in three groups, which are; the first group as mentioned above are illiterate people, who have never been to school, the second and the majority are the educated people with no computer knowledge, and the third group are people who educated with computer knowledge and have limited access to online banking. Accordingly, this study aims to address this research gap.

### **1.3 Research Justification**

Until now there has not been any substantial research undertaken on trust and acceptance in online banking technology in Arab countries in general and particularly in Libya which has a unique economic and social system. This research is one of few studies to use bank customers' perception and requirements in attempts to understand trust and acceptance in online banking technology. Furthermore, this study will use questionnaire based evidence in attempt to understand the perceptions and different views of bank customers' towards online banking technology if it is provided within the existing banking system in Libya.

According to Touati (2008), Libyan banks are currently using the very basic electronic system to provide their customers with banking services and customers struggling to do their banking transactions. It will be of interest to determine whether online banking technology will be accepted and trusted by Libyan bank customers' if it is provided by Libyan banks within their banking system.

### **1.4 Research Focus and Need**

The improvement of modern and reliable banking systems is essential for customers' trust and acceptance in Libya's banking development (IMF, 2006). Online banking technology is essential to bank customers' in modern banking business, lowering

functional costs and time saving, and many banks worldwide have been highly successful at adopting and utilising online banking to provide efficient banking services to their customers (Freeman, 1996). In contrast, online banking technology has not yet found its way to Libyan banking sector (Libyan investment, 2008). Basic electronic banking facilities, such as automated teller machines(ATMs), telephone banking are not yet widely available in Libya and more interestingly, Libyan banks are still relying on basic banking methods to undertake their daily banking activities (Touati, 2008). The increasing demand from the international banking community is placing significant pressure on Libyan banks to be electronically ready especially in online banking technology as it is shorten the long distance (Libyan investment, 2007). The long geographical distance between Libyan banks has also created a pressure for connecting banks headquarters with their branches online, rather than handling cash and papers manually (Touati, 2008).

Therefore, the need of this research and the development of the technology trust framework can be justified by the following points:

- 1- Many banks in the Arab regions are about to offer their customers with a wave of online banking technology from developed countries (Kamel & Hassan, 2003; Hassan, 2008).
- 2- ), however, they need to understand how Western-have developed technologies such as online banking technology. They also need to understand how online banking technology is perceived on Arabic culture, and what factors influencing such culture to trust and accept such technology.
- 3- The intensive investigation conducted through the literature review could not identify any similar research or a framework that could assist with bank customers' trust and acceptance of online banking technology in developing countries in general, and Libya as Arab country in particular, which explains clearly the uniqueness and novelty of this empirical study. Thus, the following sup-sections outline both uniqueness and novelty of the research.

- **Uniqueness**

Through the literature review there has been no empirical studies conducted on online banking in Libya to investigate and document the main factors that impact on Libyan customers' trust and acceptance of online banking

and to provide an appropriate framework and guidance for improving the Libyan customers trust to trust and accepting of online banking technology

- **Novelty**

Novelty refers to the quality of being new, or novel. It refers to something that is unusual or innovative;

- **Personal Interest:** It is important that you choose a topic in which you are likely to do well and, if possible, already have some academic knowledge (Saunders et al, 2000).
- **Sector Interest:** The proposed framework could be used by policy makers, banking managers, and banking sector when considering national and business strategic plans. The identification of potential barriers and difficulties facing customers trust and accepting online banking is also of benefit to academics, new researchers, and training programmers.

## **1.5 Research Questions**

Overall research question is “How can the Libyan bank customers’ trust of online banking be improved?”. The research question requires investigation issues such as:

- How are intentions towards the technology of online banking made and to what extent are they related to the actual use of online banking?
- What are the beliefs that Libyan customers hold about online banking? How do these beliefs affect their trust of online banking?
- What is the role of customers' trust and acceptance of online banking?
- Are there any perception and acceptance differences between segments of customers on the basis of their technology readiness and demographic (gender and age) characteristics?

## **1.6 Research Aim and Objectives**

The main aim of this research is to develop framework to improve the Libyan bank customers’ trust for online banking technology. To achieve this aim, the following objectives are specified in the research.



- To explore i) the Online banking technology, ii) the different issues and challenges affecting customers' trust on online banking and iii) strategies for technology adoption and use for online banking.
- To investigate the beliefs that Libyan bank customers' hold about online banking and to investigate potential country related factors that influence the bank customers' trust in online banking.
- To investigate the roles of trust and accepting online banking system in Libyan banking industry through the case study bank, which is Bank of Commerce and Development in Libya, and identify a framework for the improvement of customers' trust to online banking in Libyan banking system
- To examine (Validate) the extent to which the identified framework can improve customers' trust in online banking in Libya through analysis of Interview survey data obtained from the customers of Bank of Commerce and Development, experts and policy makers.
- To draw conclusions and make recommendations for both the bank how to encourage the trust in online banking technology and customers when to trust online banking technology in the Libyan banking industry.

## **1.7 Research Scope**

This study concentrates on the trust and acceptance of online banking within Libyan bank customers namely; males and females in all ages, users and non-users of online banking technology are involved in this study. Nevertheless, managers and employees of Bank of Commerce and Development (BCD) as a sample for commercial banks and the first bank to introduce online banking in Libya. Other banks such as non-commercial banks are excluded in this study. As this research is based on social science, it is therefore a mixed-method study.

According to the current situation in Libya, as the country is unstable and war in Libya, the data collected using interviews may also be effected, as all local and private enterprises (such as banks) are all still working in exceptional circumstances. Sanctions have been setup against Libya currently bans travelling between Libya and many countries in the world that can be the main difficulties to carry on data

collection or any other further studies in Libya. Although, some sanctions have been revised and extra flexibility given to the new government to join international institutions, it is still not safe for traveling to or from the country.

## **1.8 Research Contribution**

This study will make a number of contributions to the body of literature engaged in attempts to comprehend bank customers' views about trust and acceptance of online banking technology if it is provided by the Libyan banks. First it is one of the few studies to analyse Libyan bank customers in efforts for developing a framework for Libyan banks to produce more effective reporting in online banking trust and acceptance. It therefore fills a research gap in this literature given there is an absence of the use of rich in-depth quantitative and qualitative evidences to interpret the trust in online banking in Libya. Second, the study is unique in that it is not only focuses on perceptions of Libyan bank customers', but also investigates the factors that may affect the trust and acceptance of online banking in Libya as it is contend that these perceptions enable one to examine Libyan bank customers' concerning the trust and acceptance of online banking in greater depth. In addition, it is expected that this will bring the issue of trust and acceptance in online banking to the attention of the Libyan researchers for further research in this field. The findings of this study, furthermore, might be useful to the policy makers in Libya by helping them to develop any future potential guidance for banks in the aria of trust and acceptance in online banking.

## **1.9 Contents of the Thesis**

This study will be structured into eight chapters as shown in figure 1.1. Chapter 1 will provide an introduction to the research, which will include research background, the aim, objectives, research contribution, research justification, research design and the structure of the research.

Chapter 2 will cover the literature review related to online banking technology, its advantages and disadvantages to both, a bank and the customers, global online banking trends, and also different issues and challenges affecting customers' trust and

acceptance. This chapter also reviewing theories of technology adoption and use and evaluating them by stating best practice of these theories in term of online banking technology.

Chapter 3 defines the case study in this research by providing a review of literature regarding Libyan banking infrastructure, Libyan banking system and technology is included within this chapter. This chapter also categorises the Libyan bank customers' and their technology readiness to deal and adopt many technologies such as online banking.

Chapter 4 involves the research methodology containing Research purpose which explaining factors that determine the trust and acceptance of online banking, research paradigm which put the research in its appropriate position to the research philosophy and two philosophies were discussed in this part, Research Approach presenting the two main research methodological approaches which are deductive theory testing and inductive theory building, Research Strategy which clarifies and justifies the case study used in this research, Data Collection methods this section outlines the research methods that employed to collect data and explaining both the primary and secondary data collection methods, Data Analysis involves quantitative and qualitative methods for analysing data and in term of quantitative and qualitative methods, there are two methods was stated which are SPSS for analysing quantitative data and Nvivo 10 for the qualitative data. Finally, the research process was clearly explained and the research steps and connections between research stages were obviously presented.

Chapter 5 will be highlighting the Conceptual development of the initial framework implementing key findings that were emphasised in previous chapter especially chapter two. This chapter includes, the best practices application in online banking trust and acceptance, key factors and issues related to the Libyan context, and online banking trust and acceptance framework

Then Descriptive Analysis of the data collection will be presented within chapter 6. Results and findings from the data analysis will also be reported. This chapter includes questionnaire overview and comparison presentation to the theoretical framework, response rate and non-response bias, reliability test, and questionnaire analysis.

Chapter 7 is carrying more in depth analysis applying two types of statistical analysis, correlation and regressions. Chapter 8 concerns the verification and refinement (validation) of the framework in this research. Finally, chapter 9 will be containing Discussion, Implications and Directions for Future Research. Figure 1. 1 shows clearly the planned structure of this study.

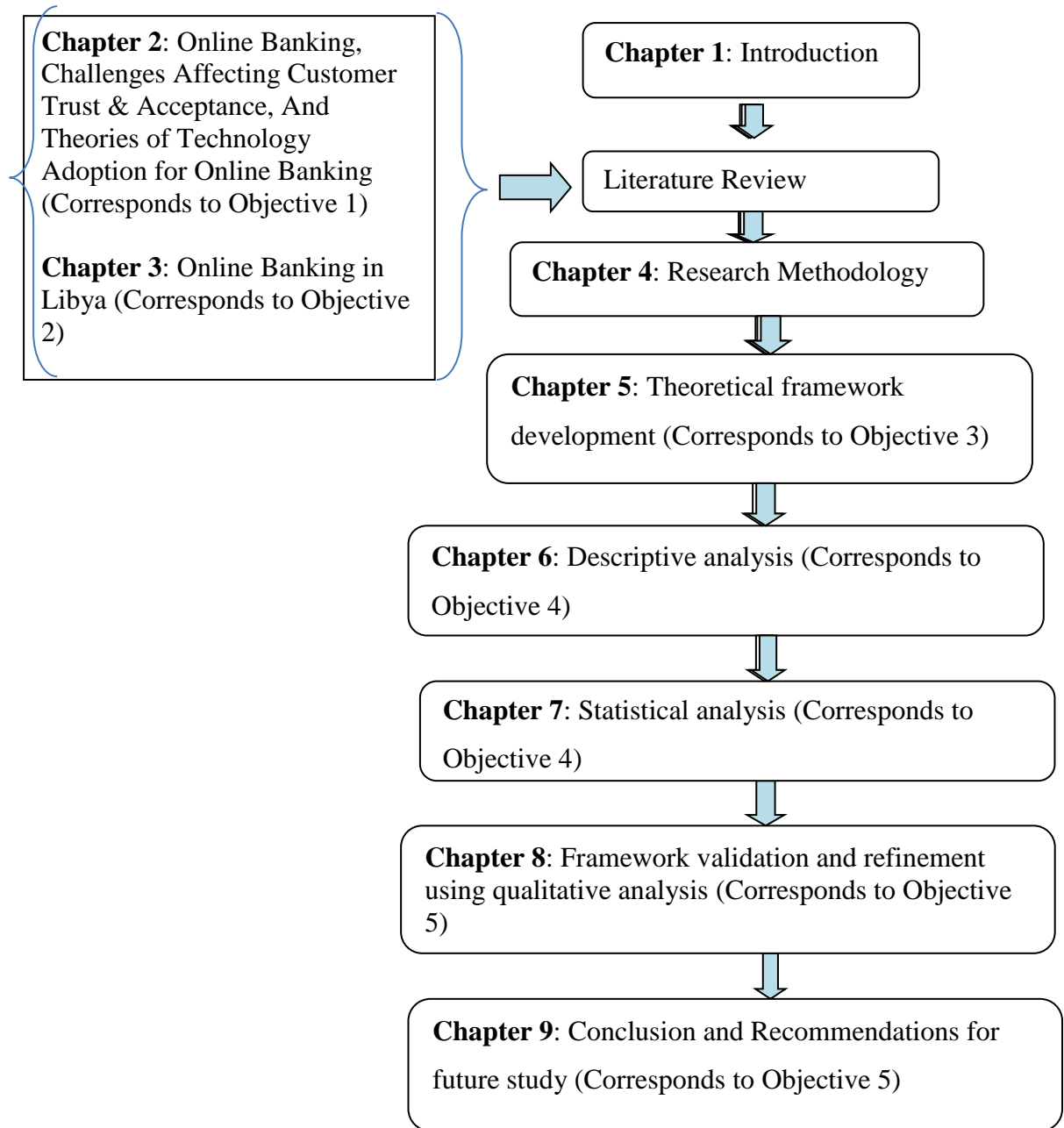


Figure 1. 1: The structure of the thesis (designed by this research)

**Chapter 2: Online Banking, Challenges  
Affecting Customers Trust and  
Acceptance, and Theories of  
Technology Adoption for Online  
Banking**

## **2.1 Introduction**

This chapter reviews the relevant extant literature that supports the research questions formulated. It is the first of two research literature review chapters in this research. The review aimed at extracting the theoretical understanding of the technology of online banking, also to identify the gaps in research. These underpinning further assist in the process of deciding on most suitable research methodology to achieve the research aim. This chapter will be starting with definition of online banking technology. This chapter also explores the relative advantages for online banking to both, the bank and customers.

As discussed in chapter 1, online banking technology is crucial for the existing banking system in Libya, as a result of this, the development and trends of online banking technology in worldwide was reviewed in order to investigate what lessons can be learnt from them. This chapter then reviewed and identified theories effecting the adoption of new technology and critically evaluating them in way that supports the review of perceived factors that effecting the trust and acceptance of online banking. The best practice use of these theories in the adoption of online banking for gaining customer trust and acceptance is lastly stated and table of related studies was provided. This chapter concludes by recapturing the chapter findings and making a holistic representation of the key findings.

## **2.2 What is Online Banking?**

Online banking can be defined in many ways depending on the level and type of service provided by banks to their customers. For example, Sathye, (1999) defined online banking as, in a basic form, the setting up of a web page by a bank to give information about its product and services; and in a more advanced form ,it involves provision of facilities such as accessing accounts, funds transfer, and buying financial products or services online. This called “transactional online banking” and this will be the more focused of this study (Sathye, 1999).

Furst et al, (2000) defined online banking as the service that refers to the use of the Internet as a remote delivery channel for banking services. Such services include modern ones, such as opening account or transferring funds among different accounts,

and new banking services, such as electronic bill presentment and payment (allowing customers to receive and pay bills on a bank's Web site). In addition, Tan and Teo (2000) defined online banking as: a service allows customers to perform a wide range of banking transactions electronically via the bank's Web site.

Online banking in general, refers to several types of services through which bank customers' can request information and carry out most retail banking services such as balance reporting, inter-account transfers, bill-payment, etc., via a telecommunication network without leaving their homes or organisations (Danial, 1999; Mols, 1998; Sathye, 1999). In different way, Aladwani, (2001) defined online banking as, the newest delivery channel for retail banking services. More recently, Ismail and Osman, (2012) have defined online banking as all necessary activities that are carried out, processed and delivered through electronic communication devices in an effort rendering banks services at ease and conveniences for their current and expected valuable customers.

The rationalization for the definitions stated above is that first, (Sathye, 1999) pointed towards the levels of development for online banking which were basic and advanced online banking with the usage of web page (Internet) with comparison, the second and third definitions (Furst et al, 2000; Tan and Teo, 2000) concentrated on the practicality of online banking by defining online banking as a "service refers to the use of Internet as a remote control" or as a "service allows customers to perform a wide range of banking transactions". All definitions refer to the Internet or web page as a way of using online banking and this which will be used in this study.

Others such as (Danial, 1999; Mols, 1998; Sathye, 1999; Ismail and Osman, 2012) stated general definitions for online banking presenting different types of services through online banking available for customers. All definitions indicate the way that online banking operates and serves customers, containing various types of online banking technology available for the perceived bank customers to use and get advantages.

## **2.3 Advantages and Disadvantages of Online Banking**

There are numerous advantages and disadvantages of online banking to both, customers and bank staff. The technology of online banking has two sides of advantages and disadvantages, to the customers and to the bank as follow:

### **2.3.1 Advantages to the Customers**

To the customers, there are many advantages of online banking for example: easy to use, price, convenience, and to save time from visiting bank branches (Jayawardhena and Foley, 2000). There seems to be a general agreement that online banking offers advantages for consumers. The portability of online banking gives the system another advantage, for instance if you are out of the country and face a money problem in your account you can access your account at anytime from anywhere as long as you have Internet access. This is foreseen as the main benefit of online banking (Tan and teo, 2000). The potential competitive advantage of online banking lies in the areas of cost reduction and satisfaction of customer needs (Bradley and Stewart, 2002).

Other online banking advantages include: (Cronin, 1998)

- Banking becomes easier and faster (can do weekly reconciliations instead of waiting for monthly statements)
- Time saving and no more queuing and trips to the bank
- The access of banking at any-time anywhere, bank can be any-time of day or night, on weekends and even holidays. This can be through online banking
- Viewing past bills without having to keep old files of account statements- this has eliminated much of the paper work and thus created much more space that used to be acquired by statements files
- Better monitoring of cash flow, this is due to you can view the account anytime and can see through all transactions that transpired during the particular time span
- Can schedule automatic or pending transfer for bill payment- this has eliminated the problem of overlooking bill payments at the end of the month.



### **2.3.2 Advantages to the Banks**

Online banking reduces physical trade difficulties by increasing market access and trade efficiency (Khalfan and Akbar, 2006). It also helps banks present a potentially low cost compared to traditional branch banking. Tan and teo (2000), found that the majority of banks with Web sites spent less than US\$25,000 to create a Web presence, and less than US\$25,000 a year maintaining it (Tan and teo 2000). They suggested that even if these figures were to rise as more banks began to offer online banking services, they would still be less costly than the traditional branch banking. For example, it requires US\$1.5 million to US\$2 million to set up a traditional brick and mortar branch and US\$350,000 to US\$500,000 a year to operate it. Note that Burnham's figure of US\$25,000 is just for creating an electronic presence on the Web. A fully functional online banking site is likely to cost US\$1 million to US\$2 million. Yet, while conventional banks' operating costs account for between 50% and 60% of revenues, running costs of Online banking is estimated at between 15% and 20% of revenues (Tan and Teo, 2000).

### **2.3.3 Disadvantages to the Customers**

Online banking technology disadvantages have also involved both, customers and the bank. In spite of the many advantages of online banking there undoubtedly disadvantages which may in some way affect customers to accept and trust online banking. It is imperative for consumers as well as banks to understand that in spite of the many benefits of electronic transactions, it may be a double-edged sword (Tan and Teo, 2000). For instance, the increased interpersonal distance between banks and customers may lead to reduced trust and increased security concerns. Moreover, The lack of knowledge and how online banking can be used by customers would be particularly important for an understanding of the slowing-down rate of acceptance of online banking among US consumers despite the rapid growth of related products and services (Tan and Teo, 2000).

Other online banking disadvantages to the customers include: (Cronin, 1998).

- Need Internet connection. Therefore, customers with no connection will not be able to utilise the services offered by online banking

- Inefficient in transferring or paying bills. Transfers can take up-to four working days to get the recipient account to be cleared. Therefore, at times traditional banking is much faster in comparison to online banking
- Switching banks can be more complicated online than in person. This signifies that closing an account online is much difficult than going to the traditional branch
- It targets those with computer knowledge. Thus, a person has to be comfortable in using a computer and must possess basic computer and Internet skills
- Some bank services have to be done face-to-face e.g. Bank Drafts, Cash Orders, Telecom Transfers etc. At present, these services are limited through online banking.
- Network stability is very crucial, otherwise it can effects customers trust of online banking

#### **2.3.4 Disadvantages to the Bank**

The main disadvantage of online banking to the bank is the increased risk of losing money and its reputation in the banking industry. Other disadvantages influencing bank staff include losing jobs, as when customers start using online banking no longer need to be face to face dealt with and transactions can be done online, number of branches will be reduced and as a consequence the number of staff will be sacked (Tan and Teo, 2000) .

Other online banking disadvantages to the bank include: (Sohail and Shaikh, 2007):

- Cybercrime and money laundry, in such instances it is difficult for banks to identify customers. Thus, it increases the crime rate
- Online banking depends on IT, fault tolerance and robustness of IT can have adverse effect on the services provided by online banking
- Initial cost of implementing the technology is always high. Thus it necessitates bank to go into partnership with an IT firm who would provide and oversee its operation.

The advantages and disadvantages of online banking may vary from region to region depending on many aspects such as culture, level of development and education and so on. Issue Regarding the development of online banking globally will be worth considering in order to further justifying the need for more in depth explanation and stating different cases of online development in worldwide. This is hence the focus of the next section.

## **2.4 Global Online Banking Trends**

It has been seen from previous section that the technology of online banking is defined from different perspective and it has as many advantages and disadvantages to both, a bank and its customers. This section studies the dramatic change in banking delivery channels towards using web-based banking channels such as online banking. Online banking channel acceptance in worldwide has been rapidly changed. For instance and according to The Finnish Banker's Association in 2003 revealed that 'currently 55 percent of the private banking customers in Finland have an online banking contract with their bank'. In general, Europe has been and still is the leader in online banking technology and usage (Mulligan and Gordon, 2002). By comparison, at the end of 2000 only roughly 20 percent of the US banks offered online banking services and only 20 percent of US private banking customers equipped with an internet connection used online banking services. Moreover, "a report by BlueSky International in June 1999 found the UK, along with eight other western European countries, to be at the forefront in online banking in Europe" (Jayawrdhena and Foley, 2000). The report also found that Germany had the most online banks. An interesting and notable difference between US and European banks is that US banks are not allowed to have a central bank branch network covering the whole country (Pikkarainen et al, 2004).

### **2.4.1 Uptake of Online Banking Technology**

Banking services and products, whether delivered online or through other remote mechanisms, have spread quickly in recent years (Nitsure, 2003). There is a rapid rate of online banking application and penetration as shown in Figure 2. 1. For example in 2004, Western Europe has the highest online banking market with 57.9 million,

followed by USA market with 22.8 million and the Asia-Pacific with 13.8 million (eMarketers, 2004).

Region	2000	2001	2002	2003	2004
Western Europe	18.6	28	37.8	47.7	57.9
USA	9.9	14.7	17.1	20.4	22.8
Japan	2.5	6.5	11.9	19.6	21.8
Asia-Pacific (exc Japan)	2.4	4.4	6.8	9.8	13.8
Rest of the world	1.0	1.7	3.1	5.1	6.1

Table 2. 1: Evolution of online banking usage by region (in Millions), (Source: IDC, 2002)

Thus, online banking services are provided through the following banking methods, online banking and traditional banking. To help outline the current levels of those channels usage, different levels of online banking usage are shown below in the Figure 2. 1.

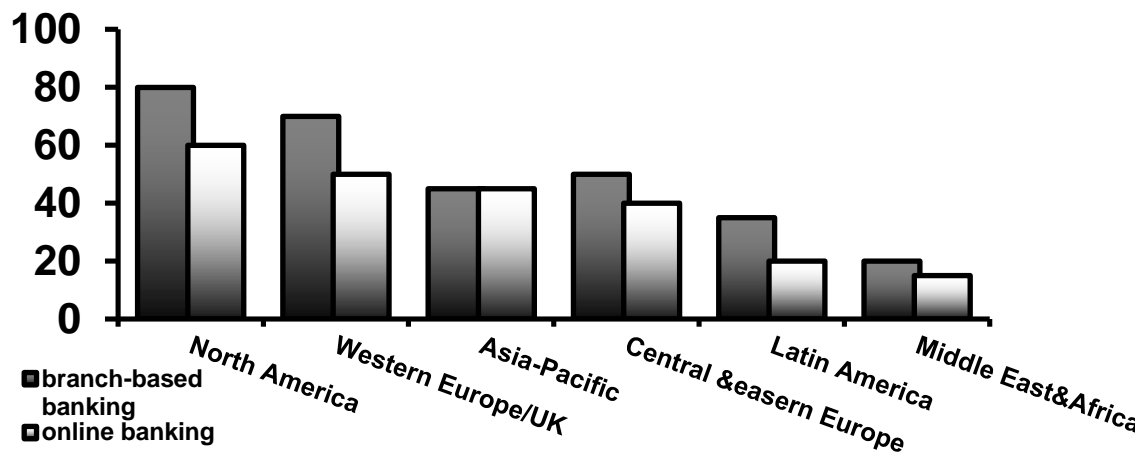


Figure 2. 1: Traditional and Online Banking Users by Regions (Source: IDC, 2002)

Figure 2. 1 illustrates that there is a significant difference in online banking usage levels across the globe (Datamonitor, 2005; IDC, 2002). For instance, usage of online banking technology in developed countries like US, Western Europe and Asian Pacific countries seems very high and impressive, whereas in developing countries like third-world countries seem very low. the huge up-take of online banking technology in developed countries have been driven by various factors such as advanced telecommunication infrastructure, secure online banking environment, deregulation and privatisation of financial services and mergers and acquisitions (Andersson, 2000).

### **2.4.2 Online Banking in the UK**

As mentioned above the UK is one of the Western European most developed countries in terms of delivering banking services electronically. This subsection is concentrating more on online banking technology in the UK as an advanced country in term of banking technology. Researchers looked at the technology development in the UK from different angles. For instance, Scott and Walsham, (1998) stated that "...UK Banks, was the first to attempt to introduce a computer-based decision support system into middle market corporate lending processes in the UK retail banking sector". Taylor, (1994) argued that, "British banking by the 1980s had become a difficult and challenging business. The move from the cosy preserve of established companies and substantial private clients to a mass market of small account holders created uncomfortable pressures, not the least of which was an unprecedented pressure from a new style of customer who insisted on treating money as a commodity. The key result of that was the free banking, as banks and other financial institutions competed for business. This, in turn, put banks into a difficult position especially, when Western countries dropped into recession at about the same point as less-developed world regions began to default on their substantial debts". However, Mintel, (2001) argued that, nowadays market is a much more different and complex place for customers, in terms of the number of availability of products to them and the number of financial providers to deal with. Many of the commentators in this field argue that a new economy is being formed, constructed around expertise in information processing and communication technology. In particular, new technologies enable organisations in developed countries to provide totally different services to customers and achieving levels of productivity until now unobtainable (Mintel, 2000).

### **2.4.3 Online Banking in Singapore**

Online banking in Singapore started in 1997 when five local banks in Singapore established their own corporate Web sites on the Internet (Tan and Teo 2000). They were the Development Bank of Singapore (DBS Bank), the Overseas-Chinese Banking Corporation (OCBC), the Overseas Union Bank (OUB), the Post Office Savings Bank (POSBank), and the United Overseas Bank (UOB). However, with respect to providing Internet banking services, these banks adopted a somewhat

conservative stance. According to Tan and Teo “while local banks agreed that Internet banking services could take over routine banking transactions, customer contact was still important in value-added services such as investment advice” (Tan and Teo, 2000). None of the banks would take the lead to offer Internet banking services as they felt it might precipitate a change in the basis of competition. Moreover, customers were not really pressuring them to offer Internet banking services as yet. Interestingly, by January 1998, the conservative attitude toward offering Internet banking services took a more positive direction. For example, the United Overseas Bank and DBS Bank were already providing online banking services. Overseas Chinese Banking Corporation and POSBank were testing their Internet banking services, while Overseas Union Bank announced their plans to launch Internet banking services in the late 1998. Banks were beginning to view online banking services as a strategic move to provide total distribution networks to their customers. In addition, by providing online banking services early, they would be able to position themselves as movers in the market (Tan and Teo, 2000).

#### **2.4.4 Online Banking in China**

China is one of the Asian developing countries, which has The Chinese Merchants Bank that was the first to launch the Internet payment system in 1997. Online banking systems spread rapidly within China (Laforet and Li, 2005). Although the proficiency of using the internet is relatively low and electronic banking is still in its early stages (Li, 2002), with the advantages of being convenient, safe, efficient and economical, Chinese domestic banks are confident that electronic banking benefits would outweigh traditional banking services in the future and therefore, are eager to implement the new technology and services in order to grasp, penetrate the market and gain competitive advantage (Li, 2002). Most retail banks in China now provide online banking as add-on services to the existing branch activities while mobile banking is in the initial stage of implementation.

#### **2.4.5 Online Banking in Arab Nations**

Arabic countries are still in their early steps of development of online banking (Rasmy et al., 2005). Few local banks offer operational transaction platforms, and there are concerns of poor security, fraud and lack of trust (Rasmy et al., 2005). The lack of national financial development policies has a direct impact on private

investment and business development in general, and on online banking infrastructure in particular (Touati, 2008). The Arab retail banking market is excessively reliant on “brick and mortar”—from large multinational banking groups to regional players and from generalists to specialized Islamic banking sectors, transactional electronic banking in general preparedness is low. For instance, in 2000, only 18 per cent of banks offered online transactional facilities (Touati, 2008). Although there were some local players (in Lebanon and Arab Gulf countries), these are mostly foreign banks with regional presence. Thirty nine per cent of the banks in the region do not even maintain an informational website (Touati, 2008). Arabic electronic banking in general and online banking particularly, suffer from the absence of clearing house alternatives to central banks, as most clearinghouses have yet to move their operations online. The absence of digital certification laws and the nonexistence of credible local third-party security enablers discourage Arab banks from moving online. Arab states such as Libya have yet to begin widely adopting online banking technology.

## **2.5 The Different Issues and Challenges Affecting Customers’ Trust and Acceptance on Online Banking**

The previous section identified clearly online technology in term of banking perspective and also has vital benefits and developed globally. This section studies different issues and challenges affecting customers’ trust and acceptance in online banking technology. It identifies what trust means and highlights perceived issues. It also explores the relationship between issues that associated with online banking and customers trust and acceptance when they attended to use online banking technology. Researchers and practitioners widely acknowledged trust's importance, especially in banking where relationships between a bank and its customers is sensitive and related to customers’ valuables (Mcknight and Chervany, 1996). The concept of customer’s trust may need to explain the importance of customers trust in terms of online banking technology perspective.

### **2.5.1 What is Trust?**

The importance of trust is widely recognised in various disciplines. However, there is widespread disagreement about its definition, characteristics, antecedents, and

outcomes. Mayer et al. (1995) identified five issues that summarise the root of this disagreement: (1) the difficulty of defining trust; (2) confusing trust with its antecedents and outcomes; (3) failing to understand the relationship between trust and issues; (4) confusing the levels of analysis due to lack of specificity of trust referents; and (5) failure to consider both the trusting party and the party to be trusted. Despite the laments regarding the definition of trust, scholars do appear to agree fundamentally on the meaning of trust (Rousseau et al. 1998). In their Meta-analysis of trust in organisations, Rousseau and colleagues made the observation that the fundamental elements of the definition of trust are comparable across various areas of research and theory. They outlined two important elements of trust (1) perception of risk and vulnerability by the trusting party and (2) the expectation that the trustee will behave in the interest of the trusting party. Other researchers have conceptualized trust by highlighting the risk involved (Gefen, 2003; Fulmer, 2012). The contemporary research on trust is converging towards a definition that reflects all these abovementioned aspects of trust with an emphasis on vulnerability. Table 2. 2 summarises the definitions of trust relevant to online customer behaviour.

References	trust Definitions
Morgan and Hunt (1994)	Trust occurs when one party has confidence in an exchange partner's reliability and integrity.
Mayer et al. (1995)	Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party
Rousseau et al, (1998)	Trust is a psychological state comprising the intention to accept vulnerability based on positive expectation of the intentions or behaviour of another.
Gefen (2000)	Trust on online transactions is the willingness to make oneself vulnerable to actions taken by the trusted party based on the feeling of confidence and assurance
Ba & Pavlou, (2002)	Trust is the subjective assessment of one party that another party will perform a particular transaction according to his or her confidant expectation, in an environment characterised by uncertainty.

Table 2. 2: Definition of trust

Following the present definitions of trust (e. g. Mayer et al. 1995; Rousseau et al. (1998) applied to an online banking perspective as presented in Table 2. 2, the present study defines trust on online banking as willingness of Libyan customer to perform banking transactions online through the provided channel of internet, expecting that



the bank will fulfil its obligations irrespective of the customer's ability to monitor or control the bank's actions on the provided channel of internet. This definition captures two different but non-separate aspects of trust in the context of online banking. First, it involves the traditional view of trust in a specific party the bank providing online banking services, and second, it implicitly encompasses trust in the integrity of the transaction medium, that is, the Internet. This definition also confirms the two scopes of trust, proposed by McKnight et al, (1998) as the 'institution based trust' and 'trusting beliefs'. They defined trusting belief as the customers' perception of the ability, integrity, and benevolence of the online banking web site. Institution-based trust was defined as the evaluation that the needed conditions are in place to expect a trusting outcome for an effort.

### **2.5.2 Trust in Online Banking**

The banking industry is associated with high levels of trust related to security, privacy, reputation, technical and legal, transaction/operation, and customers' acceptance issues in the physical environment. However, this association has not yet been translated in the electronic world to its full potential. The lack of the physical presence of a bank branch and the absence of physical interaction between the bank personnel and the customer renders a unique environment, in which trust is of vital importance. Customers are reluctant to adopt online banking because of security and privacy concerns (Lee and Turban 2001; Liu and Wu 2007). Thus, the lack of customer trust, both in the attributes of the bank and in the overall online environment has been, and remains, an obstacle in the wide spread adoption of online banking. Luhmann (2000) accordingly, has identified customers' trust as an important future challenge for online banking.

Customer's trust in online banking transactions has some unique dimensions, that is, the impersonal nature of the online environment, the extensive use of technology, and the inherent uncertainty of using an open infrastructure for transactions. The online atmosphere does not allow customers the natural benefits of face-to-face communications (Citera et al. 2005) - to directly observe the service provider's behaviour, or look into the service provider's eyes (Ba et al. 1999) - assurance mechanisms on which humans have depended for ages. This separation of time and space increases fear of opportunism. As Dellarocas (2001) noted, '... the more the two

sides of a transaction are separated in time and space, the greater the risks'. To further complicate the situation, there is concern about the reliability- of the underlying internet and related infrastructure with the extensive media coverage about security, privacy, reputation, legal and frauds on the internet.

Overall, these unique differences decrease customers' perceptions of control and increase their hesitation about trusting online banking. This provides a unique challenge to the banks to find ways in which to initiate and encourage electronic relationships with their customers. The survival of online banking depends on the bank's ability to convince customers to bank online, an act that is unlikely to occur if the bank is being perceived as untrustworthy. Banks can build mutually valuable relationships with their online customers through a trust-based collaboration process (Dayal et al. 1999). However, the way in which trust may be gained and the impact it has on online banking is not yet well understood (Jones et al. 2000). Trust in internet banking is a new and emerging area of interest in the field of marketing of financial services research. Extant literature on trust related to online banking is scarce and focused on more general issues of e-commerce. Less attention have been given to online banking trust and related issues. The next section identifies in depth online banking issues.

### **2.5.3 Trust in E-Commerce**

The open nature of the Internet as transaction information and its global constitution has made trust a crucial element of e-commerce (Hoffman et al. 1999; Souter and Kerretts-Makau, 2012). The commonly cited study by Hoffman et al (1999) focuses on security and privacy as the key drivers of online trust. They argue that environmental control, or a consumer's ability to control the action of a web vendor, directly affects his/her perception of online security and privacy. They also discuss the effectiveness of third-party trust-certification bodies and the public key encryption infrastructure for ensuring transactional security and privacy protection as success factors for building online trust. Other researchers have reinforced this belief asserting customers will only consider other web features, such as, ease of navigation, familiarity and reputation, after their security and privacy concerns have been addressed (Benassi 1999; Dayal et al. 1999).

Some authors have studied trust in the perspective of experience for example, Jarvenpaa et al. (2000) differentiated between two stages of trust, the early and mature stages. They showed that in the early stages, online trust may have more to do with the performance of the technology, whereas in the mature stages, trust may depend upon differences in the firm's implementation of Internet technology. Moreover, Lee and moray (1992) suggested that customers' trust on the transaction medium is dependent upon the mediums' perceived technical competence and performance, and the customers' understanding of the underlying characteristics and processes govern the medium's behaviour. The various performance measures used by customers to test the competency of transaction medium includes network and download speed, reliability, connectivity and availability (Lee and Turban 2001). Among these factors, reliability is the most vital concern for the customers, as when the personal and financial data is transmitted over the network there are risks that unauthorised parties could intercept the information (Clay and Strauss 2000). Therefore, customers' technical orientation and perception of the technological competency of the internet is very important in their information processing behaviour and perceived trust towards e-commerce.

(Lee and Turban 2001; Hunaiti et al, 2009) suggest that customers' trust in e-commerce is driven by trustworthiness of web-vendor, trustworthiness of web-shopping medium, contextual factors and the individual's trust propensity. Cheskin (1999) stated six features for enhancing customer perceptions of the web-vendor's trustworthiness, safeguard assurances, marketers' reputation, ease of navigation, robust order fulfilment, the professionalism of the website, and the use of state-of-the-art web page design technology. Kini and Coobineh (1998) however claim that the trustworthiness of the web merchant is necessary but not sufficient for an e-commerce transaction to take place; in addition the customer must also trust the transaction medium. Factors that identified by Lee and Turban 2001; Hunaiti et al 2009 are forming the core aspects of web based technology such as e-commerce and online banking and these factors particularly emphasised by this research.

#### **2.5.4 Online Banking Issues**

The rapid growth of the Internet has presented a new host of opportunities as well as threats to the banking sector (Tan and Teo, 2000). Over the years the Internet become

the most widely used form of conducting banking activities (Srivastava, 2005). However, bank customers are still concerned about many of the problems associated with the use of online banking services such as:

- Security issues,
- Technical and legal support issues,
- Reputation issue,
- Privacy issue,
- Transactional/ Operational Issues

Tan and Teo (2000) stated his hypotheses as “the lower the perceived risk of using Internet banking, the more likely that Internet banking will be adopted”.

The quote above shows that issues associated with online banking is various and expanding as a result of the development of programs and software of the Internet. Thus, for banks to maintain customer trust they should minimise online banking issues. But minimising Internet banking issues may not be the only solution for maintaining customers’ trust. Some customers may still use online banking even with the associated problems, because they get more benefits compared to the associated problems. This subsection will be focusing on issues that associated with online banking in developed countries such as the UK, Australia, etc., and how these problems can be avoided when online banking is established within the existing banking system in developing countries such as Libya.

#### ***2.5.4.1 Security Issues***

In banking literature, security has been identified as the number one concern for both banks and customers (Datamonitor 1999). For instance, Pennathur (2001) stated that “the ubiquity of the Internet, the constant threat of hackers, and the increased usage of the Internet to transmit sensitive information all render its users vulnerable to security threats”. This means that bank customers need to be aware that online banking services are secure and safe to use. In addition, Hutchinson and Warren (2003) identified in a study of security of Internet banking in Australia that one of the major factors inhibiting the growth of electronic banking, are security concerns. Sarel and Marmorstein (2005) also stated that security and privacy issues were major barriers to adoption. The meaning of adoption here can be the adoption of online banking by the

customer. Many banks have suffered online banking embarrassment incidents, calling the security of their online banking service into question. However and as mentioned earlier in this chapter, the overall standards of online banking in the UK are being monitored by the Financial Services Association (FSA) (Karim et al, 2009).

An example of a serious security problem in its' early years at Barclays web site was when customers accessing their accounts online could have left their accounts open to abuse because of a security error in the online banking system of Barclays Bank (Karim et al, 2009). After logging out of the online services, an account could be directly re-accessed using the back space button of the computer on the web site. If a client accessed their Barclays Bank account via public Internet access, the next user or client could use this method to view the bank details. This problem not only affected Barclays, but other banks such as Lloyds TSB, NatWest and Smile, and so had to ask their clients to re-enter their passwords if they try to re-access the service after logging out.

From all UK banks, Barclays was highly criticised for this act as they had given the responsibility for security to the end user. Barclays have now finally corrected this on their web page (Leyden and Lynch, 2000).

Karjaluoto and Mattila (2001), on the other hand argue that security doubts may not be one of major greatest obstacles. The lack of awareness of the service and benefits, way of dealing with problems, high costs, resistance of change and lack of computer access were also found to be principal barriers for trust and acceptance of online banking by customers.

Including the explanation above there may be a need to state and review types of security concerns and attacks. There are more many types of security attacks, this research will be focusing on four types of them which stated below as: intrusion, information theft, fraud and denial of service attack.

- **Intrusion:** An Intrusion is defined as the potential possibility of a deliberate unauthorized attempt to access information, manipulate information, or render a system unreliable or unusable (Kou and Huang, 2004). An intrusion involves an

attacker being able to use your computer as if he were a legitimate user. This is often done by using the user name and password of a legitimate user.

- **Information Theft:** Information theft is a term used that involves someone pretending to be someone else in order to steal money or get other benefits. The person whose identity is used can suffer various consequences when he or she is held responsible for the perpetrator's actions. In many countries specific laws make it a crime to use another person's information for personal gain.

Identity theft is somewhat different from identity fraud. However, the terms are often used interchangeably. Someone can steal or appropriate someone's identifying information without actually committing identity fraud. The best example of this is when a data breach occurs. There has been very little evidence to link ID fraud to data breaches (Wikipedia, 2009).

Attackers do not necessarily need access to your computer to steal your information. There are many types of network services designed to give out information. Many of these services have security holes which an attacker can exploit to get these services to divulge more information than you intend (Gorman, 2007).

Phishing e-mails attempt to steal bank customers' user names and passwords by imitating e-mail from legitimate financial institutions. A Gartner study released in May showed at least 1.8 million consumers had been tricked into divulging personal information in phishing attacks, most within the past year (Sarel and Marmorstein, 2006).

Phishing attempts designed specifically to steal bank information began to skyrocket about a few years ago, according to Dave Jevans, chair of the Anti-Phishing Working Group. Overall, phishing e-mails have jumped 4,000 percent in the past six months, and just last month, Citibank overtook eBay as the most common target. The company faced an average of 16 attacks per day, and 475 separate phishing attacks during April 2004, an increase of nearly 400 percent from March 2004 (Sullivan, 2004).

- **Fraud:** Kou and Huang, (2004) stated that, “ in the technological systems fraudulent activities have occurred in many areas of daily life such as telecommunication networks, mobile communications, on-line banking, and E-commerce”. He also added that “ fraud is increasing dramatically with the expansion of modern technology and global communication, resulting in substantial losses to the businesses” this may explained as the fraud can be one of the security issues of online banking and as a consequence may affect customers satisfaction toward online banking.
- **Denial of Service:** The denial of service attack aims to stop a customer from using his own computer. This is usually happen by an attacker overloading the system with too many messages, network requests, and processes, this means no resources are left for a customer who accessing internet in the same PC which uses for his account online. This can also be accomplished by exploiting flows in software which cause the system to hang (Anderson and Moore, 2007). Denial of service is one of the security issues and factors that affect customers to trust and accept online banking technology.

#### ***2.5.4.2 Technical and Legal Issues***

According to Tan and Teo (2000), “the greater the extent of perceived technological support for Internet banking, the more likely that Internet banking will be adopted”. That can be explained as online banking needs to be supported by technology to guarantee its development and this will make online banking more likely to be accepted and adopted by customers. The problem arises from the shortage of technological support, which may in some way lead to less trust by current or future customers.

Legal issues may arise from acting against laws and regulations of the business (Giglio, 2002). Legal issues include the weakening and uncertainty of establishment rights and obligations of transactions parties. This has negative impact on online banking in way that customers feel that they are not safe and loses the confidence of providing customers by legal and validated agreements of using online banking technology.

According to the Basle committee on banking supervision (1998) “banks choosing to enhance customer service by linking their Internet sites to other sites also can face legal risks. A hacker may use the linked site to defraud a bank customer, and the bank could face litigation from the customer”.

The problems of linking internet banking sites to other World Wide Web without technical and legal support is that customers’ bank accounts will be vulnerable to be hacked and increasing possibility of losing credibility and customers trust and acceptance as a consequence.

#### ***2.5.4.3 Reputation Issues***

This issue concerns the negative opinion of customers or potential customers towards online banking of a bank, which may result in the real risk of causing loss of funds. According to the Basle Committee on Banking Supervision (1998) “reputational risk may involve actions that create a lasting negative public image of overall bank operations, such that the bank’s ability to establish and maintain customer relationships is significantly impaired”. The explanation of the quote above is that the problem may arise from some actions taken by an institution may lead to bad image in the people’s mind about this institution and hit customers confidence to use online banking. This image will lasts for long time impacting on the overall bank transactions and customers trust and acceptance.

#### ***2.5.4.4 Privacy Issues***

Privacy concerns have often been revealed as one of the key reasons customers irritates customers to go online for transactions and to do purchases over the Internet (George 2004).

The privacy issue has also resulted in great concerns from both banks and their customers. The convenience with a large number of customers can access Internet has resulted in high concerns among customers (Anderson and Moore, 2007). Customers fear that other users of the World Wide Web may view their personal information or use them. The example of privacy problem is that in the year of 2000, Barclays Bank had to stop its Internet banking services for nearly four hours long after a fail in security. The bank’s clients reported that they were able to see other clients’ account details (Ticehurst, 2000). In this case customers’ privacy may be irritated and trust



can be affected as a result. Thus the more privacy provided in online banking the more chance for online banking technology can be trusted and accepted by the customer.

#### ***2.5.4.5 Transactional/ Operation Issues***

Transaction or operation issue is the issue to earnings or capital arising from problems with service or product delivery. The risk or this kind of issues arises from processing errors, system disruptions or other unforeseen events resulting in the institutions inability to deliver products or services to their customers. It exists in all products and services of all online banking technology. For instance, when banks merge with other banks, the combined computer systems may produce inaccurate or incomplete information or fail to work satisfactory (Tan and Teo 2000).

#### **2.5.5 Online Banking Trust and Issues/Risk**

As mentioned earlier in this section, the concept of trust usually comes with uncertainty or risk/issues. This subsection looks at online banking and related issues or perceived issues. Perceived risk or issue is commonly thought of as uncertainty regarding the possible negative consequences of using a products or services of online banking. It has formally been defined as a combination of uncertainty plus seriousness of outcome involved (Kim and Prabhakar, 2000). Kim and Prabhakar (2000) also suggest that perceived risk and trust affect trusting behaviour in the online banking context, without specifying what relations exist between risk and trust. However, the expectation of risk usually associated with online banking transactions (Lu et al, 2010).

The element of risk is particularly noticeable in online banking as opposed to traditional banking. The distant and impersonal nature of the online environment and the implicit uncertainty of using a global open infrastructure for transactions may bring several issues that are either caused by functional defects or security problems or by the conduct of parties that are involved in the online transaction (Pavlou, 2003). Gefen et al. (2003) suggests that the concept of risk should command a central role in the study of online banking customer behaviour. The literature on trust dating from Deutsch (1960), generally suggest that trust is interweave with risk, because it then reduces the risk of falling victim to opportunistic behaviour (Ganesan 1994).

Risk has been called the element that gives the trust dilemma its basic character (Johnson-George and Swap 1982). Trust is essentially needed only in uncertain situations since trust effectively means to assume issues and become vulnerable to trusted parties (Hosmer 1995). If there was no issue and actions could be taken with complete certainty no trust would be required. Prior research has discussed the role of trust in reducing the issue of opportunistic behaviour in channel relationships (Anderson and Weitz 1989) and in inter-organisational exchanges (Doney and Cannon 1997).

Researchers agree that trust lowers the perceived risk of facing a negative outcome of a transaction by reducing the information complexity (Mayer et al 1995; Luhmann, 2000). Research on trust however, does not clarify the relationship between trust and perceived issue. According to Mayer et al. (1995) "it is unclear whether risk is an antecedent to trust, is trust, or an outcome of trust". This implies causality between trust and perceived issue, without being clear about the direction of the causality. Rousseau et al. (1998) proposes a reciprocal relationship without implying causality, "risk creates an opportunity for trust, which leads to risk taking". This confusion is further compounded when the effect of risk is considered on customer's intentions and actual behaviour.

Gefen et al (2003) proposed two models from the trust and risk literature: i) perceived issues mediate the relationship between trust and behaviour ii) the perceived risk moderates the relationship between trust and behaviour. The conceptualisation of perceived risk in this study is based on the trust model which suggests that the higher the level of customer's trust the lower will be their perception of risk, thus leading to development of positive intentions. Recent studies of online banking suggest that perceived risk lead to low customer's trust on an online banking of transactions from that channel (Jarvenpaa et al, 2000; Lui & Jamieson, 2003).

The mediating role of perceived risk in the relationship between customers' trust and online banking has been emphasised by many other researchers over time (e. g. Blair and Stout 2000; Cheung and Lee 2000; Morgan and Hunt 1994; Noorderhaven 1996). A study conducted by Pavlou (2003) showed that "... trust act indirectly on intentions to transact through the mediating affected by perceived risk.

There has been many research studies conducted on how people from different cultures observe, define, trust and usage of technologies (e.g., Cooper, 1994; Mayer et al. (1995); Hill, et al, 1998; Aladwani, 2001; McCoy et al, 2005; Abukhzam and Lee, 2010; Houda and DEBABI, 2012). Trust on online transactions is the willingness to make one-self vulnerable to actions taken by the trusted party based on the feeling of confidence and assurance (Gefen 2000).

One of the interesting and major areas of research in IT technology is the trust of technology in banking industry (Karjaluoto et al, 2004; Chan & Lu, 2004). Therefore, the trust of online banking technology could be studied from the perspective of the adoption and diffusion of information technology innovations. Black et al (2001) suggest that diffusion and adoption of innovation studies are the starting point of any study which investigates the adoption of new technologies. These studies were designed to consider the individual's beliefs, attitude, and behaviour toward adoption of technology (Sathye, 1999; Liao and Cheung, 2002).

To assess the influence of human attitude and reaction towards trust, and accepting new technologies, several studies (e.g., Rogers, 1983; Davis, 1986; Ajzen & Fishbein, 1986; Tan & Teo, 2000) have developed a core set of theoretical frameworks that can be used as a mediator to explain and predict technology trust and acceptance. According to these studies, technology adoption is viewed as a consequence of a set of perceptions (attitude) to the technology. Attitude can be a very powerful enabler or a barrier towards the adoption of the new technology. Ajzen, (1980) defines the term 'attitude' as a complex conundrum of feelings, desires and fears that have given a set of readiness to act to a person.

Finally, to date there have been much practical research studies on human reaction and attitude towards technology trust and acceptance, but a few in the Arab regions (Alshawaf, 2001). However, researchers from the Arab countries (e.g., Aladwani, 2001; Kamal, 2006; Al-Gahtani and King, 1999; Abukhzam and Lee, 2010) argue that the research into individual's attitudes and online banking trust have been conducted mainly in the developed world, such as North America and Europe and therefore, most of the technology trust theories and models strongly reflect the attitude, values and beliefs of those countries.

Thus, due to the lack of a validated and reliable technology trust model in Arabic culture for assessing the influence of customers attitude on the trust of IT in general and online banking technology in particular and thus the lack of such guidelines have initiated the interest of the researcher in conducting this study. Accordingly, there exists a need for reviewing technology adoption theories, creating a more in-depth understanding on how technology can be accepted, trusted, adopted and used.

## **2.6 Theories of Technology Adoption and Use**

One of the key objectives of theories of technology adoption in this study is to assess the value of technology for the organisational and individual and enhance the understanding of the factors that influence the trust and acceptance of online banking technology. This helps to increase the importance of IT investment especially in developed countries like Libya (Abukhzam, and Lee 2010). It is indeed needs more cognitive understanding for their customers' acceptance and trust of newly adopted technology. There is an underlying assumption which highly suggests that in order for technology to deliver value, it must be accepted, trusted, adopted and used (Venkatesh and Brown, 2001). These Theories include the Innovation Diffusion Theory (IDT), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), and the Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM) originally formulated by Davis (1986) is one of the most powerful widely tested models of technology acceptance. In the last two decades the TAM has become well established as an effective model for predicting users' acceptance of technology. Furthermore, the TAM studies are characterized by different methodological and assessment factors resulting in conflicting findings which not only undermine the accuracy of TAM, but also essential efforts for information technology (IT) practitioners and academicians to better understand customers' technology acceptance behaviour.

### **2.6.1 Strategies of Customers' Acceptance of Technology**

In recent years a variety of theoretical perspectives have been applied to provide an understanding of the determinants of IT adoption and usage including the intention models from social psychology (Christie, 1981; Swanson. 1982). This stream of

research use behavioural intentions of individuals to predict their actual use of technology and, in turn, focuses on the identification of the determinants of intention. Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) and Ajzen's (1991) Theory of Planned Behaviour (TPB) are especially well-researched intention models that had proven successful in predicting and explaining behaviour across a wide variety of domains. From this stream of social psychology research, the Technology Acceptance Model (TAM), an adaptation of TRA, and thier based sduies, has emerged as a powerful and effective way to represent the antecedents of technology usage through beliefs about two factors: the perceived usefulness and perceived ease of use of the technology (Davis 1986; ). A second line of approach, with a basis in sociology that has featured significantly in explaining technology adoption and use decisions, is innovation diffusion theory (Rogers 1983). These models and theories are discussed in detail in the following sub-sections.

#### ***2.6.1.1 The Innovation Diffusion Theory***

The innovation diffusion theory (Rogers 1983) emerged in the 1980's and has been employed to study the adoption and diffusion of a wide range of technological innovations over the years. Rogers (1983) study can be characterized as an information-centric view of diffusion of innovations (Figure 2. 2). Information about the innovation flows through social systems where potential adopters process it to form perceptions; such perceptions, among other related factors, then serve as the drivers for innovation adoption decision (Roger 1983). In the knowledge stage users are introduced to the innovation, followed by encouragement stage in which favourable or unfavourable attitudes are formed towards the innovation. In the decision stage the individual arrives at a decision to accept or reject the innovation. If the individual decides to adopt the innovation, he\she moves to the implementation stage by actually using the innovation. Finally in the confirmation stage the individual reinforce the decision by adopting the innovation.

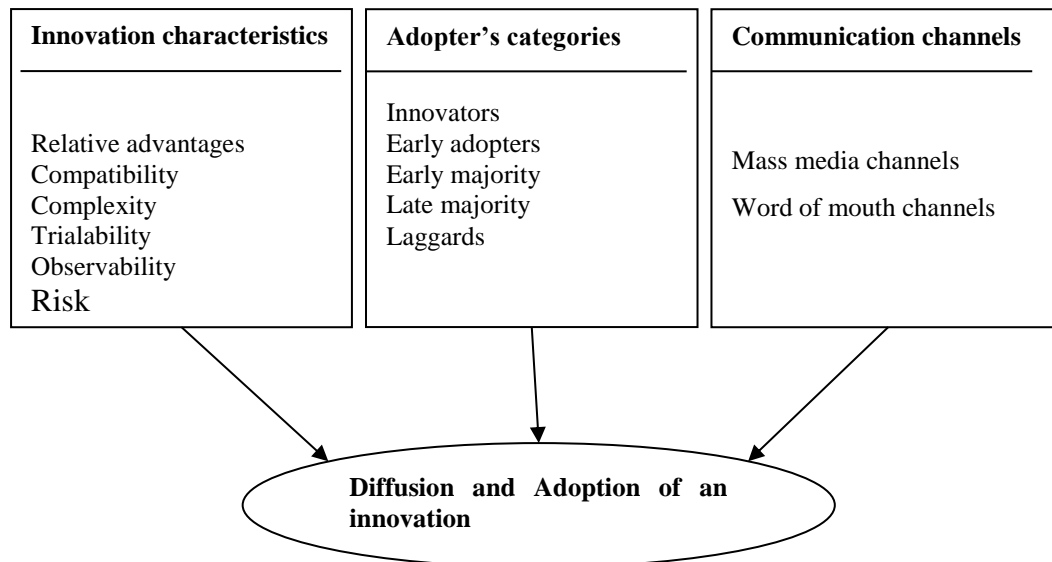


Figure 2. 2: Diffusion of innovation Theory (adopted from Rogers, 1995)

Within information systems research studying individual technology adoption, one of the first applications of IDT was by Moore and Benbasat (1991). They tested this instrument with reference to personal workstations and found that all seven characteristics were perceived differently by adopters as compared with non-adopters. Rogers (1995) suggested that the perceptions developed by individuals regarding an innovation are largely dependent on what they learn through a variety of communication channels. More recently, Agarwal and Prasad (1998; 1999) have studied the role of these characteristics in predicting IT adoption and found modest support for the predictive validity of innovation characteristics. In terms of overlap with other models, relative advantage and ease of use in IDT are similar to perceived usefulness and perceived ease of use from the technology acceptance model (TAM).

### ***2.6.1.2 The Theory of Reasoned Action***

The Theory of Reasoned Action (TRA) is a widely studied model from social psychology that is concerned with the determinants of consciously intended behaviours (Fishbein and Ajzen 1975). Bagozzi (1992) suggests that from a theoretical point of view the TRA is intuitive, parsimonious, and insightful in its ability to explain behaviour. The TRA assumes that individuals are usually rational and will consider the implications of their actions "before they decide to engage or not engage in a given behaviour" (Ajzen and Fishbein 1980).

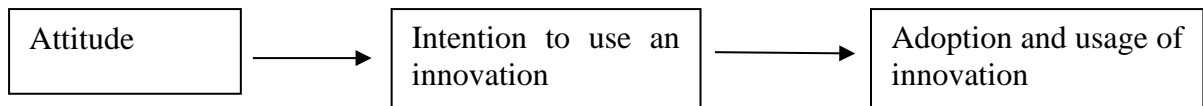


Figure 2. 3: Theory of Reasoned Action (adopted from Ajzen, 1975)

According to the TRA (Figure 2. 3), behavioural intention is the immediate antecedent of an individual's behaviour. The TRA posits that "most behaviours of social relevance are under volitional control and are thus predictable from intention" (Ajzen and Fishbein 1980). The theory also suggests that because many extraneous factors influence stability of intention, the relationship between intention and behaviour depends on two factors: First, the measure of intention has to correspond to the behavioural criterion in action, target, context, and time; second, a measure of intention will predict behaviour only if the intention does not change before the behaviour is observed Tan & Teo (2000).

The TRA specifies that behavioural intention is a function of two determinants: a personal factor termed 'attitude towards behaviour' and a person's perception of social pressures termed 'subjective norm' (Fishbein and Ajzen 1975).

Attitude refers to "an individual's positive or negative evaluation of performing the behaviour" Tan & Teo (2000). Importantly, attitude refers specifically to the person's own performance of the behaviour rather than to his/her performance in general. A behavioural belief refers to an individual's subjective probability that behaviour will lead to particular outcome, for example, it saves time to conduct banking transactions on the internet. According to the TRA, the strength of each behavioural belief is multiplied by the evaluation of its consequence, and attitude is determined by summing the resulting products across all salient behavioural beliefs.

Subjective norm is a function of a set of beliefs termed as normative beliefs. Normative beliefs "are concerned with the likelihood that important referent individuals or groups would approve or disapprove of performing the behaviour" (Ajzen and Madden 1986).

### ***2.6.1.3 Critique of Theory of Reasoned Action (TRA)***

In a comprehensive critique of the TRA, Foxall (1997) makes three substantive points. Firstly, the TRA does not take into account the non-attitudinal personal and

situational factors that are likely to influence the strength of attitude-intention-behaviour relationship or enhance prediction of behaviour. Davis et al. (1989) also suggested that the TRA is a general model and as such, it doesn't specify the beliefs that are operative for a particular behaviour. Thus, the researchers using the TRA should first identify the beliefs that are salient for subjects regarding the behaviour under investigation. Secondly, the TRA deals with the prediction of behaviour rather than outcome of behaviours, In the TRA, behaviour is determined by behavioural intentions. Thus limiting the predictability of the model to situations where intention and behaviour are highly correlated. When intention and behaviour is measured at the same time then it is not a true test of the model's power to predict future, but rather a test of the model's power to predict current behaviour. Predicting future behaviour is more difficult to achieve, due to the time interval between the intention and the behaviour, during which unforeseen events or other factors may disturb the relationship (Ajzen and Fishbein 1980). Davies et al (2002) suggest that in order to test the TRA, actual behaviour should be assessed objectively, and unobtrusively, without signalling in any way its connection to the prior intention measurement phase. Thirdly, the degree to which intentions are well-formed affects the way in which attitudes influences behaviour (Bagozzi and Yi 1989). In keeping with the TRA, Foxall (1997) agreed that well-formed intentions completely mediate the effect of attitude on behaviour. However, when intentions are poorly formed, their mediating role is reduced and attitudes have a direct effect on behaviour. A further requirement of TRA is that behaviour must be under control i. e., the person can decide at will to perform or not to perform it. When volitional control is low, the intention-behaviour relationship is reduced because the person's will is more difficult to achieve. Thus, the TRA is not completely equipped to predict situations in which individuals have low levels of volitional control (Ajzen 1985). The theory of planned behaviour (Ajzen 1991), an extension of the TRA tackled the original model's limitations in dealing with behaviours over which people have incomplete volitional control.

#### ***2.6.1.4 The Theory of Planned Behaviour***

The Theory of Planned Behaviour (TPB: Ajzen 1991) is a well-established general theory of social psychology, which suggests that in addition to attitudinal and normative influence, identified by TRA, a third element, Perceived Behavioural



Control (PBC), also influences behavioural intentions and actual behaviour (see Figure 2.4).

The TPB extends the TRA to account for conditions where individuals do not have full control over the situation. According to the TPB, human action is guided by three kinds of considerations: behavioural beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes, normative beliefs about the normative expectations of others and motivation to comply with these expectations, and finally control beliefs about the resources and opportunities possessed (or not possessed) by the individual and also the anticipated obstacles or impediments towards performing the target behaviour (Ajzen 1991). In their respective aggregates, behavioural beliefs produce a favourable or unfavourable attitude toward the behaviour; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioural control. Thus, the more favourable the person's attitude and subjective norm towards a behaviour and the greater the perceived control, the stronger should be the person's intention to perform the given behaviour.

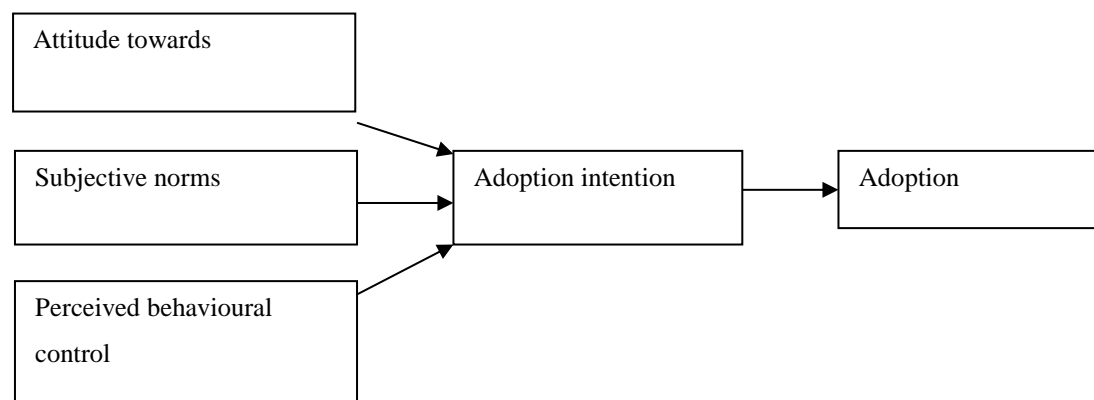


Figure 2. 4: Theory of Planned Behaviour (TPB) adopted from Ajzen (1985)

The TPB as shown in Figure 2. 4 assumes that motivation (behavioural intention) and ability (behavioural control) interact in their effects on behavioural achievements. Ajzen (1991) suggested that under a sufficient degree of actual control over the behaviour, people are expected to carry out their intentions when the opportunity arises.

Ajzen (1991) provides two rationales for this hypothesis. First, holding intentions constant, the effort expended to bring a course of behaviour to a successful conclusion is likely to increase with PBC. For example, even if two individuals have equally strong intentions to learn internet banking, and both try to do so, the person who is confident that s/he can master this technology is more likely to succeed than is the person who doubts her/his ability.

The second reason for expecting a direct link between PBC and behavioural achievement is that depending upon the accuracy of perception, PBC can often be used as a substitute for a measure of actual control (Tan & Teo (2000)). The previous IT studies suggests that PBC may be an important determinant of intentions and usage (Chau and Hu (2001); Mathieson (1991); Taylor and Todd (1995)). Moore and Benbasat (1991) found that perceived voluntariness, which they associate to PBC, was also a determinant of usage. Empirical evidence indicates that the addition of PBC to the traditional model from TRA has resulted in meaningful improvements in the prediction of intentions Ajzen (1991); Foxall (1997).

#### ***2.6.1.5 Critique of Theory of Planned Behaviour (TPB)***

The TPB is problematic on several grounds. Firstly, like the TRA, the TPB assumes proximity between intention and behaviour, thus, the precise situational correspondence is still essential to accurate prediction (Foxall 1997). As Eagly and Chaiken (1993) points out, the assumption of a causal link between PBC and intention presumes people decide to engage in behaviour because they feel they can achieve it. Secondly, the operationalization of the theory is troubled by the problem of measuring PBC directly as opposed to recording control beliefs (Manstead and Parker 1995).

Thirdly, the theory introduces only one new variable when there is continuing evidence that other factors add predictive power over and above the measures formally incorporated in the TPB. For example, Manstead and Parker (1995) argue that personal norms and affective evaluation of behaviour may account for variance in behavioural intentions beyond that accounted for by the TPB. Ajzen (1991) describes the model as open to further elaboration, stating that: The theory of planned behaviours, in principal, open to the inclusion of additional predictors if it can be

shown that they capture a significant proportion of the variance in intention or behaviour after the theories' Current variable have been taken into account.

#### ***2.6.1.6 The Technology Acceptance Model (TAM)***

As discussed earlier, a variety of theoretical perspectives have been applied to provide an understanding of the determinants of technology usage including the intention models from social psychology e. g., the TRA and the TPB. From this stream of research, the Technology Acceptance Model (TAM) originally formulated by Davis (1986), has emerged as the best and an affective model that belongs to the technology adoption field.

TAM adapts the framework of the TRA and hypothesize that a person's acceptance of a technology is determined by his/her voluntarily intentions to use that technology. The intention, in turn, is determined by the person's attitude toward the use of that technology and his/ her perception concerning its usefulness. Attitudes are formed from the beliefs a person holds about the use of the technology. The first belief perceived usefulness is the user's "subjective probability that using a specific application system will increase his or her job performance within an organizational context" (Moor and Benbasat, 1991). Initially defined in the context of one's job performance, perceived usefulness was later used for any common task in non-organizational settings e.g., Internet shopping (e.g. Gefen 2000). Perceived ease of use, the second belief, is "the degree to which the user expects the target system to be free of efforts" (Edberg and Lennartsson, 2004). PU is influenced by PEU. Researchers argue that, In order to apply these concepts to the technology acceptance context, it is essential to evaluate attitudes and beliefs regarding the actual use of technology rather than attitude and beliefs directed toward the technology itself i. e., individuals might hold a positive view about a technology without being favourably disposed toward its use (e.g. Davis et al (1989). Davis et al (1989) in his study of the User acceptance of computer technology empirically tested the original TAM and he made a comparison of two theoretical models. As a result he finally, found that the data partially supported the model. That should aid and encourages this study to look at the customers' beliefs and attitude and empirically test customers' trust and acceptance of online banking technology in Libyan context.

Table 2. 3 below summarises the comparisons between the four technology adoptions theories explained in this research.

<b>Theory</b>	<b>Author</b>	<b>Bases</b>	<b>Main factors</b>
IDT	Rogers (1983)	Employed to study the adoption and diffusion of a wide range of technological innovation	<ul style="list-style-type: none"> <li>● Relative advantages</li> <li>● Compatibility</li> <li>● Complexity</li> <li>● Trainability</li> <li>● Observability</li> <li>● Risk</li> </ul>
TRA	Fishben & Ajzen (1975)	Concerned with the determinants of consciously intended behaviours	<ul style="list-style-type: none"> <li>● Attitude</li> <li>● Behavioural intention</li> </ul>
TPB	Ajzen (1991)	A well-established general theory of social psychology	<ul style="list-style-type: none"> <li>● Attitude</li> <li>● Subjective norms</li> <li>● Perceive behavioural control</li> </ul>
TAM	Daves (1986)	Applied to provide an understanding of the determinants of technology usage	<ul style="list-style-type: none"> <li>● Voluntarily intention</li> <li>● Personal attitude</li> <li>● Perceptions of usefulness</li> </ul>

Table 2. 3: Comparing theories of technology adoption use (Source: Elaborated in this research based on technology adoption theories)

A best practice of such technology theories should explore more in-depth examples of applied adoption technology theories and outcome of related theory practices. The next section will be highlighting those notions.

## **2.7 Best Practice Use of the Theories above in the Adoption of Online Banking for Gaining Customer Trust and Acceptance**

Theories of technology adoption and acceptance have been widely used and showed best practice and useful implementations in the context of trust and widely tested and validated by many researches (e.g. George, 2002; Pavlou, 2003; Nor & Pearson 2007). Although online banking based theories have been used in many studies combing adoption theories with trust and acceptance, the following are only few examples of the practices that used online banking related theories for improving customers trust and acceptance. Table (2.3) also states several studies of online banking related theories linked with the aspects of trust and acceptance.

- **Implementation of The Innovation and Diffusion Theory (IDT) in the context of online banking technology and trust and acceptance:**

For instance, Nor & Pearson (2007) in their study of the influence of trust on internet banking acceptance which was conducted in Malaysia surveying more than one thousand academic students of four public Malaysian universities. The purpose of their study was to examine empirically the influence of trust together with some of the Aspects of Innovation Diffusion Theory on online banking acceptance.

The study came up with three suggestions those are; trust, relative advantage, and trialability, have a significant effect on attitude towards using Internet banking. It was consequently found that ‘attitude significantly affects the intention to use the technology’ (Nor & Pearson 2007).

- **Applying the basis of Theory of Planned Behaviour (TPB) for enhancing trust and acceptance of online banking:**

George (2002) in his research of “influences on the intent to make Internet purchases” showed important analytical figures regarding Internet users in the US for their purchases. The study showed that 56 percent of US customers would be willing to be online if they provided with a source of online banking. Based on the theory of planned behaviour (TPB), a framework was provided to see how beliefs about privacy and trustworthiness of the Internet influence individual intentions

- **Applying Technology Acceptance Model (TAM) in the customers trust**

As TAM is extended of Theory of Reasoned Action (TRA) and was part of it, therefore, TAM will be representing TRA in term of best practice use of theories.

Predicting customers’ acceptance of online transactions Pavlou (2003) proposed a number of fundamental factors for engaging customers online. The main ideas for gaining consumer acceptance of e-commerce are intention to transact and on-line transaction behavior. Literature on online banking are scares and as mentioned earlier in chapter one e-commerce related literature may be used and manipulated to explain online banking technology. Both e-commerce and online banking use the same source which is Internet, they

recognized as, Human and technology-based delivery channels therefore, they should face not necessary the same but sharing many parallels. In his indication for Technology Acceptance Model (TAM) to be one of the best predictors of technology acceptance, Al –Gahtani & King, 1999 stated that ‘Technology acceptance Model thought to be a best predictor of the acceptance of technology, which follows the Theory of Reasoned Action (TRA) and both theories were applied to technology-driven environment’. This model integrates trust with perceived risk and combined together given the meaning or understanding of uncertainty of the online environment.

In addition to the above examples of best practice and use of the online banking adoption theories for gaining customer trust and acceptance, the following table shows wide set of literature covers the influence of trust in online banking technology.

Source	Relevant findings	Country based study
Jarvenpaa et al. (2000)	Willingness to buy in an Internet store was affected by attitude and perception of risk. Attitude and perception of risk were affected by trust, which in turn was affected by consumer’s perception of size and reputation of the store.	Not specified
Suh and Han (2002)	Trust had a significant effect on intention to use and attitudes toward using Internet banking.	South Korea
George (2002)	Privacy and Internet trustworthiness were significant determinants of attitude toward Internet purchasing. In turn, attitude had a significant effect on intent to purchase.	US
Gefen (2002)	Purchase intention was influenced by trust, which in turn, was affected by integrity and benevolence.	Not specified
Bhattacharjee (2002)	Consumers’ willingness to transact online was influenced by trust, which in turn was affected by familiarity. Familiarity was significant on consumers’ willingness to transact.	Not specified
Gefen et al. (2003)	Trust was a significant predictor of purchase intention for both potential and repeat customers. Familiarity and disposition to trust were significant on trust for both customers.	Not specified
Sohail & Shanmugham (2003)	Trust in one’s bank had a significant influence on him or her to use Internet banking. Other factors were Internet accessibility, attitude towards change, computer and Internet access costs, security concerns, ease of use, and convenience.	Malaysia
Pavlou (2003)	Trust was a significant predictor of intention to transact in both samples. Trust had a significant effect on perceived risk, perceived usefulness, and perceived ease of use.	Not specified

	Integrates trust and risk with Technology Acceptance Model (TAM).	
Joseph and Stone (2003)	Technology based delivery channels are linked with the customers' perception of internet banking among mature customers; whereas perceived difficulty in using computers combined with the lack of personal service in e-banking were within the main barriers.	Not specified
Mattila et al, (2003)	Household income and education were found to have significant effect on the adoption of Internet banking; perceived difficulties and lack of personal services, and security were found to be the main barriers on internet banking adoption.	Finland
Nor & Pearson (2007)	The influence of trust on internet banking acceptance	Malaysia
Hahn & Kim (2008)	Consumer trust in an online retailer was a significant predictor of perceived internet confidence and search intention for product information via the online retailer.	US
Yap et al, (2009)	Traditional service quality builds customer trust in the e-banking service. The size and reputation of the bank were found to provide structural assurance to the customer but not in the absence of traditional service quality. Web site features that give customers confidence are significant situation normality cues	Not specified
Abukhzam, and Lee 2010	investigating the key factors affecting bank staff's attitude towards e-banking technology, a step necessary to understand what makes effective the introduction of e-banking projects in Libya	Libya
Houda & DEBABI (2012)	perceived ease of use, perceived usefulness and previous experience are the factors which determine Internet use as a new business tool	Not specified

Table 2. 4: The common implementation studies of technology adoption and acceptance theories

## 2.8 Summary and Key Findings

This section assembles all the key findings from the literature on what the online banking is and what benefits can be gained from online banking. Different issues and challenges related to customers' trust and acceptance on online banking identified. Technology adoption and acceptance related theories and their best practice in term of trust was reviewed and conclusion is made that, even though there are challenges in online banking technology, the benefits therein balances the consequences. The following list which is divided into four categories highlights some of the key findings from literature as follows:

## 1- Online Banking

- Online banking technology can be defined in many ways depending on the level and type of service provided by banks to their customers
- The technology of online banking has two sides of advantages and disadvantages, to the customers and to the bank

## 2- Trends in online banking

- Online banking channel acceptance in worldwide has been rapidly changed
- The usage of online banking technology in developed countries like US, Western Europe and Asian Pacific countries seems very high and impressive, whereas in developing countries like third-world countries seems very low

## 3 Challenges Affecting Customer Trust & Acceptance,

- Different issues and challenges affecting customers' trust and acceptance in online banking technology
- The importance of trust is widely recognised in various disciplines, especially in online banking technology
- Online banking related issues including, Security issues, Technical and legal support, reputation, Privacy, and Transactional/ Operational Issues.
- Perceived issue in online banking is commonly thought as uncertainty regarding the possible negative consequences of using products or services of online banking.
- There has been many research studies conducted on how people from different cultures observe, define, trust and usage of technologies.

## 4 Theories of Technology Adoption for Online Banking

- The key objectives of theories of technology adoption in this study is to assess the value of technology and enhance the understanding of the factors that influence the trust and acceptance of online banking technology
- The reviewed theories were stated in this study to be as a base for the theoretical framework and to enhance and identify factors in this study



in a way that explaining how an intention towards the new technology. By explaining intention and related factors (ease of use and Perceived usefulness/relative advantages) it may assist eventually to develop a theoretical framework and define factors for online banking trust and acceptance in Libyan perspective, as it is a new or non-commonly used technology in this country.

The next chapter will be demonstrating online banking by concentrating on online banking technology in Libyan environment.

## **Chapter 3: Online Banking in Libya**

### **3.1 Introduction**

This chapter focuses on online banking in the Libyan banking industry by reviewing Libyan banking system infrastructure. The Libyan banking industry has been continuously criticised for its less than optimal performance in banking (Touati, 2008; Rating Developments Limited, 2002). This chapter also identifies the extent of private ownership within Libyan banking and explores the Bank of Commerce and Development (BCD) as an example of a private bank. This case study includes subsections on a review of online banking and trust in BCD. The subjects of Libyan banking and online banking, the question of trust in Libyan banking both pre- and post-civil war, and Libyan banking transactions are clearly explained.

Customers of Libyan banking are also examined in this chapter, including the extent of their readiness to use the technology and the five types of customer, categorised according to their use of technology. Summary and key findings are presented at the conclusion of the chapter.

### **3.2 Libyan Banking System Infrastructure**

The Libyan authorities started to liberalise the national banking system in the mid-1990s, permitting the private ownership of banks. It is only since 2001, with the liberalisation of foreign trade, that banks have experienced substantial changes in the banking system (Libya Investment, 2004). Private sector clients no longer have to work through the large state-owned banks, and the commercial banks themselves are free to develop banking relationships abroad. They have been connected to the Society for World-wide Interbank Financial Telecommunication (SWIFT and Western Union system) since 2001 and no longer need to use the Libyan Arab Foreign Bank to make foreign payments and transfers.

However, competition between the five state-owned Libyan Public Commercial Banks has yet to emerge, and it is also expected that some privately-owned banks may enter the competition. Tight central controls have been in place for too long for immediate launch of innovative practices. However, the private sector banks are installing modern integrated banking systems and thus, are creating opportunities to

attract large volumes of business from enterprises that want to use efficient payments systems (Libya News and Views, 2008).

As presented below in Figure 3. 1 there are two types of banks under the control of the Central Bank of Libya: public and private sector banks. The state-controlled public banks in Libya consist of two major types: specialist and commercial banks.

Libyan public specialist banks (LPSBs) include: the Real State and Investment Bank, the Development Bank, the Agriculture Bank, and the Libyan Arab Foreign Bank. Libyan public commercial banks (LPCBs) are: Eljumhuria Bank, Umma Bank, Sahara Bank, National Commercial Bank, and Elwahda Bank (CBL, 2008). Libyan private banks consist of: Al-wafa Bank, Alejmaa Alarabi Bank, Mediterranean Bank, National Bank Corporation, and Saving and Real-Estate Investment Bank.

The Central Bank of Libya (CBL) is the national monetary authority and banking supervisor of Libyan banks. It owns and controls stakes in the five state-owned Commercial Banks (CBL, 2008).

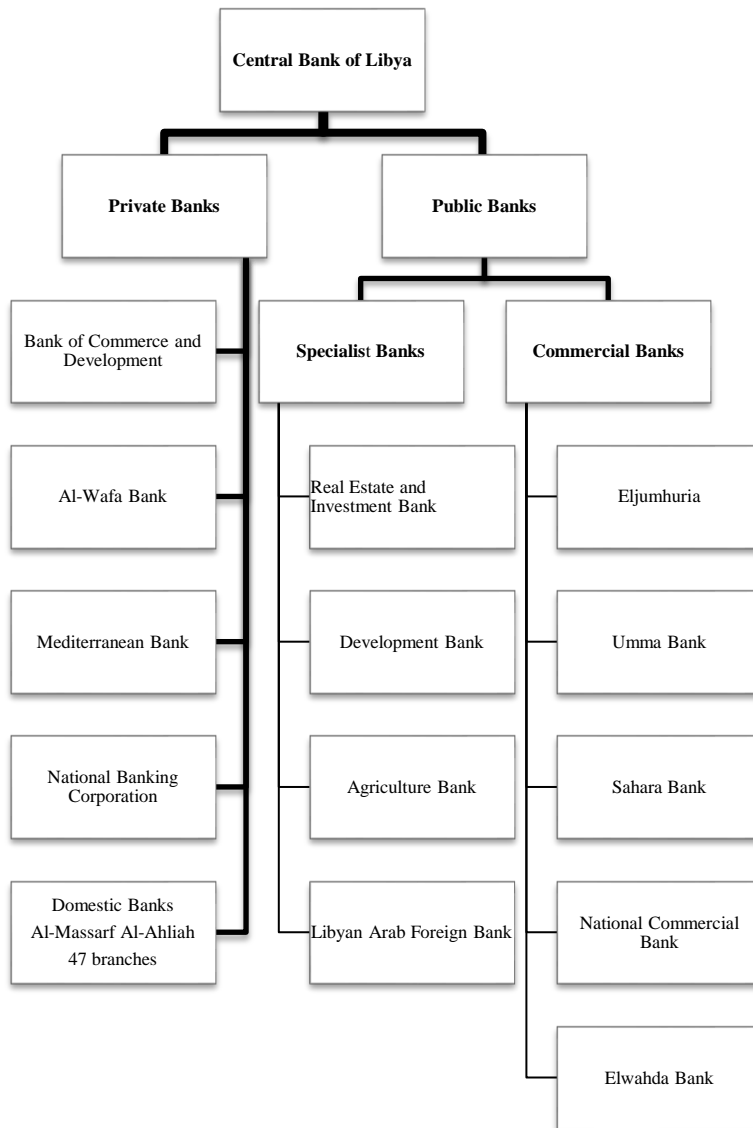


Figure 3. 1: Libyan Banking Structure (Source: designed by this research based on literature)

### 3.3 Private Ownership

As shown above, the private sector in the Libyan economy originated in the 1990s when the country started to liberalise part of the economy after a long period of time as a socialist regime (Libya News and Views, 2007). The sector that is in private ownership effectively started from within the banking sector in Libya by the mid-1990s when the Bank of Commerce and Development (BCD) was the first bank to be established under this heading. Other banks, such as the Sahara bank, were working as local banks and have only recently been permitted to be privatised (Najeb, 2009). Local company entities were restricted to around 5% of their shares being privately owned. Other publicly-owned entities, such as family businesses and other business

groups, can only have between 1% and 2% of their shares in private ownership. The only institutions in Libya that have private ownership, including the banking sector, are the State-Controlled Enterprises which include the majority of the oil companies that generate nearly 98% of Libya's foreign income. There is only one sector that is completely privatised and that is the tourism sector (Rating Developments Limited, 2002). Banking is an important sector in Libya and as the main interest of this study, it is important to observe that it is increasingly moving towards privatization (Tuati, 2006). Figure 3. 1 shows the important roles that private banks are playing within the Libyan banking structure. The Bank of Commerce and Development (BCD) is one of the private banks that is most developed and as such will be the subject of an in-depth review as a case study in the next section of this chapter.

### **3.2.1 The Bank of Commerce and Development (BCD)**

This section will be focusing further on the selected case for this study which is the Bank of Commerce and Development (BCD) in Libya. As part of the Libyan banking system, the Bank of Commerce and Development is a wholly private commercial bank, which was established by Banking Law No. 1 of 1993, Banking, Currency and Credit and its amendments, the Secretariat of the People's Committee of Planning and Finance Resolution No 234 of 1993 and the Secretariat of the People's Committee of Planning, Economics and Commerce Resolution No 529 of 1994. With an authorised capital of LD 9 million, the bank initially started as a stock company in November 1995 (BCD, 2008). The main objectives of the BCD have been referred to by the second Article of the bank's by-law as follows:

- Accepting demand and time deposits, opening current accounts, granting loans and providing other credit facilities.
- Collecting and paying notes payable, drafts and other commercial papers, and issue of bank letters of guarantee of all types.
- Discounting and re-discounting and dealing in all kinds of commercial instruments.
- Financing international trade by providing credit facilities to importers and granting advance financing to exporters.

- Undertaking to achieve the objectives of development by sponsoring agricultural, industrial and services projects to reduce dependence on foreign imports.

By the end of 2000, the BCD had maintained a total profit of about LD7 million, and the bank's balance sheet at the end of 2000 demonstrated significant growth. The total assets and liabilities were about LD315.1 million, and total deposits (current accounts, long term deposits in CBL and commercial banks) were LD192 million. It now has three main branches and three agencies in the country. Two other branches and five agencies were being opened in other cities in the coming years (BCD, 2000). The current branches and agencies of BCD are spread throughout the country and, for instance, include the main branch and agencies in the capital Tripoli, as well as in Benghazi, Tobruk, Elbeida, Sirt, Misurata, Derna, and Izzawia (BCD, 2008).

### ***3.2.1.1 Licensing of Banks***

In Libya, for a bank to operate, it needs to be licensed by way of a permit. This permit is provided by the Secretary for Finance of the Libyan government whose decision is based on the recommendations of the Governor of the CBL. However, for a bank to qualify for a permit, the following conditions must be fulfilled:

- The existence of the new bank is not inconsistent with the needs of public interest.
- The name of the bank must not create ambiguity with existing banks.

Regarding ownership, the bank is required to have Libyan joint stock ownership within an underwritten capital of at least Libyan Dinar (LD) 3 million, being distributed in nominal shares of less than 10 dinars each. This subscription should be allocated to members of the public of private entities of Libyan nationality. However, no individual should hold more than 1% of these allocated shares.

Foreign banks are allowed to operate in Libya, but are subject to strict regulations. They need to be approved by the CBL. An approval from the Central Bank of Libya is required before bank mergers or acquisitions or to cease trading.

### ***3.2.1.2 Bank of Commerce and Development Management***

The management team of the BCD is thought to be compatible, according to information in the BCD's website (BCD, 2011). A statement describes the bank as

having 'a strong management team'. However, weaknesses may appear in the management structure of the bank as some managers may be found to be responsible for more than one position, for instance a Chairman also working as a General Manager, and that may contravene the management principle of division of labour.

The Rating Development Agency (2002) may look to the "Chairman/General manager as a widely respected person in and outside of the bank". In each branch, the bank has adequate internal controls and two internal control staff. According to Woldie and Dofan (2007), "there are 50 other managers out of a total of 186 employees, who are signatories". That is an indication of the management team leading the bank and a number of branches in the country. This number is expected to increase as the bank increases its branches in different cities.

#### ***3.2.1.3 Profitability and Dividends***

The bank's profitability is strong and well managed, with the net income rising steadily from LD 0.2 million in 1995 to LD 5 million in 2002. The underlying profits on average assets are averaging around 3%, which is more than twice the industry average of 1.3%. The return on average core capital for the years 2000 to 2002 averages to over 30%, against an industry average of 20%.

Expenses are growing at a rate lower than revenue, particularly revenue generated from foreign currency sales. For example, in 2001, operating revenue as a percentage of assets was 5.6% for BCD as opposed to 2.5% for the [whole?] market, while that for expenses was -1.3 compared with the industry average of -1.0%. Risk for the bank is that it is still small and in case of failure, the government may decide to rescue it. However, if the current performance is sustained, the bank will soon be 'too big to fail.' The dividends paid to shareholders represent a 15% return on capital. This very high return is bound to keep the shareholders happy and they are more than likely to invest in the bank's expansion programmes.

#### ***3.2.1.4 Ownership***

As required by the regulators, there is a widely dispersed ownership pattern in BCD. According to Libyan laws, which are thought to be valid after the new government came into power in early 2011, the maximum share ownership of one enterprise is 5%



for a bank, while the maximum for individuals is 1%. As shown in Figure 3. 1, the bank is complying with this law. It is also interesting to note that even the largest five shareholders have in total only 26% of the bank's total shares. The major investors are also from different types of industry. The bank has a total of 1697 individual shareholders and 38 enterprise shareholders, and including the 50 founding investors.

<b>Company</b>	<b>Share (%)</b>
Libya Insurance Company	5
Islamic Call Society	5
Al-Tahaddi Construction Company	5
General Pipes Company	4
Libya Auto Club	2
<i>Safaa Construction Company</i>	<i>1</i>

Table 3. 1: proportion of major shareholders for BCD, source BCD (2011), table designed by this research

### ***3.2.1.5 Bank of Commerce and Development (BCD) and Online Banking***

BCD is the first bank in Libya to provide online banking services, offering current accounts as well as savings accounts. The bank also provides electronic magnetic cards such as Credit Card, VISA Credit Card, VISA Electron Credit Card, and Kanze Credit Card.

Although security is a very crucial element in Libyan banking as a whole, it is absolutely essential for online banking, especially in the current situation in the country at a transitional point of government. This may require the imposing of more security arrangements, with the involvement of international high security companies in addition to the existing online banking security systems. One example of the existing security is a secure login via Secure Socket Layer (SSL 128 bit) technology to enhance the transactional website of the BCD bank, allowing customers more accessibility to their account balances and statements at different times. For instance, they can retrieve a statement for one day or more up to one month. The BCD bank operates a 24/7/365 service to customers via the Internet, and BCD is the first and only bank (so far) in Libya to provide this online banking service (BCD, 2012).

Although BCD's online banking services appear more advanced worldwide in general and in particular in a developing country like Libya, it is still uncertain whether they are adequately protected by compatible online security. The level of

customers' privacy is also unknown and needs to be investigated, an issue that will be considered further in this research.

The first of its kind to be introduced in Libya, the BCD provides convenience for its customers, and assurance of the best services. Mobile banking has been recently offered as an add-on service as part of online banking. This service sends SMS to order banking transactions and services, such as (balance, exchange rates). This illustrates the advanced state of development that Libyan banking has reached so far, although this research will not be focusing on mobile banking services, as this is beyond the scope of the closer focus of this study on particular issues related to the subject of trust in online banking.

#### ***3.2.1.5 Bank of Commerce and Development (BCD) and Trust***

As mentioned above, Libyan banking has only recently introduced the technology of online banking and the Bank of Commerce and Development is the first bank in Libya to provide customers with this technology. Banks are introducing new services and making continuous efforts to improve existing services on a short-term basis; they have yet to determine when and how deep to plunge into online banking services (Najeb, 2009). However, the Bank of Commerce and Development provides an effective service to its customers with online web-based banking (BCD, 2008). Moreover, as already mentioned, mobile phone banking has also been established recently as an add-on service within the bank (BCD, 2012). In order to enhance security and gain customers' trust in and acceptance of online transactions, BCD is using a compatible security gateway to protect banking transactions online (OpenNet Initiative, 2006-2007).

### **3.3 Libyan Banking Transactions**

The Libyan banking system is still using a very basic manual method for banking transactions and technology has not yet found its way to the banking sector in general. Banks are still dealing with their customers in an inefficient, physical way (Touati, 2008). Basic transactions are available to customers such as account balances or simple payroll systems, while automatic teller machines (ATMs) are only available in Libyan banks in the main cities such as Tripoli and Benghazi, and interestingly, there

is no kind of networking between a bank and its branches. Customers have to wait in queues to cash a cheque from their accounts and they have to use a cheque book, which can only be used for cashing money from their own bank accounts (Touati, 2008). This alone should incur the need for a new technology solution. Online banking could be one of the likely channels that may need to be adopted by Libyan banking, because it adds another channel and provides customers with a new way of dealing with banking transactions. Privately-owned banks such as BCD already provide customers with the most up-to-date online banking technology. Local banks have just reached the stage of having websites with basic details, but have yet to attain the level of transactional online banking web pages (Abukhzam, 2010).

### **3.4 Libyan Banking and Online Banking**

The Libyan banking system started to liberalise the national banking system in the 1990s, when private owners were permitted to own banks, but substantial changes in the liberalisation of foreign trade in the banking system only began to happen after 2001, after a long period of time operating as national banks (Touati, 2008). Rating Developments Limited (2002) stated that “private sector customers no longer have to work through the large state-owned monopolies, and the commercial banks themselves are free to develop banking relationships abroad. They connected to SWIFT in 2001 and no longer needed to use the Libyan Arab Foreign Bank to make foreign payments”. This means that both the private banking sector and local banks are free to establish and develop relationships abroad and to seek international aid to provide their branches with updated banking technology systems.

Competition between the five State-Owned Commercial Banks (SOCBs) has yet to emerge, and there are a few privately-owned banks (Touati, 2006). The Bank of Commerce and Development was the first private bank in Libya to provide online banking technology. Moreover, the United Nations trade embargo has been partly suspended and foreign banks can now apply to open both the high street and high-tech branches in Libya as long as there is reciprocity in their home market (Touati, 2008).

### **3.5 Libyan Banking and Trust**

This section presents the issue of trust in Libyan banking in general and in online banking in particular. This section is divided into two subsections dealing with Libyan banking activities pre- and post-civil war which started when an announcement of a new revolution appeared in the social web pages, asking people to protest against government policies and other issues relating to human rights. This followed what has recently been called the ‘Arab Spring’ which started first in Tunisia and resulted in the collapse of the government in January 2011. Protests then broke out in Egypt and then in Libya in a different way as the country slipped into civil war. The Libyan economy was heavily impacted and banks, as a consequence, were also seriously affected (BBC News, 2012).

#### **3.5.1 Libyan Banking in Pre-civil War**

As mentioned earlier in chapter 1, the background to Libyan banking and as was reviewed in the previous sections in this chapter, Libyan banking was operating as wholly state-owned monopolies. By using all the reserves at the Central Bank of Libya, the Libyan government was controlling all banking activities (CBL, 2008). Development of the banking sector was very slow and many commercial banks were suffering from corruption and inadequate management (Touati, 2008). However, Libyan banking recovered to some extent after ten years of an international embargo which ended in 2003 when Libya agreed to stop developing weapons of mass destruction and to start dealing again with the international community after a long period of isolation.

Some researchers (Touati, 2008; CBL, 2008; Najeb, 2009; Human Development Report, 2009; Abukhzam, 2010) in reviewing the Libyan economy in general and banking in particular, have revealed several problems and difficulties that Libyan banking faced during the international embargo and up to the last four years which was the time leading up to civil war. The issue of trust in Libyan banking has not been mentioned in any of the research into the Libyan banking situation. However, even with on-going Libyan banking-related issues, there is now a more positive feeling among customers towards banking stability.

### **3.5.2 Libyan Banking in Post-civil War**

Banking systems in Libya during the year 2011 were equivocal, as many banks were not able to meet the huge demand of withdrawals simply because they ran out of liquidity. The Central Bank of Libya's governor, Mr Saddeq Elkaber, announced recently that "trust in the Libyan banking system hit rock bottom as the civil war started on February 2011 that ended Gaddafi's regime" (CentralBanking.com). Rumours were prevalent about thefts from both the central and commercial banks, while electricity supplies failed and technical issues led to disorder in domestic banks, the governor stated.

Understandably, citizens rushed to protect their money by taking it out of the banks. Mr Elkaber added that nearly 15 billion of Libyan currency (Dinars), which accounts to 90% of the money in Libyan banking circulation, was now being held outside of banks. This trend, he said, was having a huge impact on the entire country's economy. (CentralBanking.com). A report by Reuters on January 14<sup>th</sup> 2012 investigated the withdrawing of old currency from circulation in the banking system. The report stated that "Libya's central bank has started withdrawing old currency in an apparent attempt to restore liquidity into the country's banking system after it found that the vast majority of funds are being kept outside banks".

The immense implications for Libyan banking are now centred around the fact that an increasing percentage of money in the market outside the banks which is close to 15 billion Libyan Dinars (Reuters, 2012). Therefore, Libyan customers appear to no longer trust banks with their money. The next section will review the characteristics of Libyan banking customers.

### **3.6 Libyan Banking Customers**

Bank customers are those people who use or deal with a bank and who receive benefits from using the bank's services.

Libyan bank customers can be divided into two types as related to their online banking usage: (Najeb, 2009)

- 1- Users of online banking: those who have access to online banking provided by their bank branch (Bank of Commerce and Development and other banks who may start to provide such services)
- 2- Non-users: those who either do not know how to use the services if provided by their bank branch or who have no access to the service because their bank branch does not provide online banking or is even aware of such a service.

Libyan banking customers can be also divided into three types according to their educational, technological, Internet, and online banking knowledge as follows: (Human Development Report, 2009)

- Illiterate customers (this usually includes elderly people, aged over 60 years)
- Educated customers without computer knowledge (this group usually comprises customers aged 15-25)
- Educated customers with computer knowledge but who have no access to online banking (this group usually includes customers aged 25-46)

Educated customers with computer knowledge and who have access to online banking (this group of customers may be the same as the previous group, aged 25-46).

Table 3. 2 below shows human development-related statistical comparisons illustrating how Libyan people's recent development compares to other countries regionally and worldwide countries:

<b>Human Poverty Index (HPI-1)</b>	<b>Probability of not surviving to age 40 (%)</b>	<b>Adult illiteracy rate (%aged 15 and above)</b>
1. Czech Republic (1.5)	1. Hong Kong, China (SAR) (1.4)	1. Georgia (0.0)
58. Mongolia (12.7)	31. Bulgaria (3.8)	83. Mauritius (12.6)
59. Iran (Islamic Republic of) (12.8)	32. Syrian Arab Republic (3.9)	84. Equatorial Guinea (13.0)
60. Libyan Arab Jamahiriya (13.4)	33. Libyan Arab Jamahiriya (4.0)	85. Libyan Arab Jamahiriya (13.2)
61. Honduras (13.7)	34. Tunisia (4.1)	86. Gabon (13.8)

Table 3. 2: Statistical comparisons illustrating Libyan people's Recent Development

The table above, as included in the Human Development Report 2009, shows that Libya is number 60 in the world in terms of poverty, with 13.4 percent per 5 million population. This may indicate that there is a significant number of people who may

be considered ineligible in terms of online banking development. Yet significantly, the adult illiteracy rate for those aged 15 and above is not as bad in the context of the fast growing population and the country's rate of development. Development includes different aspects such as education, IT, banking systems and human development (CBL, 2008). Human development in terms of dealing with updated technologies is highly important, especially when the country starts to adopt new technology like online banking. The next step is to establish how ready Libyan customers are for technology.

The figures above may have been in a condition of change by the end of 2011, as the country fell into civil war. The UN also imposed a new set of sanctions against Libya from February 2011 (UN News Centre, 2011). Hence the Libyan economy was to be widely affected, and the pace of banking and technology development was to be arrested (BBC News, 2012). Banks were losing communication with their customers and trust in the banking industry as a consequence was seriously affected.

### **3.6.1 Technology Readiness**

As shown in the previous section, banking customers in Libya fall into different educational categories. This subsection attempts to consider which customers are more likely to be ready to adopt new technology products and/or services (online banking). Previous researchers have defined and examined technology readiness in many ways. For instance, Parasuraman, 2000 defined the term 'technology readiness' as referring to people's propensity to embrace and use new technologies to accomplish goals in home life and at work (Parasuraman, 2000). Parasuraman sees it as "an overall state of mind resulting from mental enablers and inhibitors that collectively determine a person's tendency to use new technologies". It is important to note here that technology readiness is not a measure of technology competency but an overall state of mind. Hence, "it is a combination of technology-related beliefs that collectively determine a person's tendency to interact with technology-based products and services" (Parasuraman and Colby, 2001).

Customers' use of online banking requires acceptance of a new technology and trust, which might be slightly difficult because it involves the changing of behavioural patterns. (Parasuraman, 2000) developed a multiple-item scale (Technology

Readiness of Index: TRI) to measure the technology readiness of individuals. The reason for including a technology readiness construct in the present study is the linkage between TRI scores and technology-related behaviours.

Research by Parasuraman and Colby, 2001 indicated that the TRI can distinguish between (1) users and non-users of high technology services; (2) the two groups that are more strongly accepting of more complex or more advanced technologies; (3) groups of users for whom discomfort and insecurity are likely to be pronounced. They further suggested that, by examining the TRI scores of customers, a variety of questions relevant to technology strategy could be answered. For instance, what is the overall level of readiness of customers to interact with high technology products and services? Are there distinct segments in the customer base that differ in terms of technology readiness? If so, what are the relative sizes of those segments and do they have any particular demographic, cultural, level of education, or purchasing characteristics? Thus the institution can make a decision regarding the extent to which technology-based systems can be used, the appropriate type of these systems, the pace of implementation, and the type of customer support required.

In the context of online banking, banks can use the customers' TRI scores as a basis for grouping them into segments so that the marketing and awareness campaigns can be tailored to the different segments' characteristics with a view to increasing online banking adoption. In the current study, TRI is used as a starting point to estimate customers' technology acceptance so that online banking may be adopted and engender trust quickly and efficiently.

### **3.6.2 The Five Types of Technology Customers**

The first part of this section shows technology readiness in a way that indicates people's propensity to accept and use new technologies. There is a more explanatory statement of five types of technology customers. Parasurman and Colby (2001) studied in their research the target markets for technologically-based products. They considered Personal Digital Assistants (PDAs) and specified five categories of customers' technology readiness (Table 3. 3). These five categories presented in Table 3. 3 are (1) explorers, a relatively easy group to attract when a new technology product or service is introduced and the first to adopt technology because it holds no



fears for them (high on optimism and innovativeness and low on discomfort and insecurity); (2) pioneers, who share the optimism and innovative beliefs of explorers, but who also feel some discomfort and insecurity (high on optimism and innovativeness but above average on discomfort and insecurity); (3) sceptics, who tend to be dispassionate about technology but also have few inhibitions (low on optimism and innovativeness); (4) paranoids, who may find technology interesting, but at the same time exhibit high degrees of discomfort and insecurity (high on optimism about technology but not very innovative); (5) laggards, who possess few motivations toward technology and typically would be the last group to adopt a new technology service or product (low on optimism and innovativeness but high on discomfort and insecurity).

Category	Drivers		Inhibitors	
	Optimism	Innovativeness	Discomfort	Insecurity
Explorers	High	High	Low	Low
Pioneers	High	High	High	High
Sceptics	Low	Low	Low	Low
Paranoids	High	Low	High	High
Laggards	Low	Low	High	High

Table 3. 3: Categories of customers' technology readiness

Parasurman and Colby (2001) found that a respondent's score on the technology readiness index is related to their demographic characteristics and use of technology-based products and services. However, they have not developed and tested a model in which technology readiness is a core construct. This study will be reviewing the technology readiness of Libyan customers as related to their demographic characteristics and trust and acceptance of online banking technology.

### 3.7 Summary and Key Findings

- Privately-owned banks such as BCD already provide customers with the most up-to-date online banking technology.
- Foreign banks can apply to open high-tech branches in Libya as in their home market.

1- Trust in Libyan banking

- Trust in Libyan banking pre-civil war: (with on-going Libyan banking-related issues, there is a positive feeling among customers towards banking stability).
- Libyan banking post-civil war: (the immense implications for Libyan banking now are centred around the fact that an increasing percentage of money in the market is outside the banks and customers seem to no longer trust their banks).

## 2- Libyan banking customers

- Libyan bank customers may be divided into two categories as follows:
  - According to their usage, as users and non-users
  - According to their education, as (illiterate customers, educated customers without computer knowledge), technology, Internet, and online banking knowledge.
- Technology readiness is a measure of a person's tendency to interact with technology-based products.
- In the context of online banking, banks can use customers' TRI scores as a basis for grouping them into segments so that marketing and awareness campaigns can be tailored to particular characteristics.
- The five types of technology customers are: Explorers, Pioneers, Sceptics, Paranoids, and Laggards. The five categories of customers' technology readiness can be used by the bank to predict customer behaviour and thereby how to deal effectively with them.

In this chapter, Libyan banking infrastructure was discussed and private ownership was described. The Bank of Commerce and Development (BCD) in terms of online banking and trust is clearly very much involved here. Transactions in Libyan banking were explained. Online banking in Libya and the issue of trust in Libyan banking was extensively examined, including comparison and assessment of the situation prevailing both pre- and post-civil war. Libyan banking customers, technology readiness and the five types of technology customers were defined, and highlighting the influence of demographic and knowledge factors in relation to dealing with a new technology. The following list highlights some of the important key findings from the literature:

### 3- Libyan Banking System Infrastructure

The Libyan banking infrastructure as presented in the early sections contains two different types of banking in terms of ownership, both of which are under the authority or control of the Central Bank of Libya (CBL). The two types of banks are:

- Local or government-owned banks which are divided into Specialist banks and Commercial banks (Table 3. 1), and
- Privately-owned banks which includes many banks and branches throughout the country (Table 3. 1).

### 4- Private ownership

- Private ownership has become more common in the Libyan banking system in recent decades after a long period of time operating under the monopoly of the government.
- The Central Bank of Libya controls the privately-owned banks by keeping a percentage reserve of their capital.

### 5- The Bank of Commerce and Development (BCD)

- As part of the Libyan banking system, the Bank of Commerce and Development (BCD) is a wholly private commercial bank.
- The BCD is the first bank in Libya to provide online banking technology as an add-on service to its customers.
- Trust in and acceptance of online banking services provided by BCD to its customers is still equivocal and requires to be investigated in the empirical research in this study.

### 6- Libyan banking transactions

- Basic transactions are available to Libyan customers such as account balances or simple payroll systems.
- Customers have to wait in queues to cash a cheque from their accounts and have to use a cheque book, which can only be used for cashing money from their own bank accounts.
- Local banks have only just launched websites with basic details, but have yet to attain the level of having transactional online banking web pages.

### 7- Online banking in Libya

- Both the private banking sector and local banks are now free to establish and develop online banking technology.

## **Chapter 4: Research Methodology**

## 4.1 Introduction

A research methodology is a systematic and orderly approach taken towards the collection and analysis of data (Collis and Hussey, 2003). This chapter represents the link between the background material of the three previous chapters and the subsequent parts of this research, which are, Specification of Key Factors affecting trust and acceptance of online banking by Libyan bank customers, Descriptive and Statistical Analysis and applying those analyses to reform the theoretical framework. The purpose of this chapter is to describe the research paradigm, design and methods used for achieving the objectives of the research (Figure 4. 1). Following this brief introduction, the next part of this chapter presents the research paradigm. This includes the methodological preferences and the main research tools used for collecting and analysing the data. The final section is a short summary.

To accomplish the main aim of the study, a survey questionnaire has been chosen as a primary research method for this study. This is because questionnaire survey enables access to a wider spectrum of views and opinions, as responses are predefined, specific or limited by the use of a limited range of predefined answers from which the respondent simply has to choose (Likert scale). An interview was also conducted as a secondary research method and also for validation purposes.

This study primarily targets customers of the Bank of Commerce and Development (BCD) in Libya, including customers who are currently employed in the BCD. The data was gathered by means of a drop and collect survey during the third quarter of 2010. The interviews conducted targeted the BCD's customers, interested researchers as well as experts in the fields of IT and banking and finance in the Libyan banking industry.

The questionnaire process was carried out in two steps. Firstly, a sample from the bank was identified from various sources that focus on banking and finance activities (see chapter 3 for more explanation). Secondly, because of the researcher's limited time and budget, and experience of Libyan firms' unwillingness to take part in telephone\postal\email surveys due to the instability of the Libyan situation, unreliable mailing and postal systems, the current research data was collected by

using a drop and collect survey. This technique is less expensive and consumes less time than other methods such as focus groups. Therefore, researchers usually use this method of data collection in Libya (Hunaiti *et al.*, 2009). Figure 4. 1 shows the sequence of research methodology stages discussed in this chapter.

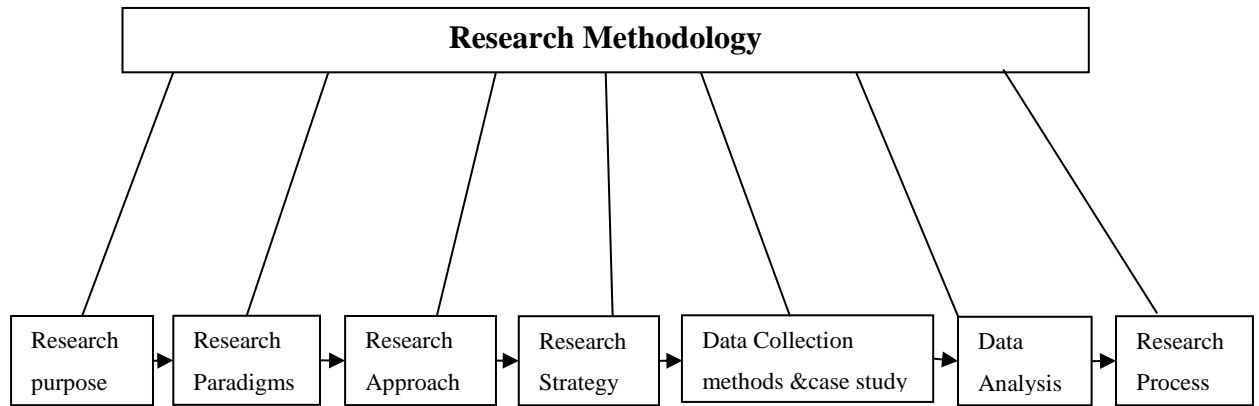


Figure 4. 1: Schematic presentation of Research Methodology

## 4.2 Research Purpose

The purpose of this research is to determine which factors influence customers' trust and acceptance of online banking technology in Libya. In chapter (2) Literature on Online Banking, Challenges Affecting Customer Trust and Acceptance, and Theories of Technology Adoption for Online Banking, including best practice use of online banking adoption theories for gaining customer trust and acceptance was reviewed, while literature related to Libyan online banking was reviewed in chapter (3). Key findings from the literature were formulated to identify factors that may be affecting the trust and acceptance of online banking in the Libyan context, using data collected from a sample of the Libyan population (Libyan bank customers of BCD).

As mentioned in earlier chapters, limited studies have been carried out on the trust and acceptance of online banking technology in Libya and, therefore, this issue in the Libyan context remains unclear. This study attempts to provide a better understanding of the current situation regarding online banking trust and acceptance in Libya. This, therefore, is an exploratory study which is appropriate when a problem is difficult to demarcate, when there exists no or limited knowledge on the subject area and no clear apprehension of what the model should be used for in gaining a better understanding of the problem (Hussey & Hussey, 1997).

As identified by Cresswell (2003), the following processes make up the empirical research:

- Problem identification
- Existing literature review
- Specifying the purpose of the research
- Data collection
- Data analysis and interpretation
- Evaluation and reporting.

Thus identifying the research problem is important as it helps in identifying the research goal which dictates the subsequent data gathering activities and how they are analysed. It is important, as well, to define the relationship between the research problem and goal to help in clarifying the research approaches and methodology. The following table (Table 4. 1) illustrates the relationship between the topic under research, the research problem, the research goal and the research questions (adapted from Cresswell, 2003).

Artefact	Description/circumstance
Topic	Research Topic: Improving The Libyan customers' Trust and acceptance for online banking technology
Research Problem	In Libya, there are many challenges which confront the bank customers' in the online banking technology and make it harder to trust and accept online banking technology
aim	This research aims to define and examine factors for effective implementation of online banking in order to enhance the trust and acceptance in online banking technology in Libya
Research Question/s	The main research question is, how effectively can the Libyan bank customers' trust of online banking be improved?

Table 4. 1: The relationship among the topic under research, the research problem, the research goal and the research questions

### 4.3 Research Paradigms (Philosophy)

The term 'paradigm' refers to the progress of scientific practice based on people's philosophies and assumptions about the world and the nature of knowledge; in this context, about how research should be conducted (Collis and Hussey, 2003).



Selecting the research methodology appropriate to a research is very important so that the research problem and questions can be fully explored (Yin, 2003). Correct research methodology for any research provides the right research philosophy, approach and techniques adopted for each research topic.

There are two main views on the nature of knowledge: the positivism paradigm and the phenomenological view (Collis and Hussey, 2003). In between these two views, there is pragmatic philosophy which shares characteristics of the two views. Some researchers call it a mixed approach (Johnson and Onwuegbuzie, 2004). The goal of mixed philosophy is not to replace either of these paradigms but rather to draw from the strengths and minimise the weaknesses of both in a single research philosophy and across studies. Logical positivism uses quantitative and experimental methods to test hypothetical-deductive generalisations. In contrast, phenomenological inquiry uses qualitative and naturalistic approaches to inductively and holistically understand human experience in the context of a specific setting (Amaratunga *et al.*, 2002). The positivist approach seeks the facts or causes of social phenomena, with little regard to the subjective state of the individual. Phenomenology is concerned with understanding human behaviour.

#### **4.3.1 Ontological, Epistemological and Methodological Stand of this Research**

Each philosophical strand of the research is explained and also listed in Table 4. 2.

**The Ontological position** of this study is that reality exists outside a researcher's mind. As shown in Table 4. 2 below, this research is based on the belief that there exists a real physical world beyond our knowledge and comprehension. But there also exists a social world that is being constructed, shaped and influenced by our life experience, knowledge and desires. Nevertheless, this study takes the position that one can only apprehend reality to a limited extent; one can never obtain the entire picture of a studied phenomenon. This study agrees that all types of research involve some degree of subjectivity (Hammersley 1992). Hence, the world can be studied to a certain extent and generalisations can be made with a degree of probability.

Contrary to the belief of interpretivism, this study does not reject the existence of a real world simply because the models about it are created as a way to simplify its complexity. One defines their factors and puts them into use in the social world through persuaders and concepts and in this way makes them 'real' or mean something to reality. This study also distances itself from the radical interpretivist perspective in that truth is a matter of convention and argumentation and not of correspondence with a reality. The observer in this position is seen as part of the reality, with the possibility of defining how the reality is scoped, studied, and influenced at the same time.

**The Epistemological position** of the present study, as presented in Table 4. 2, is situated between the positivist and interpretivist paradigms. Epistemology is much more concerned with what is 'known' and the meaning of 'known' and the relationship between the researcher and the research. This study can be considered as normative; it is not concerned with knowledge creation for its own sake, but as an instrumental means of contributing to a better understanding of customers' behaviour towards the trust and acceptance of online banking technology from a Libyan perspective. In this respect, a middle ground of realism might be the suitable choice.

**The Methodological position** of this research is based on the use of the case study with more emphasis on quantitative and qualitative methods, as shown in Table 4. 2. Quantitative research involves precision and can yield statistically significant results, although their meaning and practical validity are open to question (Smith and Louis, 1986). Quantitative methods can also provide a representation of a large sample and are seen to have considerable relevance to policy makers.

<b>Positivism</b> ← ..... → <b>Phenomenology</b>				
<b>Orientation</b>	<b>Positivism</b>	<b>Post Positivism (realism)</b>	<b>Critical Theory</b>	<b>Interpretivism /Constructivism</b>
<b>Ontology</b>	In which an understandable reality is assumed to exist, driven by immutable natural laws. True nature of reality can only be obtained by testing theories about actual objects, processes or structures in real world.	Critical realism- “real” reality but only imperfectly and probabilistically apprehendable	Historical realism- social reality is historically constituted; human being, organisations, and societies are not confined to existing in a particular state.	Relativism- local and specific constructed realities; the social world is produced and reinforced by human through their action and interaction.
<b>Epistemology</b>	Dualist/Objectivist; verification of hypothesis through rigorous empirical testing; search for universal laws of principles; tight coupling among explanations, predictions and control.	Modified dualist/objectivist; critical tradition/ community; findings probably true.	Transactional/subjectivist; knowledge is grounded in social and historical practices; knowledge is generated/justified by a critical evaluation of social systems in the context of researchers’ theoretical framework adopted to conduct research.	Transactional/subjectivist; understanding of the social world from the participants’ perspective; through interpretation of their meanings and actions; researchers’ prior assumptions, beliefs, values, and interests always intervene to shape their investigations.
<b>Methodology</b>	Hypothetical-deductive experiments/manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/manipulative; falsification of hypotheses; may include quantitative methods	Dialogic/dialectical; critical ethnography; interpretive case study; action research	Hermeneutical/dialectical; interpretive case study; action research; holistic ethnography

Table 4. 2: Ontological, Epistemological and Methodological stand of this Research

The present study relies on quantitative and qualitative methods (literature review, survey questionnaire). Data was collected by means of both a drop and collect survey and semi-structured interviews. Researchers (Easterby-Smith *et al.*, 1991; Hussey and Hussey, 1997; Saunders *et al.*, 2000) have highlighted the main elements of this choice involving research philosophy. In particular, Easterby-Smith *et al.*, (1991) offer the following key features of the two philosophy paradigm alternatives.

### 4.3.2 Positivism

Historically, the positivism paradigm in social sciences is based on the approach used in the natural sciences such as biology, botany and physics (Table 4. 3). The positivism approach seeks the facts or causes of social phenomena with little regard to the subjective state of the facts or the individual (Hussey and Hussy, 1997; Taylor and Bogdan, 1984).

	<b>Positivism paradigm</b>	<b>Phenomenology paradigm</b>
Basic beliefs	Observer is independent	Observer is part of what observed
	The world is external and objective	The world is socially constructed and subjective
	Science is value-free	Science is derived by human interests
Researcher should	Focus on facts	Focus on meaning
	Look for causality and fundamental laws	Try to understand what is happening
	Reduce phenomenon to simplest elements	Look at the totality of each situation
	Formulate hypotheses and then test them	Develop ideas through induction from data
Preferred methods include	Operationalising concepts so that they can be measured	Using multiple methods to establish different views of phenomena
Sample	Taking large samples	Small samples investigated in depth or over time

Table 4. 3: Alternative terms for the main research paradigms (Source: Easterby-Smith *et al.*, 1991)

### 4.3.3 Phenomenology

As presented in Table 4. 3, phenomenology is the science of phenomena. A phenomenon is a fact or occurrence that appears or is perceived, especially one of which the cause is in question. Therefore, the phenomenological paradigm is

concerned with understanding a social phenomenon or human behaviour from the participant’s own frame of reference (Hussey and Hussy, 1997; Taylor and Bogdan, 1984).

The positivism paradigm will be adopted in this research, in the sense that the ‘truth’ is out there to be discovered (by the researcher). Interpretivism is an epistemological position that separates the objects of natural science from the actors, the researchers/observers somehow constructing their own ‘truth’ in viewing the world. Thus, a positivist believes that the reality can be observed, studied and even ‘modelled’, whilst an interpretivist believes that the reality can only be interpreted (Table 4. 3).

#### 4.4 Research Approach

The two main research methodological approaches are deductive and inductive. Saunders *et al.* (2000) summarise the main differences between them as shown in Table 4. 3.

Deductive Approach	Inductive Approach
<ul style="list-style-type: none"> <li>• Scientific principles;</li> <li>• Moving from theory to data;</li> <li>• The need to explain causal relationships between variables;</li> <li>• The application of controls to ensure validity of data;</li> <li>• The operationalization of concepts to ensure clarity of definition;</li> <li>• A highly structured approach</li> <li>• Research independence of what is being researched;</li> <li>• The necessity to select samples of sufficient size in order to generalise conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>• Gaining an understanding of the meaning humans attach to events;</li> <li>• A close understanding of the research context;</li> <li>• The collection of qualitative data;</li> <li>• A more flexible structure to permit changes of research emphasis as the research progresses;</li> <li>• A realisation that the research is part of the research process;</li> <li>• Less concern with the need to generalise.</li> </ul>

Table 4. 4: Differences between Deductive and Inductive Research

The inductive approach is in general an inquiry to understand a social or human problem from multiple perspectives (Yin, 1994). Inductive research (building theory) is used when a researcher would collect data and develop a theory as a result of data analysis (Saunders *et al.*, 2000). It is a study in which theory is developed from the

observation of empirical reality; thus general inferences are induced from particular instances. Since it involves moving from individual observation to statements of general patterns or laws, it is referred to as moving from the specific to the general (Collis and Hussey, 2003). Inductive research is moving from specific observations to broader generalization and theories, while deductive research (testing theory) is used to develop a theory and hypothesis and design a research strategy to test that hypothesis (Saunders *et al.* 2000).

Moreover, it is a study in which a conceptual and theoretical structure is developed and then tested by empirical observation; thus particular instances are deduced from general inferences (Table 4. 4). The deductive method is referred to as moving from the general to the particular (Collis and Hussey, 2003). Deductive reasoning works from the more general to the more specific. Sometimes this is informally called the ‘top-down’ approach (William, 2006).

One of the key differences between the deductive and inductive approaches as showed above in Table 4. 4 is how existing literature and theory are used to guide the research. As discussed above, the deductive approach is designed to test theory; therefore, the literature is used to identify questions and/or interrelationships before data are collected (Creswell, 2003).

Deductive approach has been selected for this research. In this research project, a theoretical basis of Libyan online banking trust and acceptance is first derived from the existing literature and then surveyed by means of a questionnaire survey. A total of 119 people, including customers and employees of the Libyan Bank of Commerce and Development (BCD), were questioned through the questionnaire survey. For the purpose of validity and credibility, a group of seven, including BCD customers, interested researchers, IT experts, and senior management of the CBL were interviewed.

## **4.5 Research Strategy**

According to Yin (2003), when to use which research strategy depends upon:

- The type of research question;

- The control of the research over behavioural events;
- The focus on a current as opposed to historical phenomenon.

Yin also noted that a research strategy includes experiment, survey, archival analysis, history and case study.

This research is adopting a case study centred around the Bank of Commerce and Development in Libya, and this will help in implementing the research objectives in order to achieve the research goal.

#### **4.5.1 The Case Study Strategy**

A case study strategy has been used for the data collection in order to gain insights into investigation of the main topic (Yin, 1994). Case study is an ideal methodology when a holistic, in-depth investigation is needed (Saunders *et al.*, 2000). Case studies are used when the researcher is intending to support his/her argument by an in-depth analysis of a person, a group of persons, an organisation or a particular project (Naoum, 2004). Case studies are designed to elicit details from the viewpoint of the participants by using single or multiple sources of data (Tellis, 1997). There are three types of case study designs (Naom, 2004):

1. The descriptive case study, which is similar to the concept of the descriptive survey except it is applied to a detailed case(s);
2. The analytical case study, which is similar to the concept of the analytical survey except it is applied to a detailed case(s)
3. The explanatory case study, which is the theoretical approach to the problem.

Case studies have been used in various investigations, particularly in sociological studies. When these procedures are followed, the researcher will be following methods as well developed and tested as any in the scientific field. Whether the study is experimental or quasi-experimental, the data collection and analysis methods are known to obscure some details (Stake, 1995).

#### **4.5.2 Justification for Choice of the Case Study Bank**

The case study used for this research is the Bank of Commerce and Development (BCD) in Libya. The Bank of Commerce and Development (BCD) is Libyan based,

and concentrates on providing customers with commercial and development banking services in Libya. Banking services available include current accounts, money transfers, online banking, mobile phone banking, pre-payment cards, as well as provision of development finance to other banks in Libya, and international banking services. BCD's Headquarters are in Tripoli and there are several branches and agencies around the country (see also chapter (3) for more details about BCD) (BCD, 2007). The reasons for selecting this particular case are discussed below:

- The BCD is a unique bank in Libya.
- The bank is widely recognised as being amongst those with the largest number of banking services in Libya and using the most developed systems.
- The BCD was the first bank in Libya to introduce both electronic banking in general and online banking in particular. Although it is a recently established commercial bank, it has become one of the largest banks in the country as it is operating in every city and provides other banks with updated banking systems such as ATMs. Saunders *et al.* (2003) pointed out that “the single case may in fact encompass a number of settings, where for example it involves a study in a large organisation with sites across the country or even around the world”.
- The BCD was chosen because its headquarters are situated in Tripoli, which is the capital of Libya. This feature allowed the researcher to contact them easily and meant a considerable reduction in travel time and costs.

## **4.6 Data Collection Methods**

The term ‘method’ refers to the tools that are used in collecting and analysing data. This section outlines the research methods employed for this study. The choice of research methods follows the decisions involved in selecting the research strategy based on the ontological and epistemological and methodological position of the current research, as outlined in the previous sections and shown clearly in Figure 4.1. Data may be gathered from secondary and primary sources, both of which have been extensively used in social and business research. Both methods of data collection were adopted in this study, as suggested by Malhotra and Birks (2006), who strongly recommend such a strategy. Primary data refers to the collection of data through



questionnaires, interviews, direct observation, participant-observation, and focus groups (Collis and Hussy, 2003; Saunders *et al.*, 2003). As can be seen in Figure 4. 2, the methods from left to right become more quantitative and use more quantitative techniques and *vice versa*. Historical review, group discussions and case studies are mostly qualitative research methods. Qualitative techniques use, for example, conversation and in-depth semi-structured interviews (Ghauri *et al.*, 1995). Secondary data refers to information which already exists, such as archival records Yin (1994). Secondary data source is explained in the following subsections.

#### **4.6.1 Secondary Data**

Secondary data refers to all sources of information that are available before a research project is undertaken. Sekaran (2003: 63) mentions that: “[...] *Secondary data can be extracted from various sources, including books and periodicals, government publications and information sources, the media, census, stock market reports, and mechanised and electronic information of all kinds such as the bar code, scanner data, and the internet. Secondary data can be culled from the historical records of the organisation itself, from information already available on the internet, or from external sources such as the ones mentioned above, either through the internet or otherwise*”. In this study, secondary data has been obtained from recently published research and articles on online banking technology and trust and acceptance. This involved a review of the literature and the most recent publications related to economic indicators in general, and to the banking sector in particular.

Literature relating to online banking technology in Libya has been featured specifically, because of the availability of data collection sources, unpublished data, for instance, researches and other relevant material from the general websites in Libya, the webpage of Central Bank of Libya, and the webpage of Bank of Commerce and Development. The World Bank and the IMF, additionally, are useful sources of data relating not only to the Libyan context, but also to the market and emerging economic indicators. Saunders *et al.* (2007) explain that using secondary data from within organisations may additionally have the advantage that, because the information has already been collected, its use provides an unobtrusive means of research.

### 4.6.2 Primary Data

Primary data, on the other hand, is gathered personally from subjects by the researcher; this can be done in various ways, utilising different (quantitative and qualitative) key methods (Silverman, 2001). As indicated previously, this study has adopted a quantitative approach to the research design and data collection activities, and a quantitative method within the overall framework of a single case study (Libya, Bank of Commerce and Development) that depends upon the collection of both primary and secondary data. However, within that design, a series of smaller case studies was used concerning progress in other countries since introducing online banking technology, thereby providing a comprehensive data bundle. A questionnaire survey was used to collect information from customers of Bank of Commerce and Development (BCD) in Libya, relating to their views about the trust and acceptance of online banking technology.

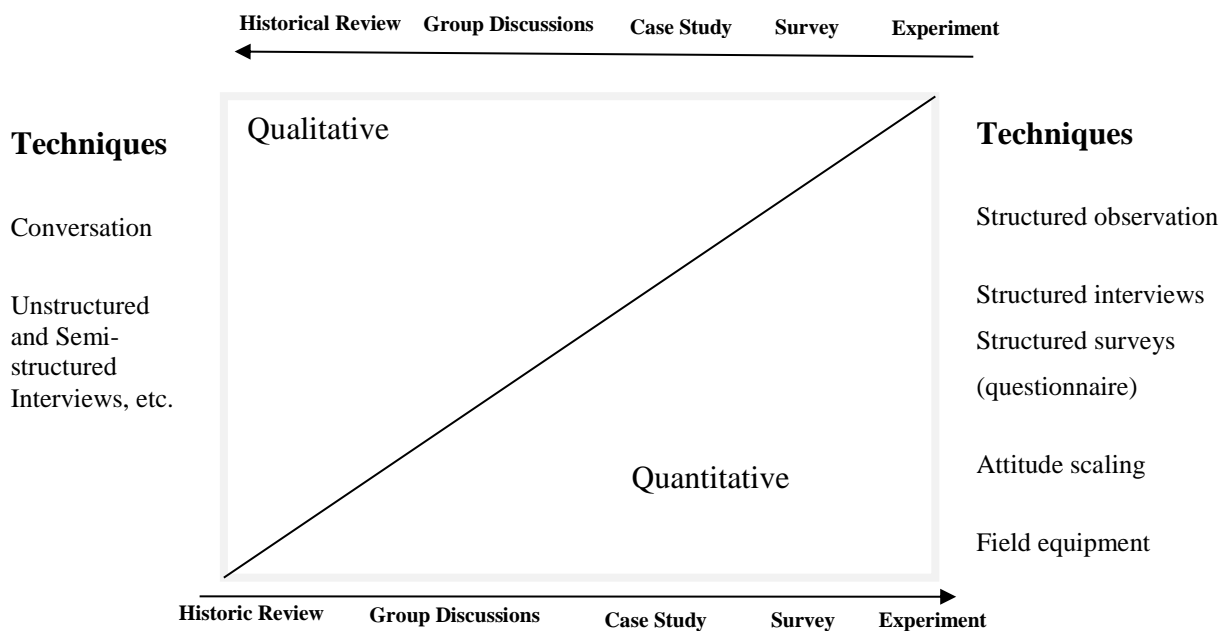


Figure 4. 2: Quantitative and Qualitative methods and techniques

### 4.6.3 Quantitative, Qualitative and Multi-method Research Methods

This section describes different types of data collection and data analysis techniques. Quantitative research is objective in nature and concentrates on measuring

phenomena. Therefore, a quantitative approach involves collecting and analysing mathematical data and applying statistical tests (Figure 4. 2). On the other hand, a qualitative approach is more subjective in nature and involves investigating and reflecting on perceptions in order to gain an understanding of social and human activities (Collis & Hussey, 2003).

Naoum, (2004) defines quantitative research as an inquiry into a social or human problem, based on testing a hypothesis or a theory composed of variables, measured with numbers, and analysed with statistical procedures, in order to determine whether the hypothesis or the theory held is true. Therefore, a quantitative approach involves collecting and analysing numerical data and applying statistical tests (Collis & Hussey, 2003). However, quantitative data is not abstract, they are hard and reliable; they measure tangible, countable, sensible features of the world (Naoum, 2004).

However, qualitative research is more subjective. Taylor and Bogdan (1984) state that “the phrase ‘qualitative methodology’ refers in the broadest sense to research that produces descriptive data: people’s own written or spoken words and observable behaviour”. Researchers use qualitative research when they seek to understand the context of the study matter in terms of how and why it occurs (Cassell and Symon, 1994) and when the study phenomena are emergent rather than prefigured (Creswell, 2003). Ghauri, *et al.*, (1995) consider that qualitative research can be used to do research on behaviour, events, organisational functioning, social environments, interaction and relationships. Data of these studies may be quantified, but the analysis itself is qualitative. In addition, Ghauri suggests that techniques such as structured, semi-structured or unstructured interviews, surveys and observations are normally used in business studies.

Multi-method research is a ‘mix and match’ of quantitative and qualitative research and both can be used in the same study. Data collection incorporates both numerical data and text data so that the interpretation is both quantitative and qualitative (Creswell, 2003). Saunders, *et al.* (2000) identified the major advantages of utilising multi-methods in the same study. First, different objectives in the study can use different methods. The second advantage is that “it enables triangulation to take place.

Triangulation refers to the use of different data collection methods within one study in order to ensure that the data are telling you what you think they are telling you”.

<b>Quantitative research method:</b>	<b>Qualitative research method:</b>	<b>Mixed methods research methods:</b>
Predetermined;	Emerging methods;	Both Predetermined and Emerging methods;
Instrument based questions;	Open-ended questions interview data;	Both open-and closed ended questions;
Performance-data, attitude-data, observational-data census data;	Interview-data, observation-data, document-data and audio-visual data	Multiple forms of data drawing on all possibilities;
Statistical analysis	Text and image analysis	Statistical and text analysis

Table 4. 5: Comparison between quantitative, qualitative and mixed methods of a research

#### 4.6.4 Comparing Quantitative and Qualitative Research

The difference between qualitative research and quantitative research, as presented in Table 4. 6, is like the difference between counting the shape and types of design of a sample of a house as against living in them and feeling the environment. The difference between each one may be in some way quantifiable, but such assessment will not convey the importance and the special impact of some over others (Naoum, 2004). Moreover, it is not just a question of quantification, but also a reflection of a different perspective on knowledge and research objectives.

<b>Quantitative Method</b>	<b>Qualitative Method</b>
Emphasis on testing and verification	Emphasis on understanding;
Focus on facts and /or reasons of social events	Focus on understanding from respondent’s/ informant’s point of view;
Logical and critical approach	Interpretation and rational approach ;
Controlled measurement	Observations and measurements in natural settings
Objective ‘outside view’ distant from data	Subjective ‘inside view’ and closeness to data;
Hypothetical-deductive focus on hypothesis testing	Explorative orientation;
Result oriented	Process oriented;
Particularistic and analytical	Holistic perspective;
Generalisation by population membership	Generalisation by comparison of properties and contexts of individual organism

Table 4. 6: Differences between quantitative and qualitative research methods

#### **4.6.5 Data Collection Method Selected for this Study**

In this study, the drop and collect questionnaire survey was employed as the main empirical method for data collection because questionnaires can be adapted to examine and explain relationships between variables (Saunders *et al.* 2000). Moreover, Cooper and Emory (1995) indicate that drop and collect questionnaires have several advantages, such as giving time to the respondents so they can think about the questions, they are perceived as more anonymous, and they allow contact with otherwise inaccessible respondents.

In addition, there were several other reasons why this study utilises a drop and collect questionnaire survey, namely, (1) due to the limited time available for data collection, drop and collect questionnaires save time; (2) a wide geographic area needed to be covered; and (3) the cost of a drop and collect questionnaire survey is lower than other types of surveys such as a postal survey.

Initially, the option of internet survey was considered as they are lower in cost than postal questionnaires. However, the idea was dropped because at the time of data collection a large number of Libyan customers were not able to use their emails due to problems linked to the Internet connection in Libya.

#### **4.6.6 Questionnaire Review and Development Process**

##### **a- Questionnaire Review**

In the survey these are areas incorporated in the questionnaire. These are briefly introduced below and detail questionnaire itself can be found in appendix (B) and the detail development of the questionnaire is in chapter 5 (section 5.4 pp. 102). Chapter 6 (section 6.2 pp. 114) includes the detailed statistical analysis of the survey findings

##### Theme 1: Banking channels:

Banking channels refer to the methods of banking and services that customers can use to conduct their banking transactions and obtain information using electronic communication channels. Banking channels looked at in this study including; online banking, ATMs, branch banking, and telephone banking.

### Theme 2: Relative Advantages and ease of use:

This factor investigates online banking advantages including; the advantage service availability which is 7/24 bank services and anywhere, the cost of online transactions, and the accuracy of online banking transactions.

The usage of online banking website perceived through two items in the questionnaire aiming to look at the mental effort and understanding the procedures of online banking technology. Transactions Performance and confidence of using online banking website are also merged to this them in order to cover the perception of online banking usage.

### Theme 3: Intention

The intention towards online banking technology looked at from three angles, first using online banking for communication purposes and for most of customers' banking needs, second, customers' beliefs regarding benefits and simplicity of the technology which may present a great impact on customers' intention towards online banking in Libyan banking industry. Finally, the access that online banking can gives to customers to enable them to conduct banking transactions more quickly, make the best of their times and to manage their financial resources more effectively.

### Theme 4: Reputation Issues

This factor looked at from the bases of customers' perception of the influence of their friends and family in their behaviour and way of using online banking and how important are they to support the use of online banking.

### Theme 5: Transactional issues

The issues of online banking transactions looked at from two aspects, transactions related information and how they dealt with before and during an online banking session.

### Theme 6: Perceived Privacy

Online banking privacy explained her as customers' authentication and providing safety of providing personal and valuable information through the system of online banking.

#### Theme 7: Security issues

Online banking security is concerning the provision of secure environment for customers using online banking including establishing policies to protect customers' accounts and repay any money taken from their accounts through unauthorized transactions. The bank as reliable service provider and trusting Internet as a reliable medium for banking transaction, are also concerned in this them and looked at as sub-factors for security issues.

#### Theme 8: Technical and legal support issues

Technical and legal issues including equipment the suites customers to use online banking such as personal computer and Internet connection. Knowledge, expert staff, legislations are all meant to be as factors looked at in this them.

#### Theme 9: Trust and Risk

As the concept of trust usually comes with uncertainty or risk and if there was no risk there would no trust and action would be required. This them is comparing financial loss versus financial gains when using the technology of online banking, including the decision of performing banking transaction online comparing a significant risk with a significant opportunity of using online banking.

#### Theme 10: Technology Readiness

Factors related to technology readiness might be summarised in four technology level drivers; first, the personal level of technology which is the "*Optimism*", the second part is explaining the technology temper and development which is "*Innovativeness*", the third part which is looks at the category of inhibitors "*Discomfort*" and the fourth part which looks at the category of "*Insecurity*". These Drivers and categories were explained specifically in (chapter three (section 2.6.2, pp. 65).

#### Theme 11: Demographic Profile

Demographics issues looked at in this them, such as having a bank account, place of accessing Internet, Internet experience, conducting or heard about

Internet shopping and largest amount spent on online transactions. Age and Gender where also may have a great impact on the issue of customers' trust and acceptance of online banking technology in Libya.

#### **b- Questionnaire development process**

The process of development and validation of questionnaire is based on the approaches recommended by Churchill and Iacobucci (2002) and Moore and Benbasate (1991). Figure 4. 3 illustrates the simple procedure that was used as a guideline for constructing an effective questionnaire.

- **Step 1: Specify Information Sought:**

The specification of information required for research depends on the constructs stipulated in the conceptual framework. In the present study, the conceptualization of constructs has been described in Chapters 2, 3 and 4.

- **Step 2: Item creation:**

The initial pool of items was created from the review of literature dealing with quantitative studies on customer behaviour towards technology acceptance, trust in online banking and electronic commerce, (e.g. Jarvenpaa *et al.*, 2000; Gefen, 2002; Gefen *et al.*, 2003; Pavlou, 2003; Hahn & Kim, 2008; Yap *et al.*, 2009), and technology readiness (e.g. Bhattacharjee, 2002; Chellappa, 2003; Davis, 1989; Gefen, 2002; Jarvenpaa *et al.*, 1989; 2000; Parasuraman and Colby, 2001). Literature on online banking is still at an early stage of development and is more focused presently on general issues of electronic commerce, especially in the field of online banking technology in a Libyan banking context. Therefore, some items were taken from the previous literature, with modification to fit the context of online banking. The items were developed following the framework suggested by Ajzen (2002), in which each behaviour must be defined within a well-specified framework of target, action, context, and time.



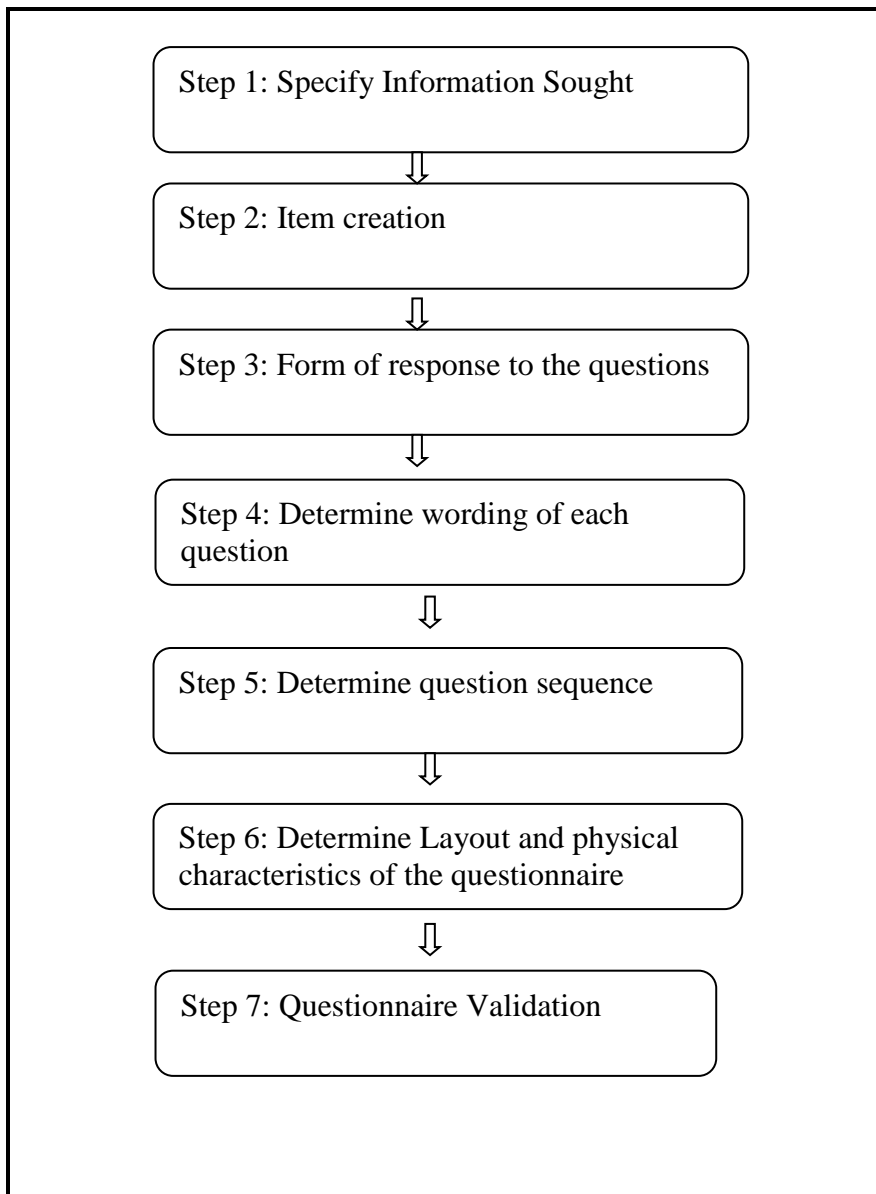


Figure 4. 3: Questionnaire Development

- Step 3: Form of response to the questions:  
The questions were closed-ended with a predetermined response type accompanying each question or item. In order to maintain uniformity, regardless of response type, a seven point Likert scale was applied to all the items in the questionnaire.
- Step 4: Determine wording of each question:  
Churchill (1992) states that most researchers experience a vocabulary problem, that most of them are more educated than the typical questionnaire respondent. In order to avoid this problem, it was decided

that the questionnaire must be pre-tested to ensure that any misleading questions, inappropriate abbreviations, and ambiguous wording could be detected before the survey was finalised. In addition, on the first page of the questionnaire, a definition of online banking was given to ensure that the respondents did not confuse online banking with other channels of electronic banking (i.e. telephone banking, ATMs).

- Step 5: Determine question sequence:

The sequence in which the questions are presented is essential to the research effort Churchill (1992). The questionnaire in this research followed Churchill's guidelines, which suggest starting with a few simple, interesting, and non-threatening questions, as this will encourage respondents to relax and motivate them to complete the entire questionnaire in a relaxed frame of mind. The first question in the survey questionnaire in this study was a general question, to check respondents' awareness of different banking channels. Secondly, questions with similar initial wording were put together in a group to reduce the length of the questionnaire. The questions relating to the personal profile or demographics of the respondents, information which is regarded as sensitive, were placed in the final section of the questionnaire. The contact details of the researcher were also given at the end of the questionnaire, in case the participants wanted to contact the researcher regarding the questionnaire or to be informed of the end result of the research. Overall, the order of the questions in this study satisfied the recommended guidelines as proposed by many scholars (e.g. Churchill, 1992).

- Step 6: Determine layout and physical characteristics of the questionnaire:

The physical characteristics of a questionnaire can influence the perceived importance of the study in the respondents' eyes, which may influence their cooperation or willingness to participate in the study, and most importantly, can have detrimental effects on the accuracy of the information obtained (Churchill, 1992). Based on such rationale, in the

pilot study of the questionnaire, emphasis was placed on layout as well as the wording of the questions. Effort was devoted towards achieving a professional layout to reflect the credibility and importance of the study. In this context, the questionnaire was bound in a booklet format which offered ease of reading and turning pages, and reduced the likelihood of misplaced or lost pages.

- Step 7: Questionnaire Validation (Pilot study Implementation):

Conducting a pilot study before the main study allows any potential problems in the form of the questionnaire to be identified and corrected (Gill and Johnson, 2002). The aim of this pilot study was to provide a clear understanding of any potential problems with the questions and to ensure the appropriateness of the research instrument. Yin (1994) also mentions that the pilot study helps the researcher to refine data collection plans with respect to both the content of data and the procedures to be followed.

Following Yin (2003), a pilot study was undertaken in order to refine the questions and procedures. A draft of the questionnaire guidelines was discussed with the supervisory team, consisting of PhD students, so that the validity of the questions in the questionnaire could be enhanced and also to seek their opinions before finalizing the questions. Following a detailed discussion of the draft by the researcher's supervisors, the form adopted for the pilot study was confirmed.

The pilot study used a small number of participants from three different types of bank customer (employees and customers). These types of customers were chosen using the same criteria as those in the research itself. The respondents could be as follows: 'five respondents from bank employees, and five respondents from bank customers'. All questionnaires collected were treated as a part of the main study and at the end of the pilot study additional comments were invited.

In summary, the pilot study was an essential element of the research, in order to ensure that the questionnaire questions were clear and made sense to the respondents. Moreover, the pilot study was important in terms of measuring the time needed for

the questionnaire, and it was a valuable initial opportunity to test the validity of the research questions. Furthermore, in practical terms, the pilot study provided the opportunity to practise the analysis of data using SPSS software.

The rationale behind the pilot study was to provide a more valid and reliable instrument, as well as to practise the processing of the quantitative questionnaire and data analysis. The initial outcomes of the pilot study analysis enabled an enhanced understanding of the subject to be gained in the target group of bank customers.

#### **4.7.4 Translation into Arabic Language**

The official language in Libya is Arabic and consequently the initial instrument needed to be translated into that language to allow the collection of data and to be clearly understood by the participants. The researcher carefully performed the translation of the form of both the questionnaire and interview. The translations were included in the questionnaires, with each question accompanied by its Arabic translation so as to be clear and understandable to the participants. The translated copy of the questionnaires was used in the process of the pilot study, which was an additional opportunity for the interpretation to be checked for any missing or misunderstood words and to be corrected in the final version. A form of the translated questionnaire is attached in the Appendixes at the end of this thesis.

#### **4.7.5 Conducting the Questionnaires**

As discussed earlier, information was collected from drop and collect survey questionnaires. The survey was conducted by a uniform method in Libya (Bank of Commerce and Development, BCD) during the period mid-September 2010 until the end of December 2010. All participants had sufficient time to be able to answer questions and provide useful information.

The information was collected from 119 completed questionnaires containing different types of bank customers' views including customers employed at (BCD). After collecting the data, another important step was required to test the data and to verify whether it matched the theoretical data. This is called data analysis, which will be covered in the next section.

## **4.8 Data Analysis**

In general, quantitative data requires quantitative methods and qualitative data requires qualitative methods in the collection and subsequent analysis (Sutrisna, 2009). Data analysis includes examining, categorising, and interpreting the evidence to support, reject or amend a theory and/or to generate a new framework or theory. However, there is no standardised approach to analysis of quantitative data (Saunders *et al.*, 2003). Quantitative methods are based on a positivistic ideal coined by the 17<sup>th</sup> century philosophers who advocated that mathematics is the perfect tool for an understanding of God's worldly creation.

Numerical methods and mathematics are considered a supra-human language of description and the appropriate method for attaining facts scientifically (Sutrisna, 2009). Survey data was entered into a statistical package, SPSS, for analysis and graphical presentation of the results. Using SPSS, frequencies and percentage distributions of respondents' demographic information were developed in tables to ensure that these responses were representative of a large number of customers of the Libyan Bank of Commerce and Development.

Backwards linear regression for each research variable was computed to test the reliability. Multi-linear regression analysis was used to test the model's prediction capabilities. Further, correlations between Internet experience, gender, education, age, bank account and technology knowledge were tested using Spearman's rho test. This was used because the data is non-parametric. Qualitative data analysis was also conducted using Nvivo 10 software, in order to validate the quantitative results for the framework in this research.

## **4.9 Ethical Approval**

Since this study intended to collect data from individuals, prior approval was required from the University of Salford's Ethical Committee in April, 2010. The application and questionnaire were forwarded for ethical approval, and subsequently, such approval to conduct the survey was received in September, 2010.

## **4.10 Research Process**

This section focuses on the steps and stages involved in this study and a summary of the themes (shown in Figure 4. 4 below). The research process is compared to the research themes and the tools or methods used to gain a certain process or reach certain stages are described.

### **Stage 1: Critical Review of Online Banking Technology**

In the first stages shown in Figure 4. 4, a critical review of the trust and acceptance of online banking technology in Libya will be conducted in order to acquire knowledge about the real obstacles that face bank customers there, and the obstacles that confront them in accepting and trusting online banking. This review includes the background to online banking technology in Libya, and asking the questions: How did it start? What is the level of technology in Libya? This is followed by an explanation of the different types of bank customers in Libya.

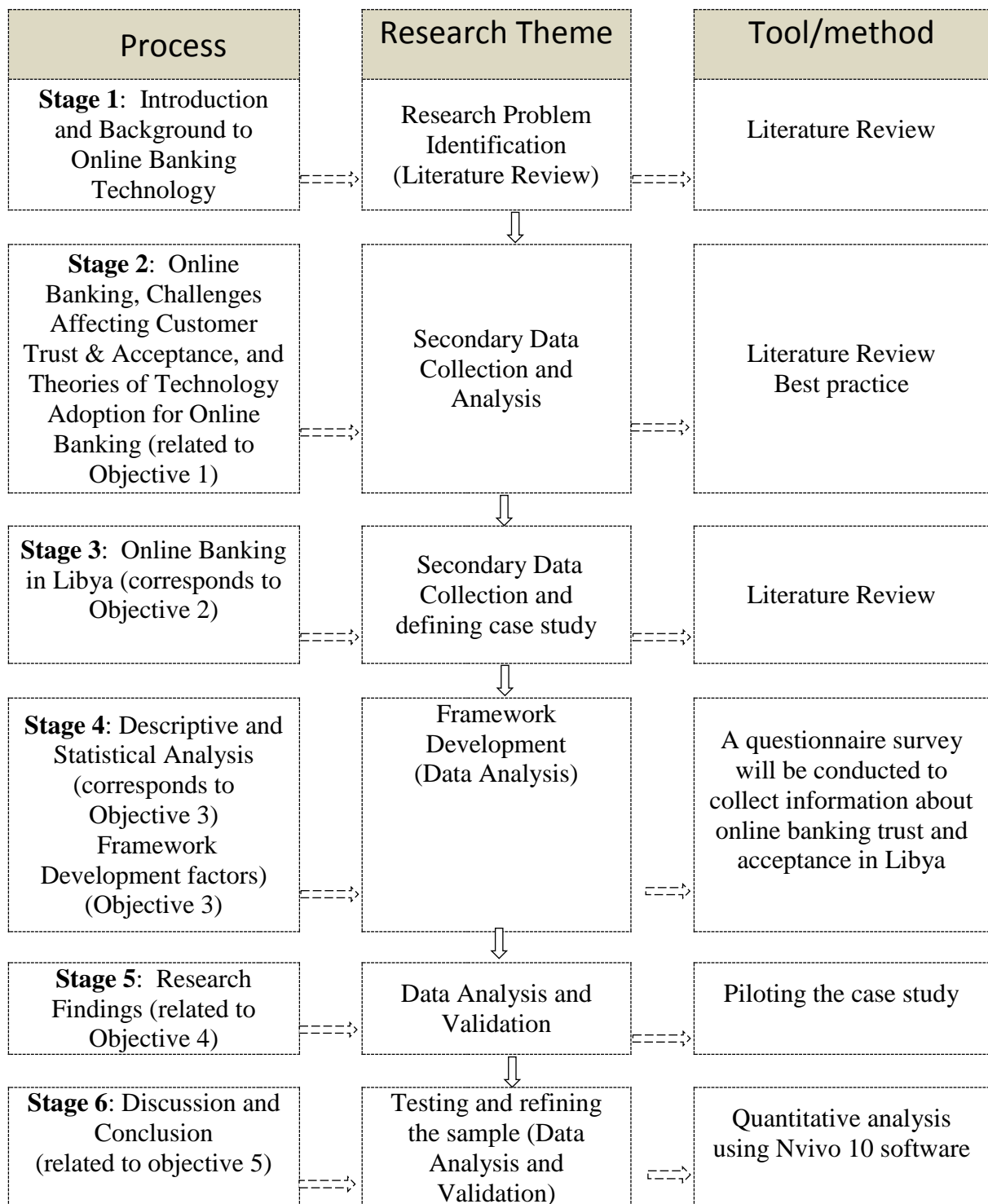


Figure 4. 4: Research process

### **Stage 2: Online Banking, Challenges Affecting Customer Trust & Acceptance, and Theories of Technology Adoption for Online Banking**

Stage 2, as shown in Figure 4. 4, is mainly about conducting a literature review from relevant research articles and projects in order to acquire knowledge and experience about the challenges confronting customers and which inhibit their trust and

acceptance of online banking technology. This literature review focuses widely on theories of acceptance and trust and the trends and development of online banking worldwide, how it can be used to consolidate customers' trust and acceptance, what are the best practices available that are being used in different countries, such as in Europe and Asia, and from the banking perspective, what are the lessons that can be gained from the development of online banking in developed countries. This literature review includes an overview of the benefits and opportunities of online banking technology for both a bank and the customers, with a summary of most of what has been mentioned in the literature regarding the potential benefits, as well as a statement and explanation of the key findings. The review then focuses on some strategies for pedagogical innovation in online banking through adoption of technology theories.

This stage fulfills the first objective of this research, which is the identification of the potential impact of Social Computing on the teaching and learning process. Reviewing the best practices of online banking technology also helps at the stage of framework development as it highlights some beneficial and key findings of how customers perceive the usage of this technology in their normal daily usage of technology, and thus consequently fulfilling the second objective of the research in terms of understanding their attitudes and behavioural stance when using the technology and defining the tools they use most frequently. This also clarifies some advices on ways of implementation, which consequently supports the sample stage as well.

### **Stage 3: Online Banking in Libya**

This stage includes part of the data collection research activity, which is identifying the Bank of Commerce and Development (BCD) as the subject of a case study of Libyan banking in terms of online banking technology. A number of questionnaires were issued to bank customers and customer-employees in the Bank of Commerce and Development in order to collect information about trust and acceptance of online banking technology. This stage is important as it serves in achieving the second objective relating to an exploration of Libyan customers' interaction with online banking technology and how they use it (Figure 4. 4).



#### **Stage 4: Descriptive and Statistical Analysis**

This stage aims to identify and develop those factors that are found empirically to be affecting customers that will help the policy maker in realising which factors may influence customers to trust and accept online banking technology, should it become widely available in the existing banking system in Libya. This stage is to comply with the third objective of this research by describing factors that, as the result of data analysis and tests, are found to be those that most influence customers' trust in and acceptance of online banking technology in Libya. Tests such as factor analysis were applied to identify which factors most affect customers' trust and acceptance of online banking in Libya.

#### **Stage 5: Research Findings**

Collected data will be manipulated in terms of weighting factors and rate of importance via applying statistical analysis of Cronbach's Alpha, descriptive analysis, correlations and regression techniques. By testing the questionnaire reliability using statistical analysis techniques such as Cronbach's Alpha, this should indicate that the questions applied in this study are compatible and fair enough to serve the objectives and subsequently achieve the aim of this study. Moreover, factor analysis is the best test to evaluate the best model for this study, which can be ensured and enhanced by applying a correlation test. Correlation and regression tests show the best selection of factors that bear a close relationship to this study and can serve the objectives.

#### **Stage 6: Discussion and Conclusion**

This stage, as shown in Figure 4. 4, incorporates implementation of the proposed model through specified case studies. By using a relevant literature review and applying the appropriate research methods at this stage, the final picture of the study is accomplished, the discussion is presented and conclusions are delivered along with recommendations. Chapter 7 will highlight how the related constructs could be used in enhancing online banking technology through a prototype of a model which will focus on implementing the different Social Computing tools in an effective way so as to improve customers' trust and acceptance, and also to develop a new framework. A subsequent discussion is then presented of how such a framework and design could meet the main needs of Libyan banking.

## **4.11 Summary**

This chapter has described and discussed the research method, survey mode, survey instrument, sample selection and survey process followed in order to investigate the research objectives of this study. It has been concluded that the methodology adopted needs to follow from the nature of the problem and the research's theoretical perspectives. If the main theoretical perspectives were to be placed on a continuum, one extreme would be positivism and the other would be phenomenology.

The difference between these two ideas and their relationship with Ontology, Epistemology and Methodology was highlighted. The approach adopted in this research because of the nature of the aim and objectives of this study has been concluded to be quantitative and qualitative; the main attributes of quantitative and qualitative approach were stated and discussed.

The research methodology section explained the many classifications available to the researcher; a special focus was placed on research purpose in terms of a research being descriptive, exploratory, or explanatory. Various other approaches were considered and dispelled with a view to justifying the one adopted. The distinction between research methodology and research methods was discussed briefly and also research methods were concluded to be the techniques of collecting data. This research uses both quantitative and qualitative methods, which in this case consist of a questionnaire survey and semi-structured interviews.

Quantitative and qualitative methods were clearly explained in this chapter and justification for the selected case study was defined. To bring all of the considered factors together, Table 4. 2 sets out to show the position of this research in terms of its philosophy, ontology, epistemology, and methodology. The progress of this research and main stages were highlighted in Figure 4. 4, which clearly explains the research process.

# **Chapter 5: Conceptual Development of the Initial Framework**

## **5.1 Introduction**

Previous chapters (two and three) discussed the existing theories and empirical studies in order to establish a conceptual framework. This chapter is to introduce a theoretical framework for the trust and acceptance of online banking technology. The framework is based on the literature and best practice reviewed in chapter two. This literature includes the Technology Acceptance Model (TAM) and trust-related theories such as trust and risk theory. The framework explains clearly the relationships between elements of this study by identifying the key factors and determinants that affect customers trusting and accepting online banking technology. This chapter fulfils the requirements of and responds to Objective three by investigating the roles of trust and acceptance in relation to online banking in the Libyan banking industry and identifies a framework for improvement of customers' trust in online banking in the Libyan banking system.

## **5.2 The Best Practices Application in Online Banking Trust and Acceptance**

This section concentrates on the best practice use of theories regarding online banking trust and acceptance discussed earlier in chapter two, section 2.7. The first example of best practice use of theories was the implementation of the Innovation Diffusion Theory (IDT), which was tested and validated by Nor & Pearson (2007) in their study of the influence of trust on internet banking acceptance. The purpose of their study was to examine empirically the influence of trust with some aspects of Innovation Diffusion Theory on online banking acceptance.

The second example was applying the basis of the Theory of Planned Behaviour (TPB) for enhancing trust and acceptance of online banking. This example is explained in George's study in (2002) "Influences on the intent to make Internet purchases" which showed critical analytical figures of purchases by Internet users in the US. Two aspects were implemented and tested by a framework to identify how beliefs about privacy and trustworthiness in the context of the Internet influence individual intentions. The proposed framework in this study introduces privacy as part of the

online banking challenges, including aspects of the model of trust in online banking which includes trustworthiness and trust and risk, but which focuses more on trust and risk. Trust and risk are also theorised as part of the online banking challenges.

The third and more important practice was applying the Technology Acceptance Model (TAM) to the concept of customer trust. The main ideas about gaining customer acceptance of online banking are intention to transact and online transaction behaviour. In one indication regarding the Technology Acceptance Model (TAM) being one of the best predictors of technology acceptance, Al-Gahtani & King, 1999 state that the “technology acceptance model is thought to be a best predictor of the acceptance of technology, which follows the Theory of Reasoned Action (TRA) and both theories were applied to technology-driven environment”.

The current study applies two aspects of the Technology Acceptance Model (TAM) for developing a framework, and these are Relative Advantages/Perceived Usefulness (PU) and Ease of Use (EU). These ideas are also mentioned in the key factors and issues related to the wider context, of which Libya is no exception.

### **5.3 Key Factors and Issues Related to Libyan Context**

The key findings that are stated at the end of chapter two are a clear definition of the factors that may be encountered in the Libyan context in the light of key issues and local culture. The key findings emerged first from an exploration of online banking from different angles, as online banking technology can be defined in many different ways depending on the level and type of service provided by banks to their customers. The advantages and disadvantages of online banking technology to both customers and the bank were also reported at this point, as the technology of online banking has two kinds of advantages and disadvantages to both the customers and the bank.

Movements and developments in online banking globally were also discussed and two findings were stated. Firstly, acceptance worldwide of online banking as a delivery channel has changed rapidly, and secondly, the level of usage/uptake of online banking technology in developed countries like the US, Western Europe and

Asian Pacific countries seems very high and impressive, whereas in developing countries it seems very low.

The other key findings concern the challenges affecting customer trust and acceptance. Five points were highlighted in this respect: firstly, there are various different issues and challenges that may affect customers' trust in and acceptance of online banking technology. Secondly, the importance of trust is widely recognised in various disciplines, especially in online banking technology. Thirdly, online banking-related issues include Security issues, Technical and legal support, Reputation, Privacy, and Transactional/Operational Issues. Fourthly, one perceived issue in online banking is commonly thought of as uncertainty regarding the possibly negative consequences of using the products and/or services of online banking. Finally, many research studies have been conducted on how people from different cultures observe, define, trust and use technologies.

Theories of Technology Adoption for Online Banking were identified ultimately in the key findings and two points were stated: firstly, the key objectives of theories of technology adoption in this study are to assess the value of technology and to enhance understanding of the factors that influence trust and acceptance of online banking technology. Secondly, the reviewed theories are stated in this study to be a base for the theoretical framework which will be used to enhance and identify factors in this study as a way of explaining how an intention of adopting the new technology might be nurtured/engendered. By explaining intention and related factors (ease of use and perceived usefulness/relative advantages) this may assist eventually to develop a theoretical framework and define factors for online banking trust and acceptance from a Libyan perspective, as the technology is still new or not commonly used in this country.

The literature highlighted above is not the only contribution to forming the framework in this study, as other literature relating to customers' demographic profile and technology readiness was also emphasised and was used to help identify the factors related to customers' demographics and technology level in the Libyan context. Both factors are playing significant roles in forming the framework developed in this study.

## **5.4 Online Banking Trust and Acceptance Framework**

The theoretical framework of online banking trust and acceptance developed in this study is following the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM), and explaining both the intention towards actual trust and acceptance of using online banking by proposing three main direct determinants: acceptance which includes (relative advantages, ease of use); trust and risk; and online banking issues which includes (security issues, technical and legal support issues, reputation issues, privacy issues, transactional/operation issues). Technology adoption frameworks such as TRA and TAM offer effective theoretical bases for factors contributing to customers' acceptance of new technology and have been successfully applied to customer behaviour, technology acceptance and system use, and a variety of instances of human behaviour.

The practical utility of considering TAM is that online banking is a technology-driven behaviour. Given the uncertain environment of online technology, trust and risk issues are theorised as directly connected to intentions. In addition, trust and risk issues are viewed as being only one of the challenges of online banking that customers face. Moreover, technology readiness and demographic characteristics (age, gender, occupation, educational qualifications, Internet experience and online banking experience) are proposed as having a moderating effect on the relationship between intention and the challenges affecting customers' trust and acceptance. This represents the research framework developed for the present study.

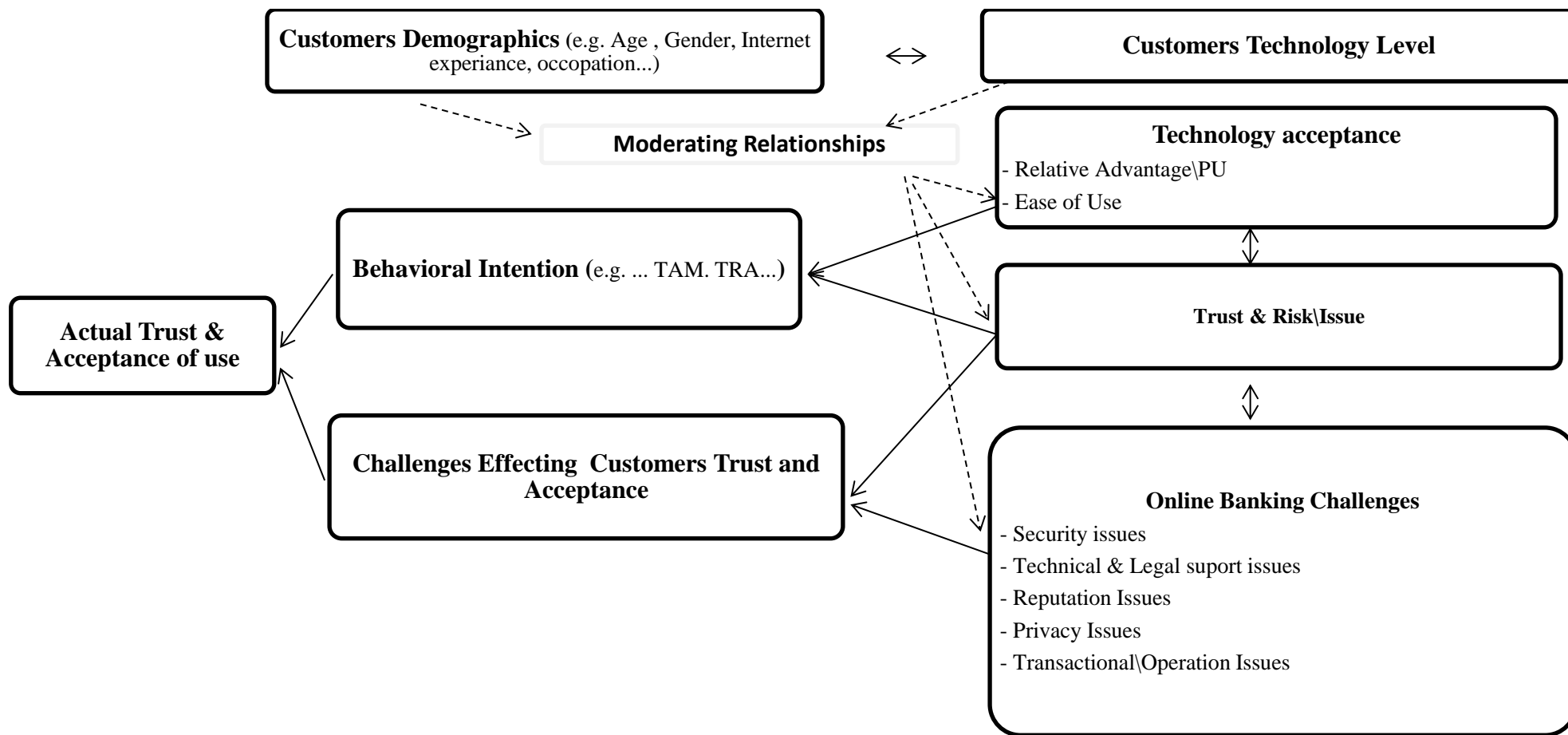


Figure 5. 1: Structure of the theoretical framework



### **5.4.1 Behavioural Intention**

Behavioural intention, a central concept in both TRA and TAM, is defined as a “person’s subject probability that s/he will perform some behaviour” (Fishbein and Ajzen, 1975).

Research following TRA and TAM consistently shows a high correlation between intentions and the actual use of technology (Szajna, 1996). However, Ajzen and Fishbein (1980) argue that the strength of intention in the behaviour relationship largely depends on the degree of testing specificity attained in a research project. Therefore, in order to apply these ideas to the online banking context, this study is proposing a framework that aids the understanding of the relationship between the components of technology acceptance that are based on TAM, which are perceived usefulness, which is called in this study (relative advantages) and ease of use. Below is a review of these ideas and the roles they play in the relationships of the proposed framework.

#### ***5.4.1.1 Technology Acceptance***

Technology acceptance was first suggested by TAM, which proposes two beliefs, Perceived Usefulness (PU) (in this study called relative advantages) and Ease of Use (EOU). These two beliefs can influence the acceptance of technology and in this study are shown as components of technology acceptance.

#### ***5.4.1.2 Relative Advantages and Ease of Use***

As mentioned above, relative advantages or perceived usefulness and ease of use were explained first by TAM as interacting with the acceptance of technology. In the context of online banking, the service provides notable advantages and convenience by allowing customers to conduct their banking transactions at any time and from anywhere. The service also gives customers greater control over managing their own finances.

In view of the advantages that online banking offers (explained more in chapter 2, section 2.6. p. 27), it would thus be expected that customers who acknowledge online banking to be useful would also be likely to develop positive intentions towards it and will use the service. Likewise, an easy-to-operate online banking website should

facilitate the transaction process and is likely to be accepted by customers. Danial (1999) identified ease of use as one of the factors influencing customer acceptance of electronic banking in the UK and Ireland. Davis *et al.* (1989) suggest that PU/Relative Advantages are influenced by PEOU. Previous research has consistently suggested that there is a strong positive relationship between PU/Relative Advantages and PEOU (see also best practice use of theories in adoption of online banking in chapter 2: section 2.7 p. 28).

The selected studies in chapter 2 suggested that, relatively, PEU might not be important if compared to PU/Relative Advantages in determining the level of use of the adopted technology. This may influence the initial decision to accept online banking. Both Relative advantages and Ease of Use are moderated by both customers' demographic profiles and customers' technology level.

#### **5.4.2 Challenges Affecting Customers' Trust and Acceptance**

The challenges of online banking, as explained in chapter two, appear to be the difficulties and issues that customers face and that affect their trust and acceptance of online banking technology. This chapter is looking at the more cohesive parts of the theoretical framework and more specifically in this subsection, highlighting the relationships and movements of the components of challenges affecting customers' trust and acceptance, as shown in the theoretical framework in Figure 5. 1. Different researchers present online banking challenges that affect customers' trust and acceptance in different ways (e.g. Aladwani, 2001; Gupta *et al.*, 2004; Podder, 2005; Abukhzam and Lee, 2010; Houda and Debabi, 2012).

This research highlights online banking challenges in a way that is explained more in chapter two by presenting trust and risk and the specific issues that are associated with online banking technology as found in the best practice and use of the technology worldwide. The key findings at the end of chapter two also pointed out the key factors that were considered when shaping the proposed framework as shown above in Figure 5. 1. The following is a further explanation of these relationships and a statement of the challenges and issues that customers face in relation to trust and acceptance of online banking technology.

#### ***5.4.2.1 Perceived Trust and Risk/Issues***

The discussion in chapter two (section 2.5.5: p. 18) highlights the importance of trust and perceived risk in the issue of online banking trust and acceptance. The present study agrees with the definition of risk as an issue commonly thought of as uncertainty regarding the possibly negative consequences of using a product or service of online banking. Kim and Prabhakar (2000) suggest that perceived risk and trust affect trusting behaviour in the online banking context. Trust is needed essentially only in uncertain situations since trust effectively means to assume certain issues and hence to become vulnerable to trusted parties (Hosmer, 1995).

To make this clearer, if there was no issue and actions could be taken with complete certainty, no trust would be required. At this point, in comparing trust in terms of risk in online banking technology, especially with early adopters in a developing country like Libya, significant outcomes may emerge for accepting and trusting online banking technology. The developed framework above in figure 5.1 shows that, perceived risk and trust have a mutual relationship with online banking issues in a way that, as explained above, trust is required essentially only for uncertain events or transactions of the kind that can be conducted online through online banking technology.

The framework also shows that perceived trust and risk are moderated by both customer demographics and customer technology level in a way that, if we take customer's age as an example, customers who are aged 26-45 years may be more aware of the risks associated with online banking than those aged 15-25 years, when it comes to them intending to use the technology. However, male customers in this study appear to rate more highly their awareness of using online banking technology in Libya than female customers and as a consequence, males might be more aware of trust and risk of the technology than females. Moreover, customers with a confident level of technology awareness have more of a chance of knowing about online banking technology and accordingly are likely to be more aware of trust and related risk.

That is only a simple example of how customer demographics and customer technology level are influencing the perceived relationship of trust and risk. Further

explanation will be given in the next chapters (chapters 6, 7). As shown in the framework (figure 5.1), perceived trust and risk and online banking issues are both linked to challenges affecting customers' trust and acceptance in a way that the expected or perceived risk might be of concern to customers when they plan to use online banking technology.

#### ***5.4.2.2 Online Banking Issues***

The main channel for online banking technology presently is the Internet, which is associated with a variety of issues and obstacles facing customers when they conduct banking transactions using online banking technology through the Internet (Sathye, 1999). It is not enough for a bank or a customer to think only about the benefits of online banking but rather a bank or a customer should be prepared to address potential online banking problems/difficulties (Aladwani, 2001). Together with perceived trust and risk, online banking is one of two components of the challenges affecting customers' trust and acceptance, as shown in the theoretical framework in figure 5.1. Online banking issues are mainly associated with the Internet. A statement of the online banking issues that have been considered in this study and that are mentioned in the framework is as follows:

- Security issue of online banking: is the user falling victim to one or more of the online banking security breaches or issues such as Intrusion, Information Theft, Fraud, and Denial of Service (Aladwani, 2001). Security is one of the most important online banking issues challenging customers' trust and acceptance of online banking in a developing country like Libya. Security issues are the first thing that customers think about when intending to use online banking technology. A more detailed explanation of this subject was given in chapter 2, section 2.5. pp. 14-17.
- Technical and legal issues: Technicality and legality are additional issues that online banking customers have to confront when they are intending to use the technology. The kind of technical issues that usually arise are problems associated with the technology that supports exchanges over the Internet and these may constitute a barrier to success for this strategy. Such technical

problems can make the Internet technology seem uncertain and requires the customers to demonstrate a high level of trust (Angelides, 1997; Baer, 1998).

- Reputation issue: Reputation arises from the strength of a particular brand name, endorsement from trusted parties, and previous interactions online or offline (Egger, 2000). When customers process information on online banking, the first thing they are likely to consider is the bank's reputation. A more in-depth explanation regarding reputation issues is provided in chapter 2.
- Privacy issue: Privacy and confidentiality in online banking refers to the protection of customers' personal information. The growing capacity of online banking technology for online transactions and information processing has made privacy an increasingly key issue (Casalo, 2007). Privacy is one of the five issues addressed in this study and in this chapter appears as one of the components of online banking issues. A more detailed explanation of the privacy issue can be found in chapter 2.
- Transactional/Operational Issues: Online banking issues were clearly reviewed and theorised in chapter 2 and a framework was developed to explain the complete picture in this study. Figure 5.1 shows the 'roadmap' of the relationships in this study. With regard to online banking issues, figure 5.1 shows a linkage between online banking issues and challenges affecting online banking trust and acceptance in a way that includes perceived trust and risk, as online banking issues are part of the challenges that influence customers trusting in and accepting online banking technology. As previously, these elements are also moderated by both customer demographic profiles and customer technology level. If we take the previous example stated in the previous subsection regarding customer's age and in terms of online banking issues, this study shows that customers aged between 26-46 years appear to have more awareness of the technology of online banking and are expected to show concerns about the issues associated with it. They are not only expected to be aware of online banking issues, but the most important thing is to know what types of issues and how to deal with them. Online banking issues have shared relationships with perceived trust and risk, as highlighted above in the previous subsection.

### **5.4.3 Customers' Technology Level**

The earlier explanation in chapter 3 (section 3.6 pp. 13-15) highlighted two aspects of explaining customers' technology level. The two aspects include technology readiness and five types of technology customers. Customers' technology level plays the role of a moderator in the framework shown above in figure 5.1. As explained above, customers' technology level moderates or controls technology acceptance, while containing both (relative advantages and ease of use), perceived trust and risk and online banking issues including (Security issues, Technical and legal support issues, Reputation issue, Privacy issue, Transactional/Operational Issues).

### **5.4.4 Customers Demographics**

Demographics are used to identify the targeted customers (now and in the future), where they live, and how likely they are to purchase or use the product or provided service or product (D'Ausilio, 2008). This study will explain customer demographics by focusing on age, gender, occupation, educational qualifications, Internet experience and online banking experience. As presented in the framework in figure 5.1, customer demographics and customers' technology level are both moderating or controlling the relationships of technology acceptance, which contain both (relative advantages and ease of use), perceived trust and risk and online banking issues, which includes (Security issues, Technical and legal support issues, Reputation issue, Privacy issue, Transactional/Operational Issues). The following is a more in-depth explanation of customer demographics components, as presented in the framework in figure 5.1.

#### ***5.4.4.1 Age and Gender***

Bank customers were classified in different age categories, given three choices to select from as follows: 18-25 years, 26-45 years and 46-60 years. The reason for asking customers about their age is related to finding out which group of customers in terms of age are more likely to accept and trust online banking technology in Libya. A customer's gender is normally male or female. As a result, most studies in this domain implicitly suggest that demographic characteristics are less important than the characteristics of the technology itself in determining whether specific technologies will be accepted or rejected by the intended user base.

There has been some recent research that has adopted a more user-centric position by testing the role of demographic characteristics (Morris and Venkatesh, 2000). The present study examines the moderation of technology acceptance, perceived trust and risk and online banking issues relationships by six key demographic characteristics, i.e., age, gender, occupation, educational qualification, Internet experience and online banking experience. Figure 5.1 presents the demographics as moderators' factors.

#### ***5.4.4.2 Occupation***

Asking about the person's occupation was intended to investigate whether a customer has a job or is running some kind of business. The reason for asking customers about their occupation is to know what category or form of employment they are working in and also to know their income, level of financial awareness and way of dealing with certain issues. The choices given to the customer to choose from for answering the question regarding occupation were as follows: i.e., Housewife/Husband, Retired/Pensioner, Student, Professional, Clerical staff, Technical staff, Self-employed and Other.

#### ***5.4.4.3 Educational Qualification***

Customers' educational qualifications are important because the customers' education level can be used to predict their level of technology awareness or intention of adopting the technology (Ankit, 2011). Although customers need not necessarily have a high level of education to adopt new technology, customers who do have a high level of education, such as a university degree or above, should be able to deal easily with or adopt or even learn about new technology. Chapter 3, section 3.6 highlights issues related to customers' educational qualifications by mentioning Libyan banking customers and indeed explaining the five types of Technology Customers. Customers' technology Readiness were categorised in depth in table 3.3.

#### ***5.4.4.4 Internet Experience***

The Internet is currently the main channel for online banking but it also has many obstacles for present and potential future customers (Ankit, 2011). Customers need to have a certain level of Internet experience to be able to deal with or use online banking technology (Sathye, 1999). Internet experience, along with other customer demographics, moderates or controls the relationships of technology acceptance,

perceived trust and risk and online banking issues. Internet experience acts as a moderator by identifying the type of customers who are expert in or have knowledge of the Internet, and consequently, that knowledge should allow them to be aware of online banking technology and its advantages and related issues.

#### ***5.4.4.5 Online Banking Experience***

The level of customer online banking experience is important to establish so that some degree of expectation may be estimated of who might accept and trust online banking technology in Libya. Chapter 3 indicates that customers' experience of online banking is the most significant barrier to acceptance and trust of online banking technology generally and in Libya in particular. The present study assesses customer demographics as a moderator of the relationships in the proposed framework for online banking technology in Libya. Online banking experience, as part of customer demographics, acts as a moderator in the framework shown above in figure 5.1, pp. 106).

#### **5.4.5 Actual Trust and Acceptance**

Customers' actual trust and acceptance of using online banking technology is the target of the proposed framework shown above in chapter 5 (figure 5.1, pp. 106).

Actual trust and acceptance is associated with two key factors, behavioural intention (relative advantages, ease of use) and challenges affecting customers' trust and acceptance (perceived trust and risk, online banking issues (security, technical and legal, reputation, privacy, operational/transactional)).

### **5.5 Summary**

This chapter has addressed the development of the theoretical framework for trust in and acceptance of online banking in Libya. The theoretical framework was structured based on empirically tested theories including the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA) and trust-related theories such as trust and risk theory. The framework was also affected by two moderators: customer demographics and customers' technology level.



The relationships between factors in this study were clearly identified and explained in the framework. Key factors and determinants affecting customers' trust and acceptance of online banking technology were stated, highlighted and explained. This chapter precisely fulfils the requirements and responds to Objective three by responding to the roles of trust and acceptance in online banking in the Libyan banking industry and by identifying a framework for the improvement of customers' trust in online banking in the Libyan banking system. The proposed framework will be tested and validated using qualitative and quantitative methods in the following chapters.

# **Chapter (6): Descriptive Analysis of the Survey Data**

## 6.1 Introduction

Chapter five introduced the theoretical framework which will be empirically tested and improved through questionnaire survey. This chapter reports the descriptive analysis of the final data and summarises the basic statistics related to the respondents' demographic profile and the constructs examined in the present study. This chapter relates to objective four displayed in figure 1.1 p. 12, and parallels with stage four in the research process presented in chapter four-figure 4.4 p.23.

A brief description of the research focus was attached to each questionnaire. The questionnaires have satisfied all ethical requirements as passed by the University of Salford ethical committee assessment.

## 6.2 Questionnaire Overview

The items used in the questionnaire to develop the framework are divided into twelve parts and are described as follows:

Part 1- Banking channels: To determine the popularity of banking channels available to customers within the Libran banking system. Respondents were asked to select an answer using a seven point Likert scale to the item "*I use the following for my banking transactions*". An opportunity was given to the respondents to choose from four banking channels namely "Branch banking", "Telephone banking", "Cash Machine" and "online banking".

Part 2- Relative advantages: To seek respondents' beliefs about advantages gained from using online banking. This item was subdivided into three sub-items: 1) Importance of 24/7 bank services; 2) Cost of the online transactions and 3) Accurateness of online banking transactions compared with branch transactions.

Part 3- Intention: To relate intention to online banking. The item was whether the respondent will start using online banking if available within the existing Libyan banking. The item was subdivided into three sub-items as follow, "*Use Online banking to communicate with my bank*", "*Use Online banking for most of my banking needs*" and "*Use online banking any way*".

Part 4- Ease of use: To think of the usage of online banking. This part was divided into two items:

1) Belief towards online banking, which was subdivided into 3 sub-items: *“online banking is more appealing to use than other types of banking”*, *“do not require a lot of mental effort”* and *“have clear and understandable procedures”*

2) How easy to use online banking, which was also subdivided into two sub-items: *“to learn how to perform the transactions available on my online banking website”* and *“to become confident in my use of the transactions on my online banking website”*. Respondents select their choices using a Likert seven scale starting from *“strongly agree”* to *“strongly disagree”*.

The next seven parts (from Part 5 - Part 11) present the challenges facing customers to trust online banking technology

Part 5- Reputation issues: Through recommendations from people, either family, friends or colleagues or from other sources like media. This part of the questionnaire focuses on reputation from people’s recommendation. This item was subdivided into two sub-items as follows:

*“Influence my behaviour”*; *“think that I must use online banking”*, *“Are important to me”*, *“strongly support the use of online banking”*.

Part 6- Transactional issues: this looks at issues related to online banking transactions. This part is divided into two items: the first item looks at *“beliefs towards online banking transactions”*. This was subdivided into 4 sub-items as follows: *“online transaction will not be lost during an online session”*, *“will only reach the target account”*, *“will only be used for the purpose of the original transaction”* and *“will be shared with others with my account”*. The second item investigates *“while using online banking, I believe that”* and this was subdivided into three sub-items as follows, *“I will know exactly what information is collected”*, *“I will have full knowledge of the par”*, *“I will control the use of my information”*. Both items have a seven Likert scale starts from *“strongly agree”* to *“strongly disagree”*.

Part 7- Perceived privacy: this looks into the perceived privacy and respondents were asked “*while using online banking, I believe that online banking system*”. This item was subdivided into five sub-items as follows: “*will confirm my identity before disclosing account information*”, “*will confirm my identity before processing transactions*”, “*does not allow unauthorised changes to a transaction*”, “*stop any unauthorised changes to a transaction*” and “*provides a secure environment in where to bank*”.

Part 8- Security issues: this part is divided into two items as follows: the first item investigates the respondents’ beliefs towards online banking security provided by their bank. This was subdivided into six sub-items as follows: “*provides online banking*”, “*is processing my transactions accurately and on time*”, “*provides 24 hour secure access to online banking*”, “*Will repay any money taken from my account through unauthorised transactions*”, “*is acting in my best interest*”, and “*has consistent online practices and policies*”. The second item in this part is to ask respondents about whether to trust or not online banking and was subdivided into three sub-items as follows: “*I trust online banking for its safety*”, “*my bank as reliable service provider*”, “*and the Internet as a reliable medium for banking transactions*”.

Part 9- Technical and legal support issues (Q14 in the questionnaire): this is to investigate respondents’ beliefs of the technical and legal issues they face when they use or if they intended to use online banking in Libya. This item is subdivided into four sub-items as follows: “*I have the best equipment necessary to use online banking (e.g. a personal computer and Internet connection)*”, “*I have the knowledge to solve any problems with my expected use of online banking*”, “*If I need help using online banking, I know people who would help me*”, “*and knowledge to use online banking*”.

Part 10- Trust and risk (Q15, 16, 17 in the questionnaire): this part looks into rating or assessing the risk that comes up with online banking transactions and how the risk can affect the trust. This part is divided into three items as follows: “*Whilst performing online banking transactions, I would rate the risk of online banking as follows*”: “*Financial loss as*” “*very likely to occur*”, “*neutral*”, “*very unlikely to*

*occur*”, and “My bank as reliable service provider” and choices for respondents are also “very likely to occur”, “neutral”, “very unlikely to occur”. The second item investigates the decision to perform banking transaction online by given choices “a significant risk”, “neutral”, and “a significant opportunity”. The third item deals with personal decision: “my decision to perform banking transaction on the Internet presents”: “*High potential for loss*” → “*High potential for Gain*”

Part 11- Technology readiness: To insure that the respondents have a certain level of technology. This part was divided into twenty items (for more details see appendix A). These twenty items can be summarised as follows: the first five items explain or test the person’s ability to deal with technology. The second five items which start from question (6-10) are about feeling towards new technology. The third five items those start from question (11-15) are about technical support of the new technology that customers may face when intended to use or already used online banking. Finally the fourth five items start from (16-20) are about the negative feelings that customers may have towards the new technology.

Part 12- Demographic profile: these are some additional information about the respondents including “*opening a bank account*”, “*internet experience*”, “*online banking experience*”, “*age*”, “*gender*”, “*educational qualification*” and “*occupation*”.

### **6.3 Response Rate and Non-response Bias**

The final data process was conducted over a period of 12 weeks commencing in October 2010 until December 2010. The data were obtained through the drop and collect method where 200 questionnaires were handed to carefully selected customers of the Bank of Commerce and Development in Libya. 119 completed questionnaires were filled and received back giving a response rate of 59.5% of the original sample.

### **6.4 Reliability Test**

The purpose of a reliability test for a questionnaire, as suggested by Sushil (2010), is to determine its consistency and ability to measure a construct. Questionnaires are often used to measure constructs such as happiness, health, participation etc.

According to Hilton et al (2004), a questionnaire should be consistent in measuring any construct it is designed for that reliability (Joppe 2000). Golafshani (2003) defines reliability as “the extent to which results are consistent over time” it also measures the degree to which a result accurately represents the total population under study. The statistical software for social sciences (Hinton et al 2005) was used to carry out the reliability analysis. The procedure used with SPSS is shown below in Figure 6. 1.

Cronbach’s Alpha is one of the most important ways of measuring reliability (Yu, 2005). It is an internal consistency method which examines the number of questions on a questionnaire and the average inter-item correlation. The result ranges between 0 for completely unreliable tests and 1 for completely reliable test (Yu, 2005). The generally accepted range of Cronbach’s Alpha is between 0.7 and 0.8 or more. SPSS is used for the computation of the Cronbach’s Alpha for the questionnaire and the result is shown in Table 6. 1.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Questions
.933	.929	82

Table 6. 1: Reliability statistics

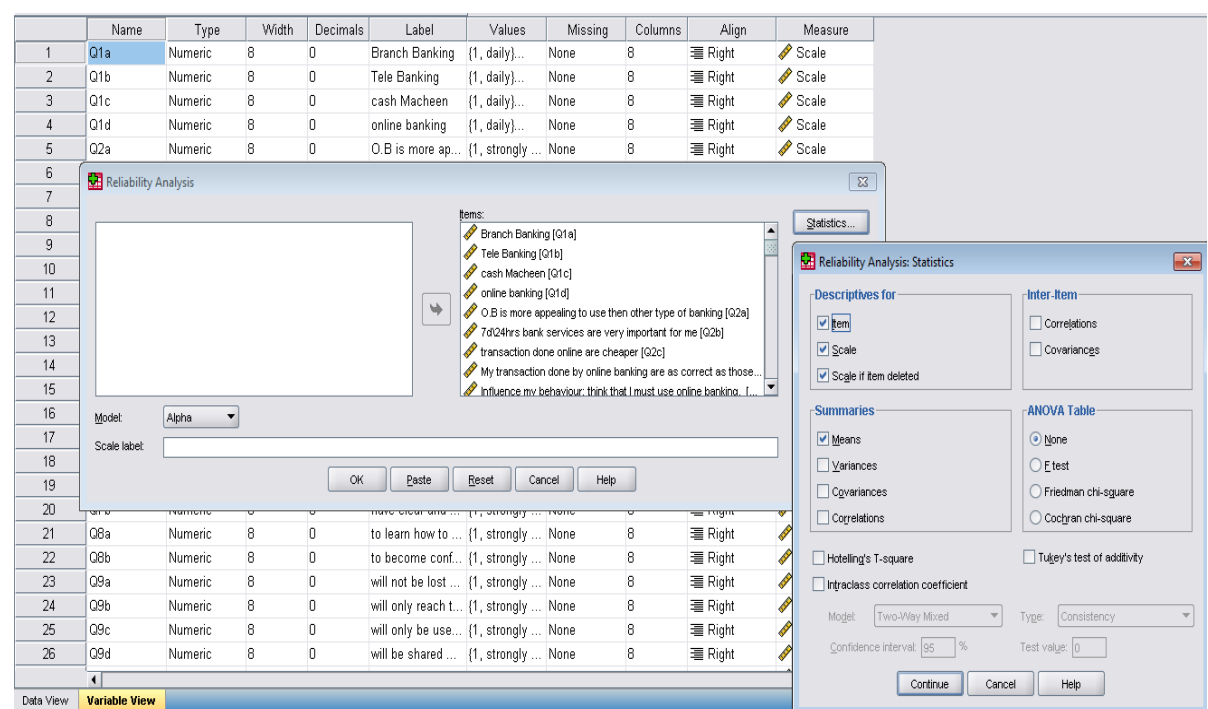


Figure 6. 1: Screen shot of reliability test from SPSS

Table 6. 1 above displays the Cronbach's Alpha as 0.933. This value indicates that the results obtained from the analysis of this questionnaire are trustworthy, repeatable, dependable and reliable to an excellent reliability extent.

## **6.5 Questionnaire Analysis**

This section describes the sample space and the demographics profile of the respondents. The aim of this section is to explore the response sample in relation to their Bank account, *Use of Internet, Internet experience, online banking (O.B) Experience, Amount spent on online banking (O.B), Gender, Age, Qualification, Occupation.*

### **6.5.2 Overall Sample Demographic Profile**

The demographic profile of the survey respondents presented in Table 6. 2. It shows that 26% of the respondents were female and 74% male. The largest age group consisted of those aged 26-45 years with percentage of (67%), followed by the age group 46-60 years (18%) and (15.1%) were between 18-25 years.

The education level of the participants shows that 43% had postgraduate university education, 33% had undergraduate university education, 1% had Secondary School/ College education, 22% had professional diploma and only 1% had no educational qualification.

As the largest group of respondents has postgraduate university education it infers the general relationship between education level and technology trust and acceptance. The occupational distribution of the respondents varied widely. The largest group of respondents was technical staff or teachers scoring at (35%) followed by students (32%), professionals (14%), self-employed (9%), Housewife/Husband (6%), others (3), and clerical staff at (1%).



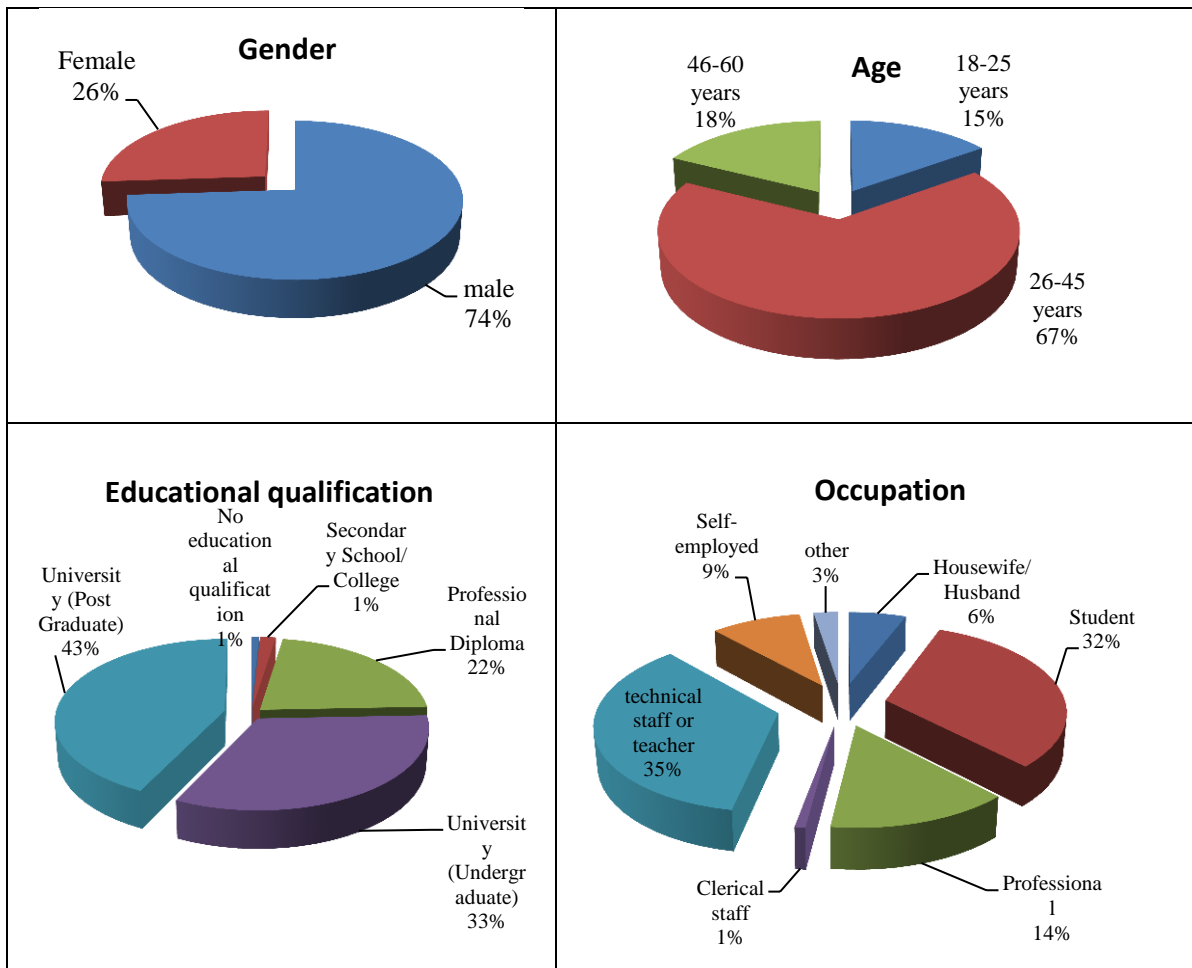


Figure 6. 2: A Pictorial profile of the survey respondents

Regarding the pattern of internet usage, Table 6. 3 suggests that 60% of the respondents had internet access at home and 23% at internet café. Fourteen percent were using internet at their workplaces and only 3% of the respondents had no access to internet at all. In term of internet experience of the respondents, 29% had 1-5 years and 6-10 year, 27% had less than 1 year, and 15% of the respondents were using internet for over 10 years.

The average of internet experience of the respondents was 2.59 years. Fifty percent of the respondents did shop over the internet and of these, 82% had spent less than 50 Libyan Dinars in a single transaction. Fifty percent of respondents never shopped over the internet. For those having a bank account and online banking experience, 77% of the respondents have been using online banking for only a year, another 13% for less than 3 years, and 10% of them were using the service for over 3 years.

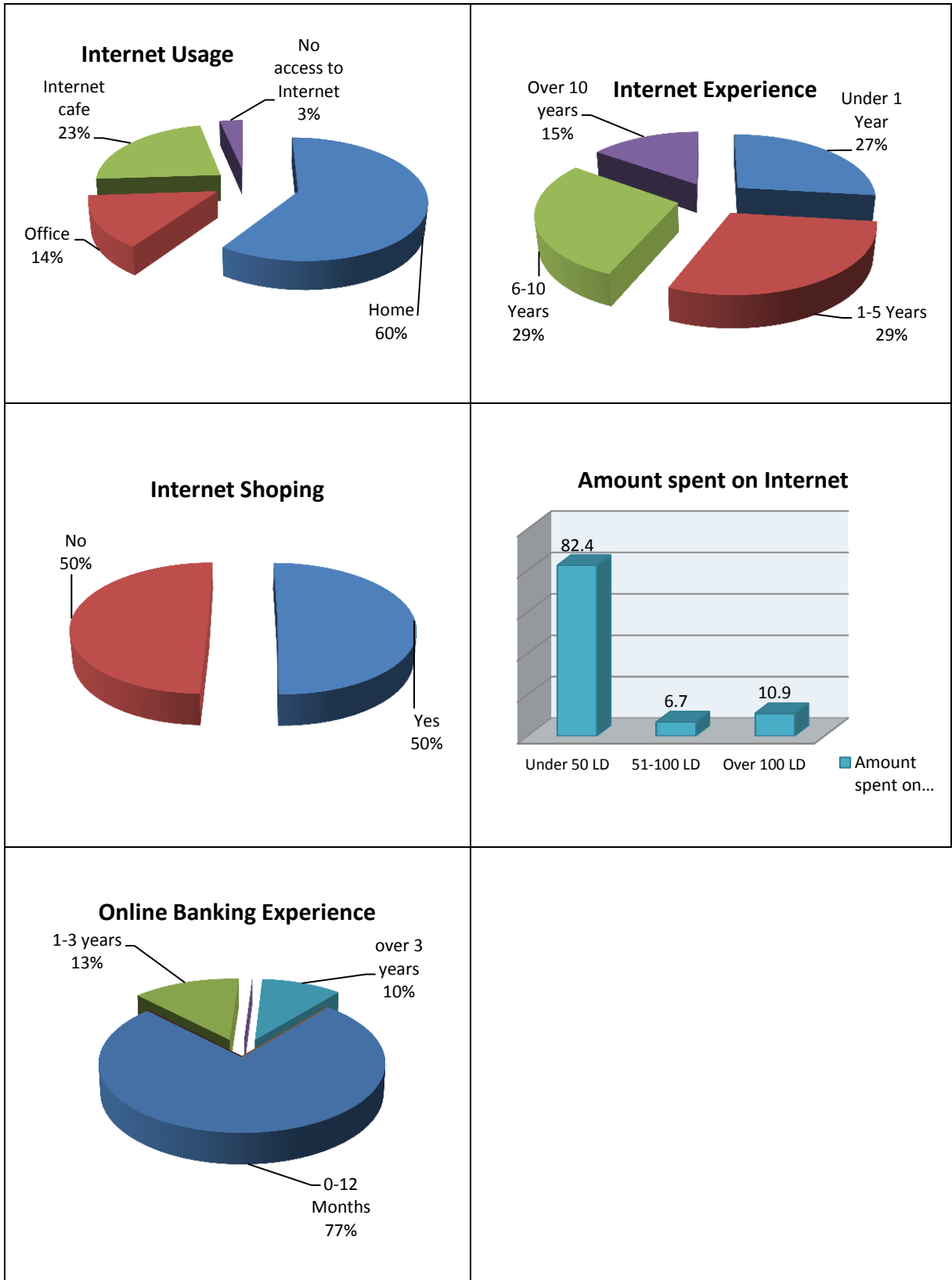


Figure 6. 3: A pictorial profile of Internet-related behaviour of the survey respondents

### 6.5.3 Descriptive Analysis of Response

After describing the demographic characteristics of the respondents and their usage pattern of different channels and online banking service, the attention was turned to how they answered the survey questions related to twelve components of the conceptual framework (figure 5.1: pp. 105) and their technological readiness in relation to those ten components of the conceptual framework.

#### 6.5. 31 Banking Channels

The result of questionnaire analysis of the banking channels are summarised in both, Table 6. 2 and Figure 6. 4, which shows the comparison between respondents' most selection of choices provided using Lickert scale by means of pie charts using Excel. Question No. 1 was a screening question in which respondents were asked about their frequency of use of four different banking channels. Figure 6. 4 suggests that “few times a week” 21%, “once a week” 19% and “once a month use (24% of respondents) of online banking” are the highest amongst all channels, followed by “branch banking” and “ATMs” (cash machines). “Telephone banking” was the most unpopular channel among the respondents, as 87% mentioned that they never used it.

Table 6. 2: Different banking channels describes banking channels with letters as (A) for branch banking, (B) for telephone banking, (C) cash machine and (D) for online banking. The reason for stating different banking channels is to show the differences in customers' intention towards banking channels. It is also compares online banking in terms of other banking channels and show how important is online banking for Libyan current and perceived customers. Using Likert scale, respondents were given multiple choices to select from, and indicate their available and preferred banking channels to conduct their banking transactions.

	Questions	Daily	Few times a week	Once a week	Once a month	Few times a year	Once a year	never	
Banking channels	Q1	A	25%	12.9%	4.4%	54.4%	14.6%	6%	1.7%
		B	5.2%	4.4%	2.5%	7.7%	6%	5.2%	87.9%
		C	20.6%	12.9%	2.5%	4.4%	0.8%	6%	70.7%
		D	4%	21%	19%	24%	5%	3%	43%

Table 6. 2: Different banking channels

Figure 6. 4 shows pie charts using Excel, which display the distribution of the frequency in using banking channels. Frequency of using banking channels includes

(daily, few times a week, once a week, once a month, few times a year, once a year, never).

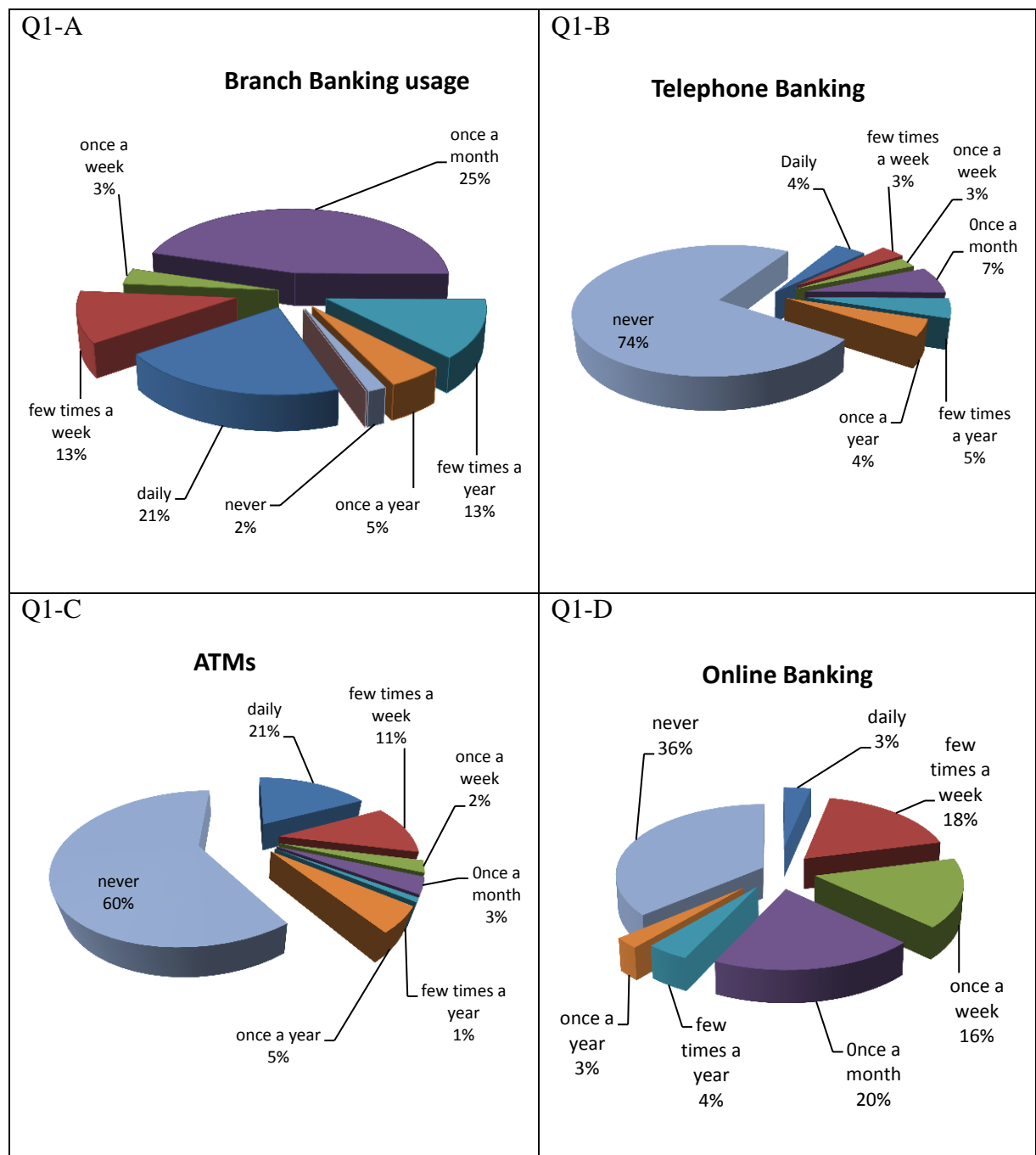


Figure 6. 4: A pictorial profile of Different banking channels

The findings of banking channels (Q1) show that:

- A. 25% used branch banking once a month to communicate with their bank
- B. 74% never used Telephone banking to communicate with their bank
- C. 60% never used ATMs to do any transaction or communicate with their bank

D. 20% used online banking once a month to communicate with their bank and to obtain balance inquiry.

### 6.5.3.2 Relative Advantages

Relative advantages or perceived usefulness as stated below in Table 6. 3 explains what benefits or advantages that customers can get when using online banking technology. Table 6. 3 below shows percentages of the respondents replying to the items related to this factor. Item 2 (Q2) in the questionnaire was divided into four sub-items “Online banking is more appealing to use than other types of banking”.

		Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree	
Relative Advantages	Q2								
		A	22.7%	13.4%	8.4%	26.1%	5%	1.7%	22.7%
		B	38.7%	18.5%	11.8%	12.6%	3.4%	1.7%	13.4
		C	31.9%	16%	5.9%	21%	21%	4.2%	2.5%
	D	26.1%	19.3%	6.7%	16%	2.5%	6.7%	22.7%	

Table 6. 3: Relative advantages

The Table 6. 5 below shows the percentage of respondents to item 2, which is related to relative advantages, It was subdivided into four sub-items as shown in the table above A, B, C, D explaining relative advantages. The first chart, shows that online banking, is more appealing to use than other types of online banking. Twenty seven respondents strongly agreed that online banking is more appealing to use than other types of banking whereas 27 strongly disagree with it. However, 31 of the respondents were not sure whether online banking is more appealing to use than other types of banking, and their answers therefore appeared as neutral.

The second chart in Table 6. 5 shows that 24/7 bank services are very important for the customers; as 46 of the respondents strongly agree. The third chart is about online transaction being cheaper if compared with other banking channels. Thirty eight respondents strongly agreed with the low price of online banking compared to 22 respondents who strongly disagree with it.

The fourth chart explains that online banking transactions are as correct as those carried out at bank branches. Thirty one respondents strongly agree with the accuracy

of online banking and 23 of them moderately agree. Whereas, 27 were strongly disagree and only 11 between moderately disagree and slightly disagree.

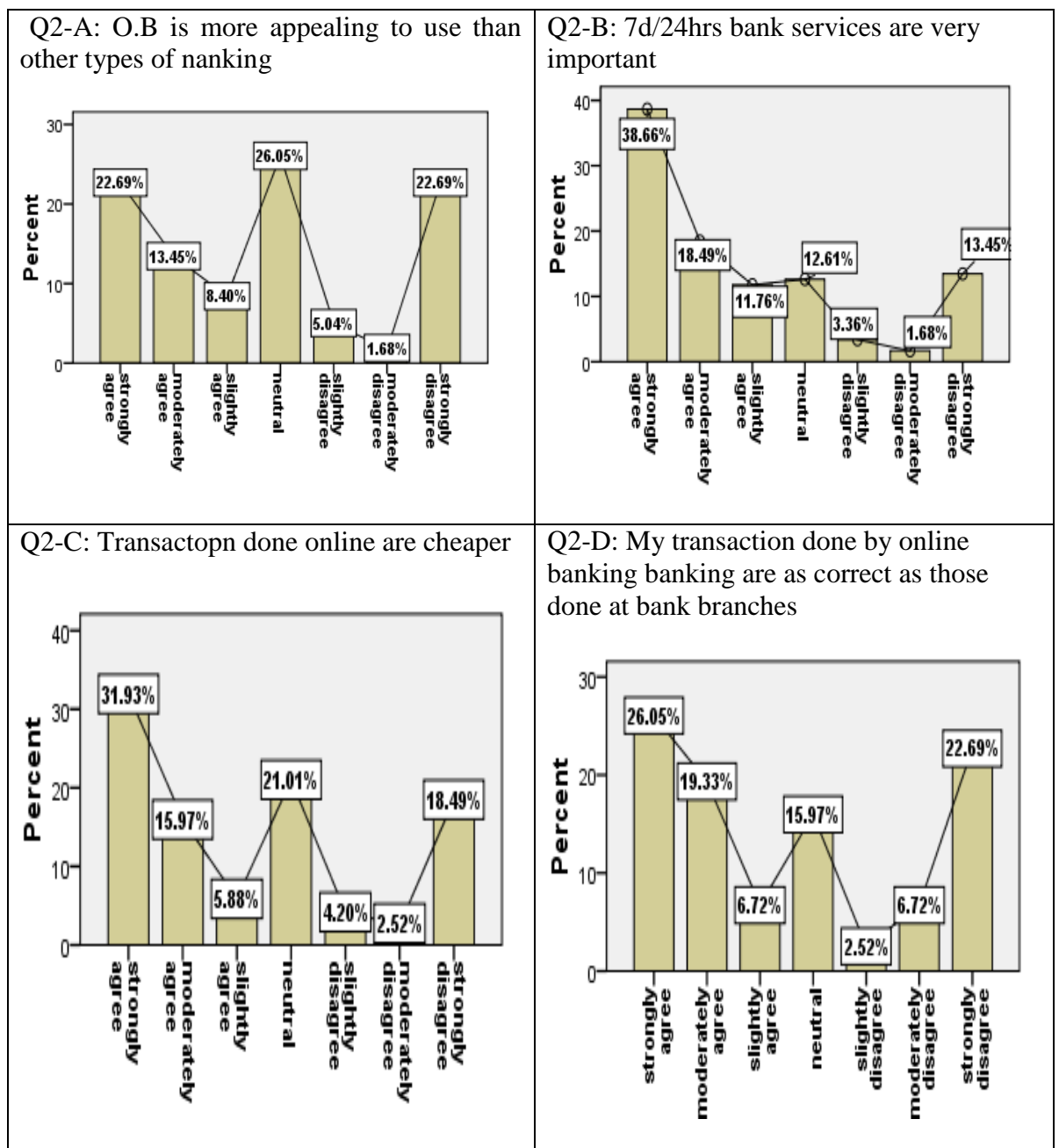


Figure 6. 5: Profile of Relative Advantages

A four-question scale measured respondents to *relative advantages*. The findings show that:

- A. 22.7% strongly agree that online banking is more appealing to use than other types of banking
- B. 38.7 strongly agree that 24/7 bank services are very important for them

- C. 31.9% strongly agree that online transaction are cheaper
- D. 26% strongly agree that their online banking transactions are as correct as those at bank branches.

### 6.5.3.3 Reputation Issues

Reputation issues are the impact of bad reputation of products or services such as online banking. Reputation issues were assessed through a one-item, seven-point Likert-type scale ranging from ‘strongly agree’ (1) to ‘strongly disagree’ (7). Table 6. 4 below shows the percentage of the respondents to item three which is about respondents’ beliefs that “people (Friends, Family, & colleagues) who: Influence my behaviour”, and this item was subdivided into two sub-items: A- “think that I must use online banking” and B- “Are important to me, strongly support the use of online banking”.

			Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Reputation Issues	Q3	A	14.3%	12.6%	9.2%	25.2%	5.9%	7.6%	25.2%
		B	16%	15.1%	6.7%	21%	8.4%	10.1%	22.7%

Table 6. 4: Reputation issues

The two charts were shown in Figure 6. 6 below demonstrating the frequency of respondents to reputation issues. The first chart explains number of respondents to sub-item A (“Friends, Family, & colleagues influence my behaviour; think that I must use online banking”). The chart shows that 30 respondents strongly disagree with the influence of friends, family, & colleagues in their decision to use or not to use online banking. However only 17 strongly agree with the influence of their friends, family, colleagues in their decisions and 15 of the respondents moderately agree. In addition 30 of them were not sure about the influence of their friends, family, and colleagues in their decisions.

The second chart in Figure 6. 6, which shows that friends, family, & colleagues are important to me strongly support the use of online banking. This chart shows that 27 of the respondents strongly disagreed with the importance of friends, family, and colleagues support in term of online banking. However 19 of them strongly agree

with that and only 18 moderately agree. In addition 25 of them were not aware of the importance of their friends, family, and colleagues in supporting them to use online banking as their answers were neutral.

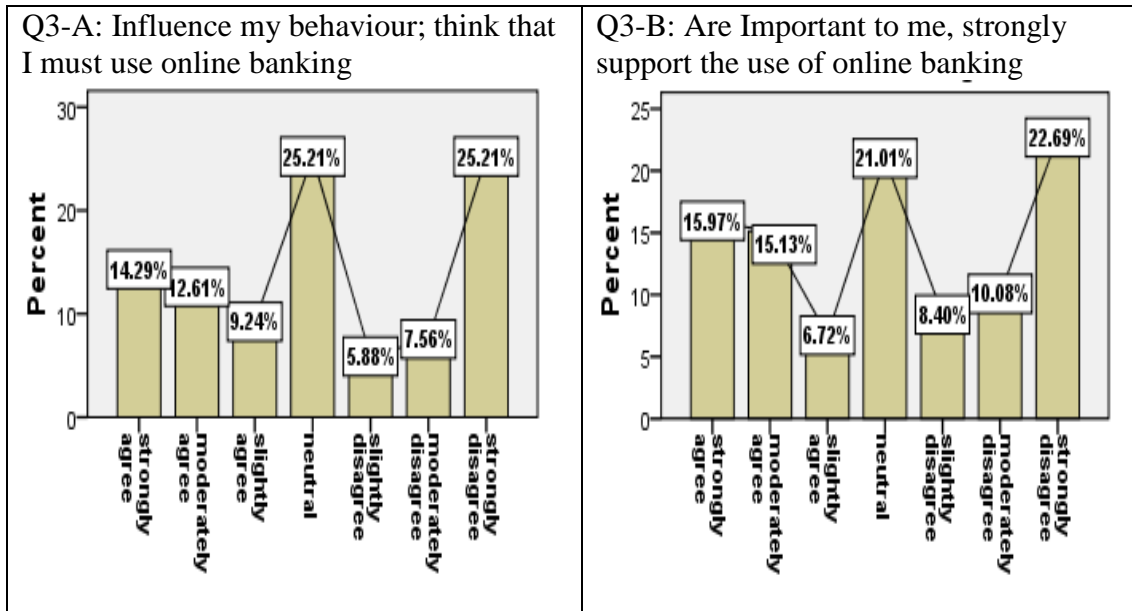


Figure 6. 6: Reputation Issues

The two items described above measured respondents' answers to *reputation issues* (Q3). The findings show that:

- A. 25% strongly disagree that their friends and family are influence their behaviour
- B. 23% strongly disagree that their friends and family are important to them and supporting them to use online banking

#### 6.5.3.4 Intention

The respondents were asked to indicate their intention to use online banking recently and in the future. Intentions were measured through a three-item, seven-point Likert-type scale ranging from 'strongly agree' (1) to 'strongly disagree' (7) Table 6. 5.



			Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Intention	Q4	A	52.1%	14.3%	10.1%	17.6%	0.8%	2.5%	2.5%
		B	33.6%	15.1%	9.2%	23.5%	6.7%	4.2%	7.6%
		C	42.9%	15.1%	11.8%	19.3%	5%	1.7%	4.2%
	Q5	D	36.1%	19.3%	14.3%	19.3%	5%	2.5%	3.4%
		E	50.4%	20.2%	8.4%	9.2%	5%	3.4%	3.4%
	Q6	F	57.1%	21%	5.9%	8.4%	5%	2.5%	
		G	59.7%	22.7%	4.2%	7.6%	3.4%	0.8%	1.7%
		H	44.5%	23.5%	10.1%	10.9%	4.2%	1.7%	5%

Table 6. 5: Intention

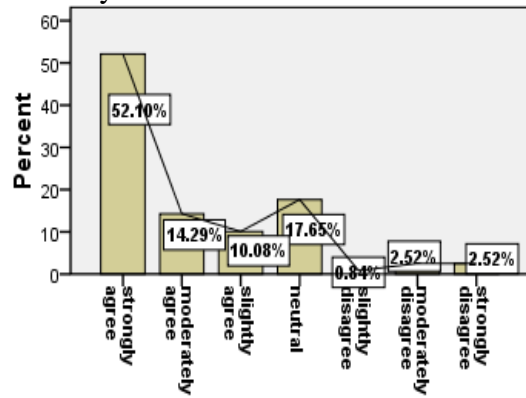
The charts below in Figure 6. 7 show the curves and explain the three items of intention. Each item was subdivided into two or three sub-items. For example the first sub-item which is Item four (Q4) was subdivided into three sub-items “A: *use online banking to communicate with my bank*”, “B: *use online banking for most of my banking needs*”, and “C: *use online banking anyway*”.

The curve in item (A) shows that the majority of respondents were strongly agreed to use online banking to communicate with their banks and those were counted for 62 respondents. The same as in item (B) where 40 respondents found to strongly agree to use online banking for most of their banking needs and 28 of them were not sure about using online banking for most of their banking needs or do not know how to use it.

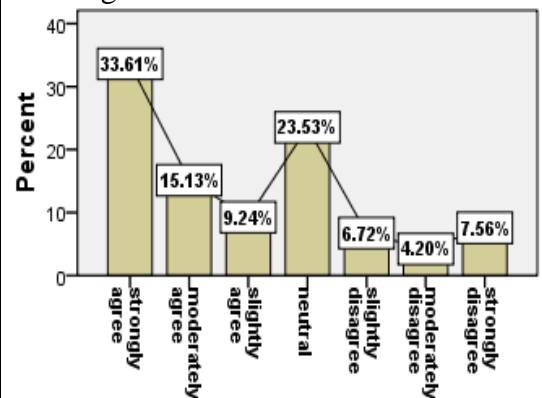
Item (C) was not so different, as 51 of the respondents strongly agree to use online banking anyway and only 23 of the respondents were neutral as for online banking use.

Item five (Q5) was subdivided into two sub-items “D: *presents great benefits to me*” and “E: *is very easy to use*”. Item six (Q6) was subdivided into three sub-items; “F: *conduct banking transactions more quickly*”, “G: *make the best of my time*”, “H: *Manage my financial resources more effectively*”.

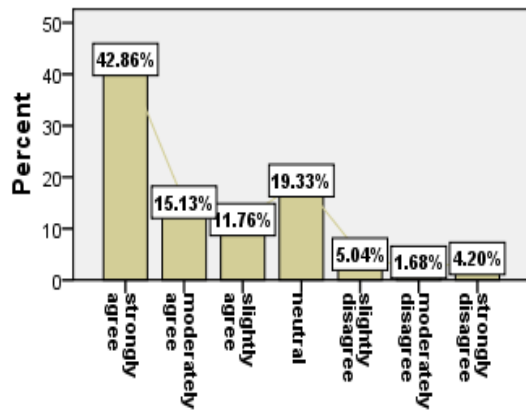
Q4-A: Use online banking to communicate with my bank



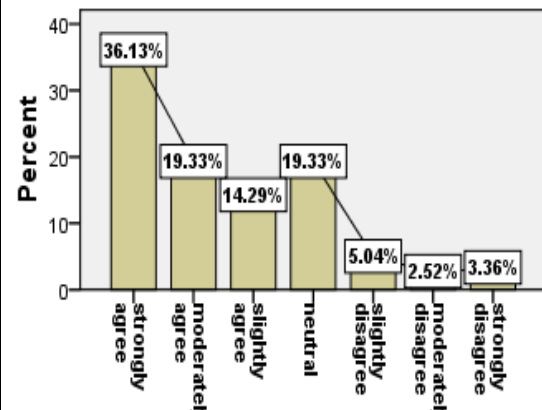
Q4-B: Use online banking for most of my banking needs



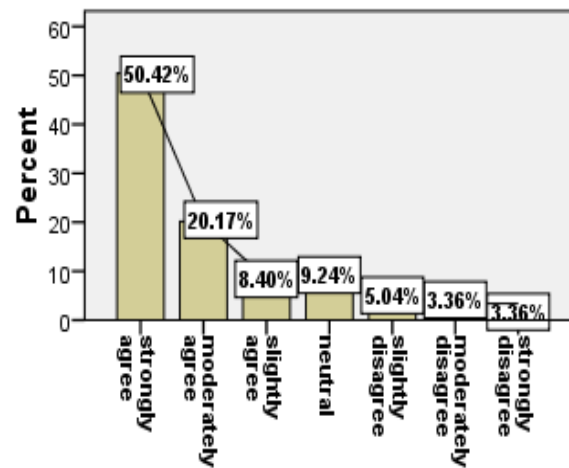
Q4-C: Use online banking



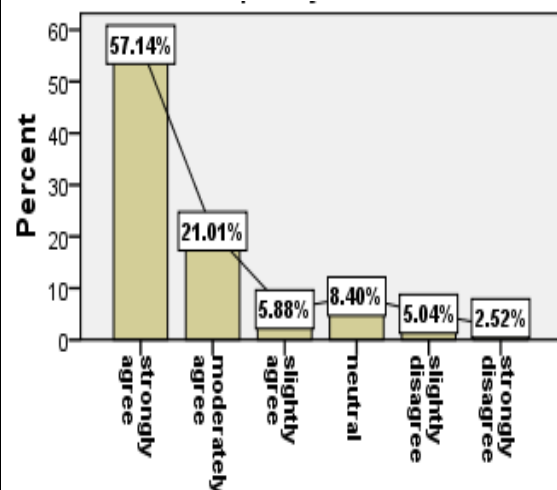
Q5-D: Present great benefits to me



Q5-E: is very easy to use



Q6-F: Conduct banking transactions more quickly



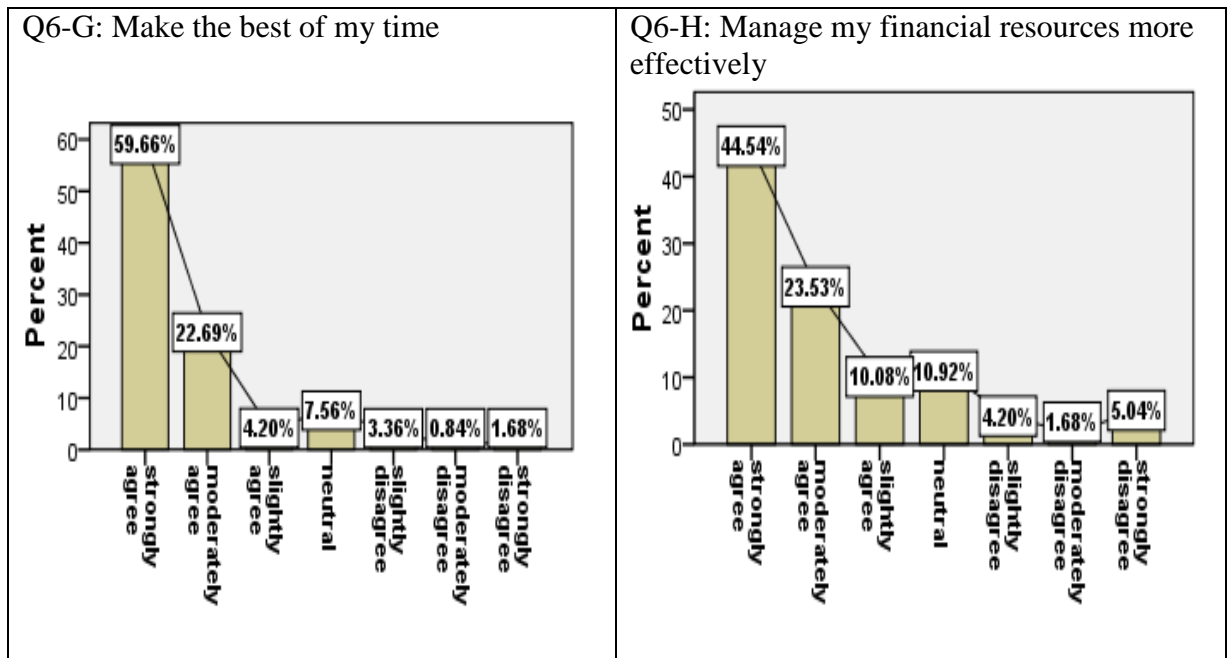


Figure 6. 7: profile of Intention

The findings from an eight-question investigate respondents to indicate their *intentions* of using online banking. The findings show that:

- A. 52% of the respondents strongly agree that they use online banking to communicate with their bank.
- B. 34% of the respondents strongly agree with the use of online banking for most of their banking needs
- C. 43% of respondents agree to use online banking anyway
- D. 36% strongly agree that online banking presents great benefits to them
- E. 50% strongly agree that online banking were very easy to use
- F. 57% strongly agree that online banking conduct banking transactions more quickly
- G. 60% strongly agree that online banking make the best of their times
- H. 45% of them strongly agree that online banking manage their financial resources more effectively.

### 6.5.3.5 Ease of Use

Table 6. 6 shows the responses percentages as respondents were asked their opinions about using online banking recently and in the future. Ease of use was measured through a two-item, seven-point Likert-type scale ranging from ‘strongly agree’ (1) to ‘strongly disagree’ (7) and each item was subdivided into two sub-items. The first

item Q7 was subdivided into two sub-items; “A: *do not require a lot of mental effort*” and “B: *have clear and understandable procedures*”. The second item Q8 was also subdivided into two sub-items; “C: *to learn how to perform the transactions available on my online banking website*” and “D: *to become confident in my use of the transactions on my online banking website*”.

			Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Ease of use	Q7	A	32.8%	13.4%	13.4%	21.8%	6.7%	3.4%	8.4%
		B	37%	17.6%	5.9%	16%	13.4%	3.4%	6.7%
	Q8	C	32.8%	14.3%	18.5%	11.8%	6.7%	2.5%	13.4%
		D	31.1%	18.5%	16.8%	16%	5.9%	3.4%	8.4%

Table 6. 6: Ease of use

Figure 6. 8 illustrates the data in Table 6. 6. Figure 6. 8 shows that the respondents strongly agree with all items in Q7 (A, B) and Q8 (C, D).

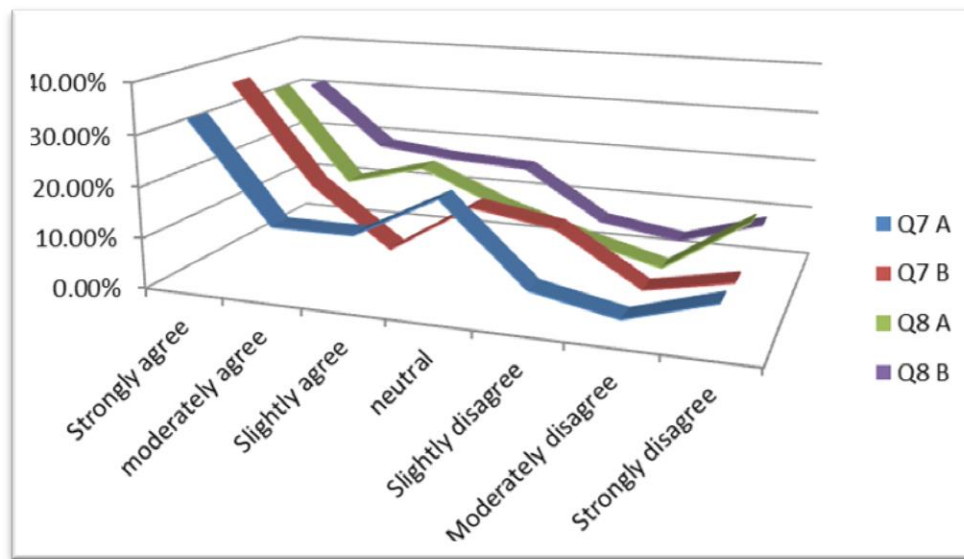


Figure 6. 8: Ease of use

The Figure 6. 9 below shows the frequencies and curves of respondents to the ease of use as mentioned above it contains Q7A&B and Q8C&D.

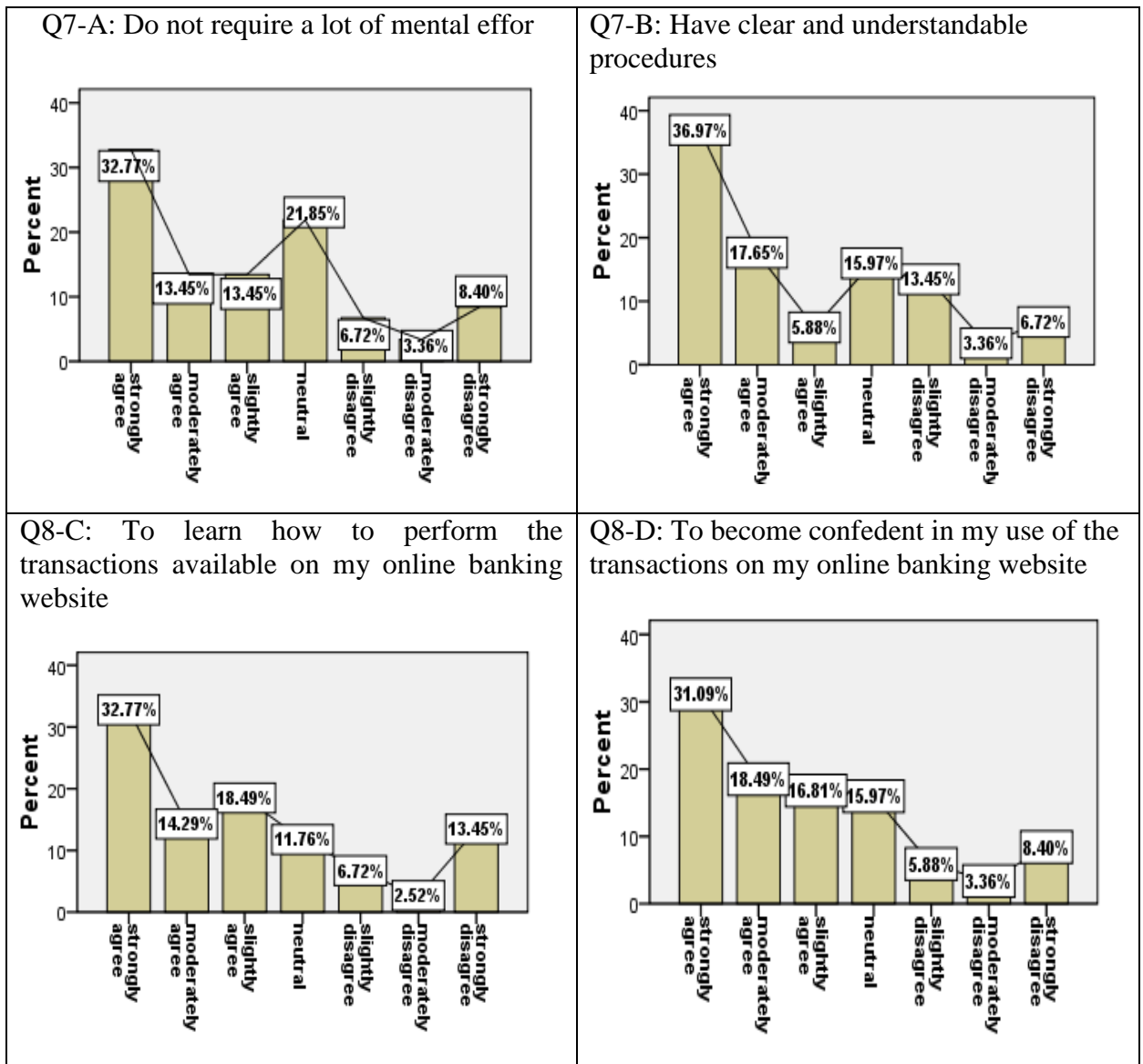


Figure 6. 9: Ease of use II

The four-item scale measured respondents' Ease of use (Q7 (A, B) and Q8 (C, D) of online banking. The findings show that:

- A. 33% strongly agree that online banking website do not requires a lot of mental efforts
- B. 37% strongly agree that online banking website have clear and understandable procedures
- C. 33% strongly agree that it was easy for them to learn how to perform the transactions available on their online banking website
- D. 31% strongly agree to become confident in their sue of transactions available on their online banking website

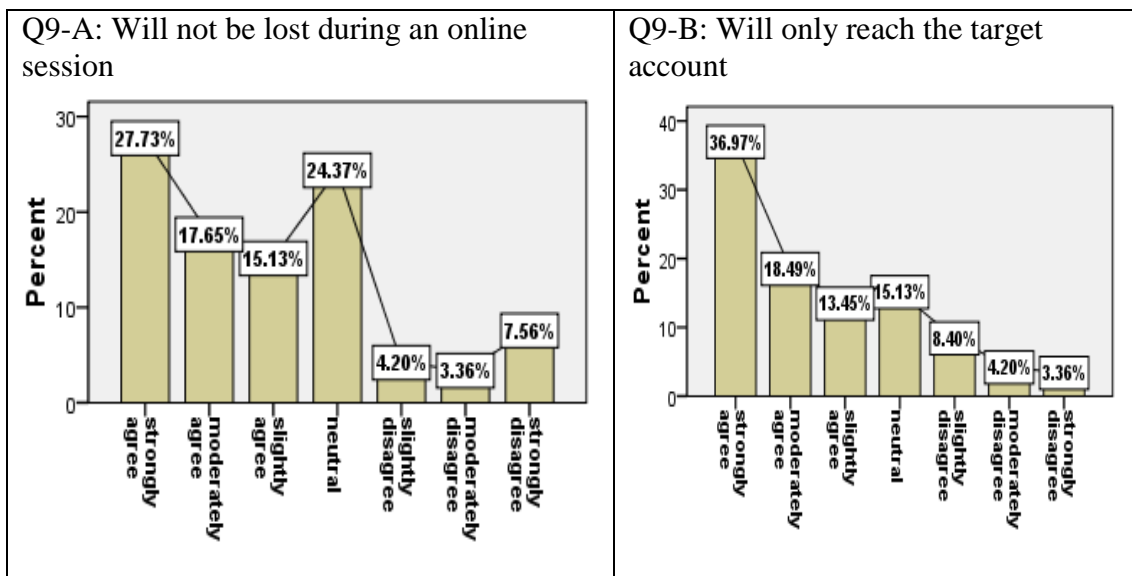
### 6.5.3.6 Transactional Issues

Transactional issues are presented in two items; the first item is Q9: “I believe my online banking transaction information...” and this subdivided into four sub-items as follow; A: “will not be lost during an online session”, B: “will only reach the target account”, C: “will only be used for the purpose of the original transaction” and D: “will be shared with others with my account”. The second item is Q10: “while using online banking, I believe that...” this subdivided into three sub-items as follow; E:” I will know exactly what information is collected”, F: “I will have full knowledge of the par” and G: “I will control the use of my information”. Table 6. 7 shows the percentage of respondents to transactional issues.

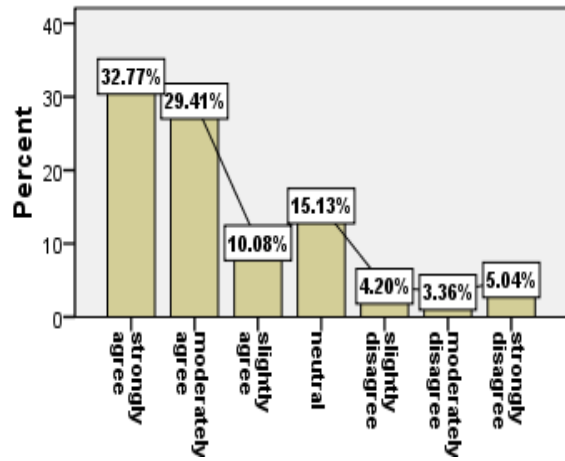
		Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree	
Transactional issues	Q9	A	27.7%	17.6%	15.1%	24.4%	4.2%	3.4%	7.6%
		B	37%	18.5%	13.4%	15.1%	8.4%	4.2%	3.4%
		C	32.8%	29.4%	10.1%	15.1%	4.2%	3.4%	5%
		D	10.1%	9.2%	9.2%	11.8%	8.4%	14.3%	37%
	Q10	E	25.2%	33.6%	13.4%	15.1%	2.5%	1.7%	8.4%
		F	30.3%	30.3%	16.8%	13.4%	3.4%	0.8%	5%
		G	35.3%	22.7%	14.3%	13.4%	3.4%	5.9%	5%

Table 6. 7: Transactional issues

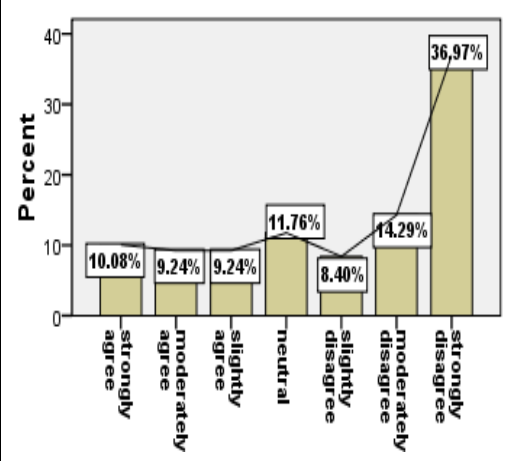
Figure 6. 10 and Figure 6. 11 show the frequencies and curves of respondents to the transactional issues.



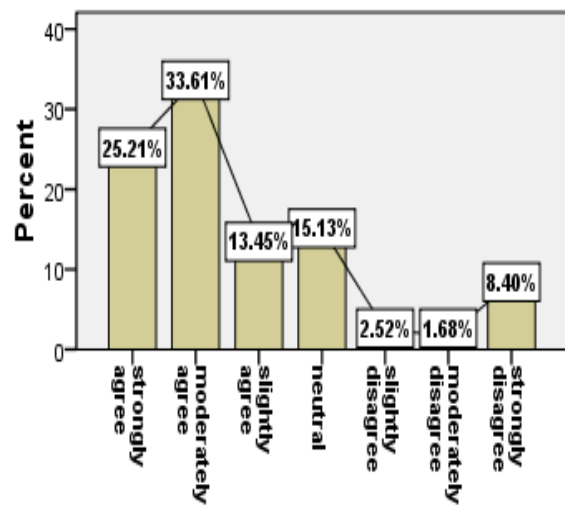
Q9-C: Will only be used for the purpose of the original transaction



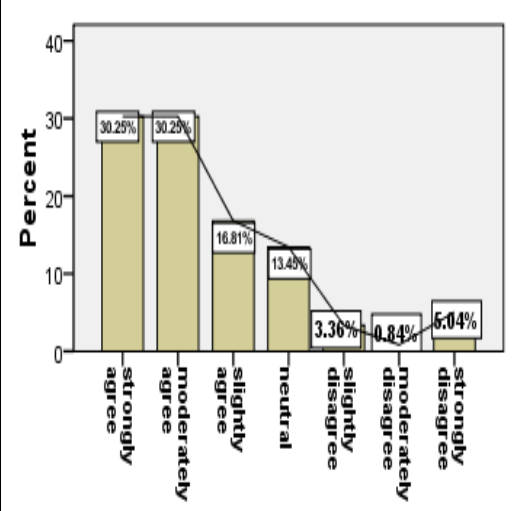
Q9-D: Will be shared with others with my account



Q10-E: I will know exactly what information is collected



Q10-F: I will have full knowledge of the par



Q10-G: I will control the use of my information

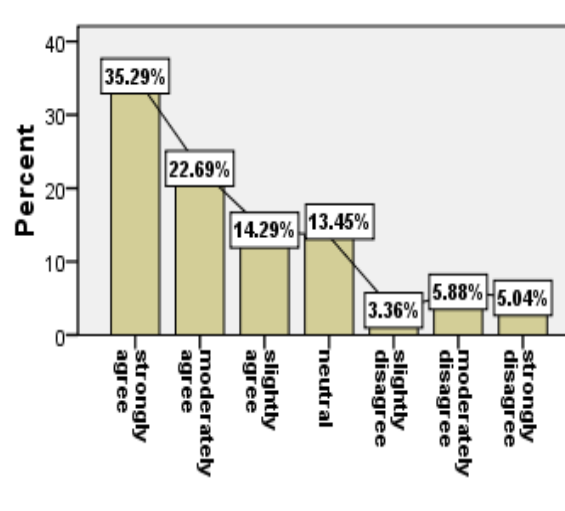


Figure 6. 10: Transactional issues

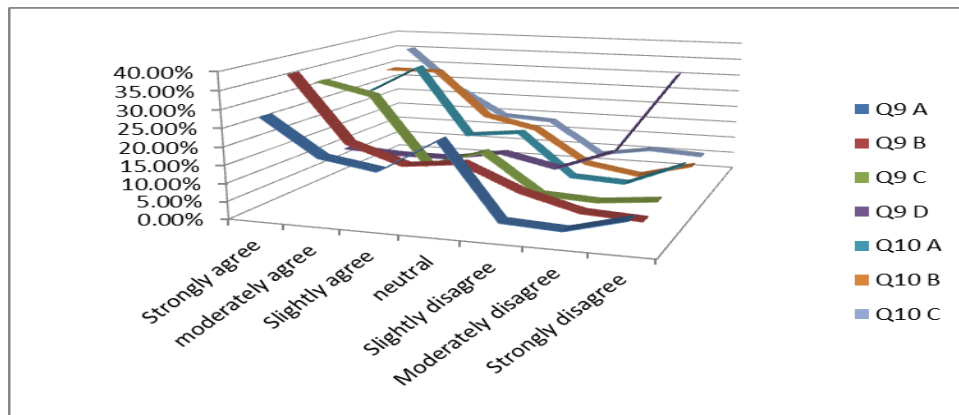


Figure 6. 11: Transactional issues II

The findings from the five-subitem *Transaction issues* scale suggest that:

- A. 28% strongly agree that online banking transaction information will not be lost during an online session
- B. 37% strongly agree that online banking transaction information will only reach the target account
- C. 33% strongly agree that online banking transaction information will only be used for the purpose of the original transaction
- D. 37% strongly disagree that online banking transaction information will be shared with others with their accounts
- E. 34% moderately agree that while they were using online banking they will know exactly what information is collected
- F. 30% moderately agree that while they were using online banking they will have full knowledge of the par
- G. 35% strongly agree that while they were using online banking they will control the use of their information.

### 6.5.3.7 Privacy Issues

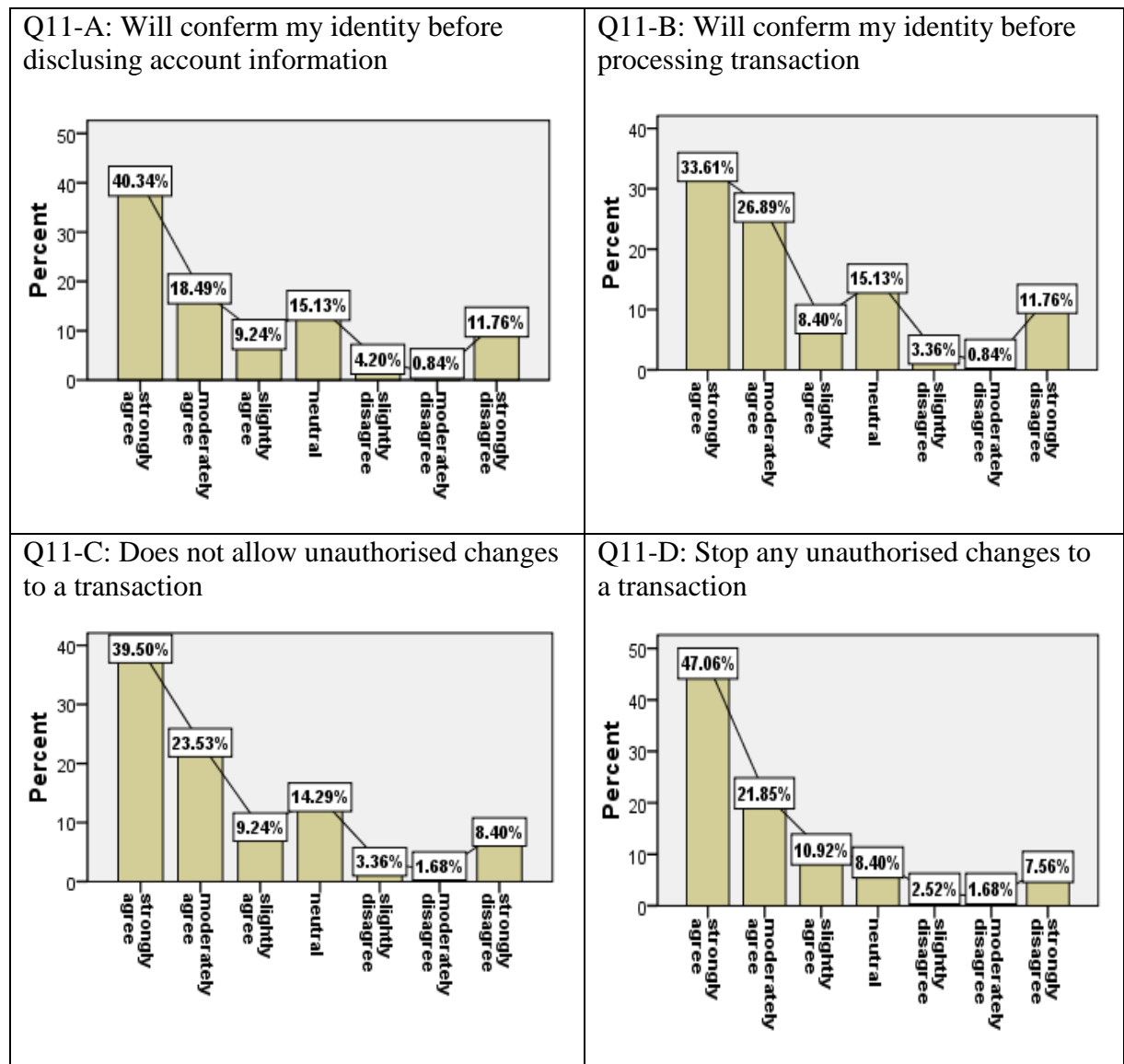
The privacy issues factor as presented in Table 6. 8 contain one item (Q11); “*while using online banking, I believe that online banking system...*”, this question was subdivided into five sub-items as follows; A: “*will confirm my identity before disclosing account information*”, B: “*will confirm my identity before processing transactions*”, C: “*does not allow unauthorized changes to a transaction*”, D: “*stop any unauthorized changes to a transaction*”, and E: “*Provides a secure environment in which to bank*”.



			Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Privacy issues	Q11	A	40.3%	18.5%	9.2%	15.1%	4.2%	0.8%	11.8%
		B	33.6%	26.9%	8.4%	15.1%	3.4%	0.8%	11.8%
		C	39.5%	23.5%	9.2%	14.3%	3.4%	1.7%	8.4%
		D	47.1%	21.8%	10.9%	8.4%	2.5%	1.7%	7.6%
		E	43.7%	18.5%	9.2%	14.3%	3.4%	2.5%	8.4%

Table 6. 8: Privacy issues

Figure 6. 12 presents the relationship between the five sub-items in Q11 and the responses from Table 6. 8 above. The next paragraph will explain the findings more in depth.



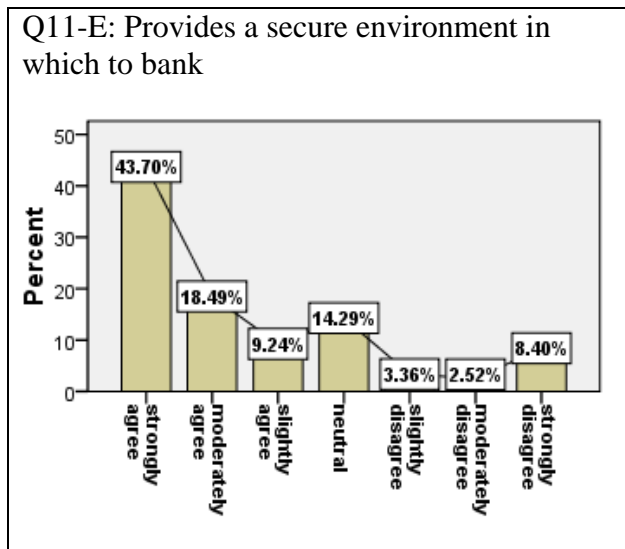


Figure 6. 12: privacy Issues

The findings from the five-sub-item *privacy issues* scale suggest that while conducting online banking transactions:

- A. 40% strongly agree that online banking system will confirm their identities before disclosing account information
- B. 34% strongly agree that online banking system will confirm their identities before processing transactions
- C. 40% strongly agree that online banking does not allow unauthorized changes to their transactions
- D. 47% strongly agree that online banking system stop any unauthorized changes to their transactions
- E. 43% strongly agree that online banking system Provides a secure environment in which to bank

### 6.5.3.8 Security Issues

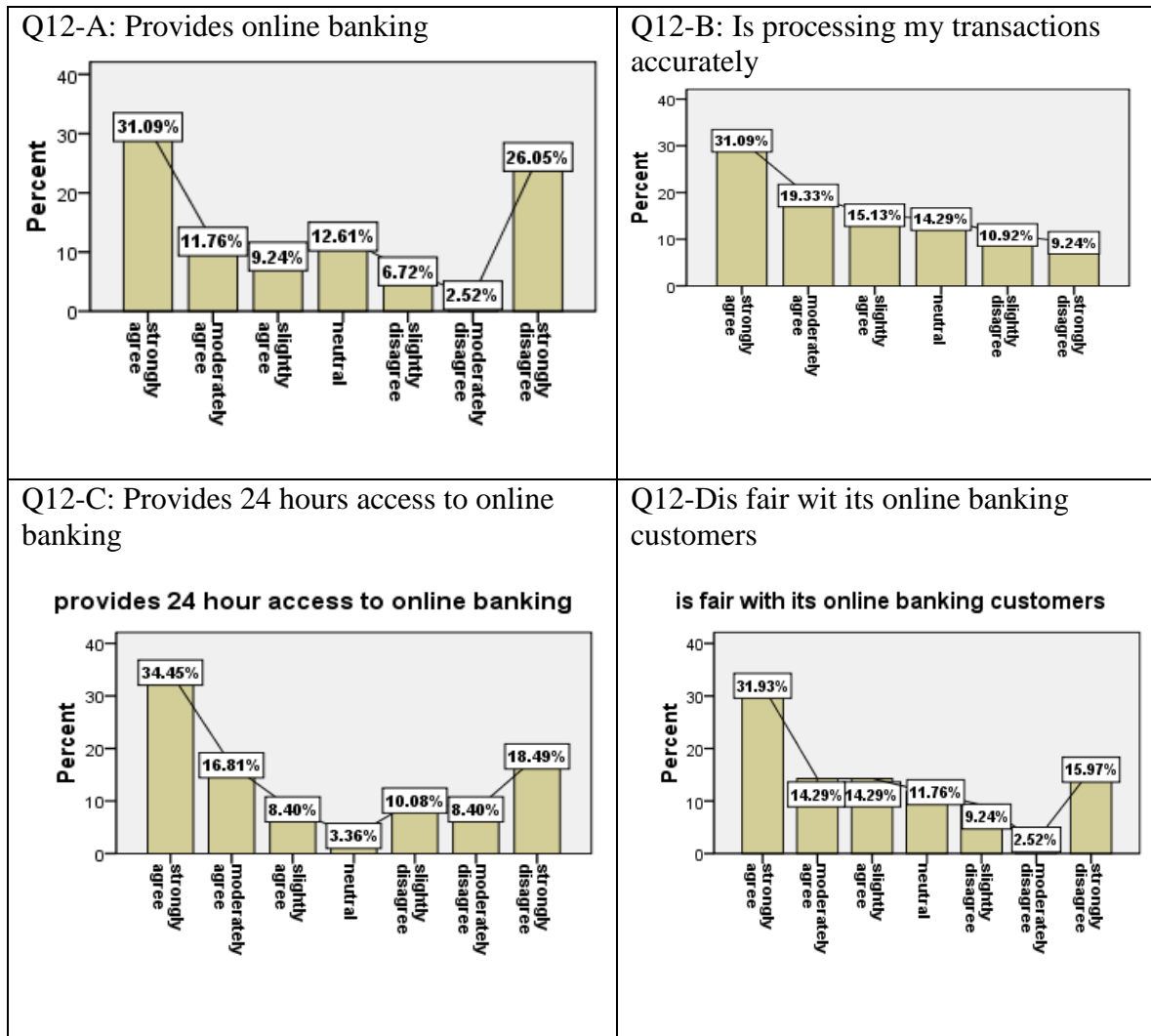
Security issues as presented in Table 6. 9 contain two items/questions (Q12) and (Q13). (Q12) is defined as: “*I believe that my bank...*” and this subdivided into eight sub-items as follows, A: “*provides online banking*”, B: “*is processing my transactions accurately and on time*”, C: “*provides 24 hour secure access to online banking*”, D: “*is fair with its online banking customers*”, E: “*Will repay any money taken from my account through unauthorized transactions*”, F: “*is acting in my best interest*”, G: “*has consistent online practices and policies*”. (Q13) is defined as: “*I trust...*” which divided into three sub-items; H: “*online banking for its safety*”, I: “*my*

bank as a reliable service provider”, and J: “the Internet as a reliable medium for banking transactions”.

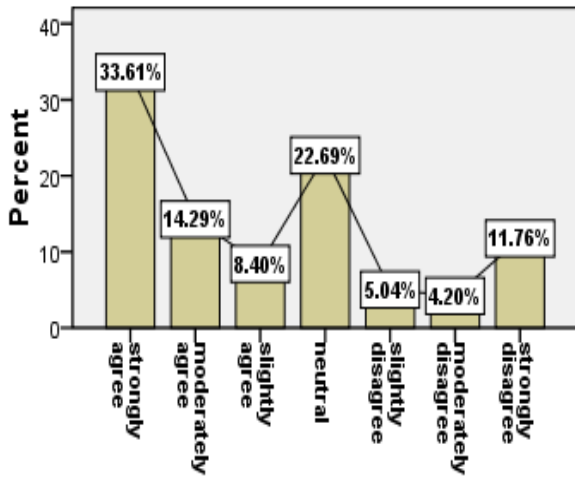
		Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree	
Security issues	Q12	A	31.1%	11.8%	9.2%	12.6%	6.7%	2.5%	26.1%
		B	31.1%	19.3%	15.1%	14.3%	10.9%	9.2%	0.10
		C	34.5%	16.8%	8.4%	3.4%	10.1%	8.4%	18.5%
		D	31.9%	14.3%	14.3%	11.8%	9.2%	2.5%	16%
		E	33.6%	14.3%	8.4%	22.7%	5%	4.2%	11.8%
		F	25.2%	12.6%	10.9%	20.2%	5.9%	5.9%	19.3%
		G	16.8%	14.3%	19.3%	23.5%	9.2%	5%	11.8%
	Q13	H	34.5%	13.4%	10.1%	19.3%	10.1%	4.2%	8.4%
		I	24.4%	25.2%	16%	16.8%	5.9%	0.8%	10.9%
		J	24.4%	16.8%	18.5%	21%	5%	5.9%	8.4%

Table 6. 9: Security issues

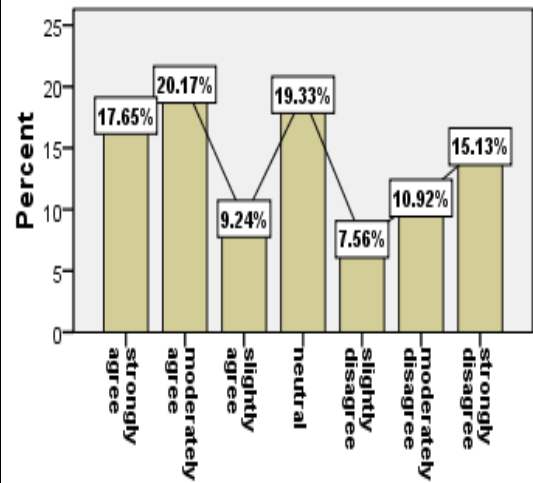
Figure 6. 13 below shows the percentages responses to security issues using pie chart. The chart shows that



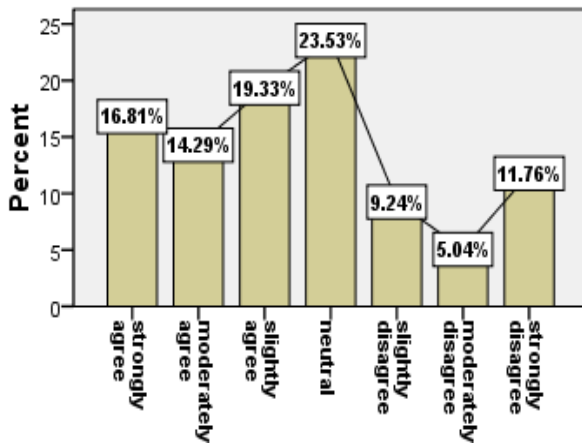
Q12-E: Will repay any money taken from my account through unauthorised transactions



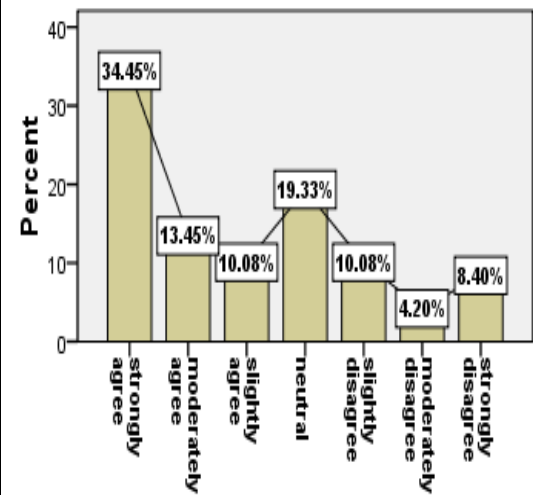
Q12-F: Is acting in my best interest



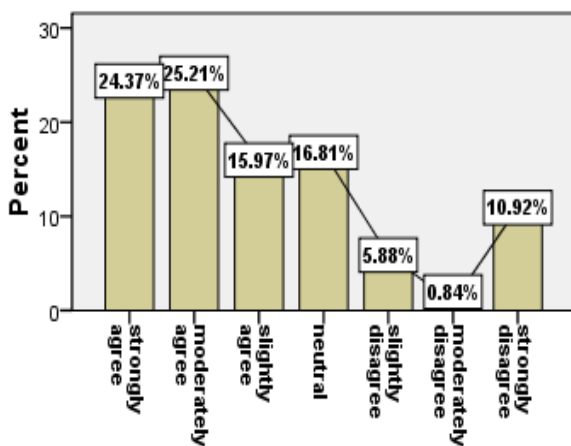
Q12-G: has consistent online practices and policies



Q13-H: Online banking for its safety



Q13-I: My Bank as a reliable service provider



Q13-J: The Internet as a reliable medium for banking transactions

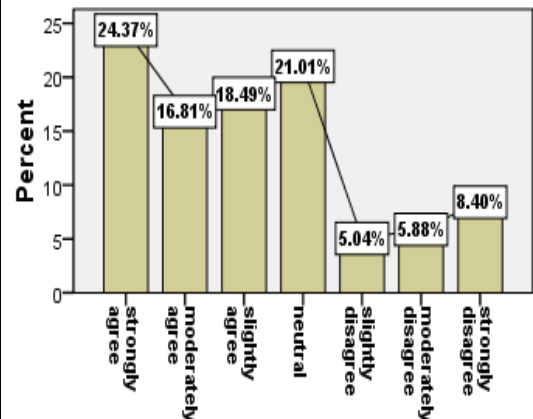


Figure 6. 13: Security issues

The findings from ten-sub-items *security issues* scale show that:

- A. 31% strongly agree that their bank is provides online banking whereas 26% strongly disagree that their bank is not provides online banking services or provides limited services
- B. 31% strongly agree that their bank is processing their transactions accurately and on time
- C. 35% strongly agree that their bank provides 24 hour secure access to online banking
- D. 32% strongly agree that their bank is fair with its online banking customers
- E. 34% strongly agree that their bank Will repay any money taken from their accounts through unauthorized transactions and 22% are not sure about that
- F. 25% strongly agree that their bank is acting in their best interests
- G. 23% were not sure about or neutrally agreed that their bank has consistent online practices and policies.

### 6.5.3.9 Technical and Legal Support Issues

This item or issue was prepared and presented in Table 6. 10 as one question/item (Q14): “*I believe that my bank...*” this item was subdivided into four sub-items as follows; A: “*I have the best equipment necessary to use online banking (e.g. a personal computer and Internet connection)*”, B: “*I have the knowledge to solve any problems with my expected use of online banking*”, C: “*If I need help using online banking, I know people who would help me*”, and D: “*knowledge to use online banking*”.

			Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Technical & Legal support issues	Q14	A	22.7%	18.5%	16.8%	10.9%	5.9%	11.8%	13.4
		B	20.2%	21.8%	16.8%	16%	5.9%	6.7%	12.6%
		C	20.2%	16%	10.1%	22.7%	10.1%	10.1%	10.9%
		D	23.5%	20.2%	16.8%	9.2%	9.2%	10.1%	10.9%

Table 6. 10: Technical and legal support issues

In quick summary, Figure 6. 14 below shows the frequencies and curves of Q14 which explains technical and legal support issues.

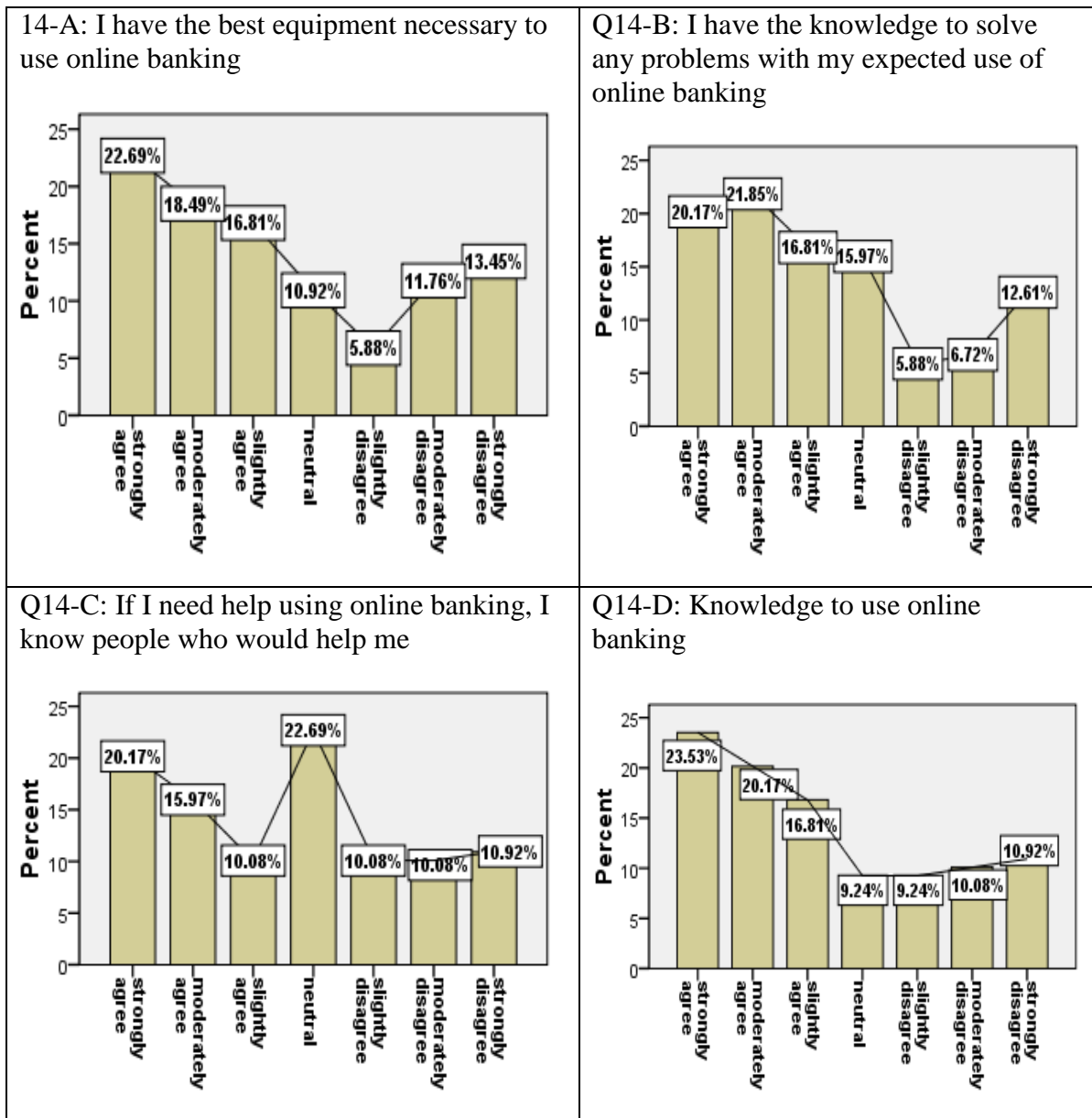


Figure 6. 14: Technical and legal support issues

A four-sub-item *technical and legal support issues* scale suggests that:

- A. More than 50% in total agree that they have the best equipment necessary to use online banking such as personal computer and Internet connection, whereas only 13% strongly disagree with that.
- B. More than 47% in total agree that they have the knowledge to solve any problems with their expected use of online banking
- C. About 40% in total agree that if they need help using online banking, they know people who would help them, and 22% were not sure about whom they may go to if they need help in using online banking.

D. More than 50% in total agree that they have the knowledge to use online banking

### 6.5.3.10 Trust and Risk

Table 6. 11 presents trust and risk which contains three questions/items Q15: “*whilst performing online banking transactions, I would rate...*” this question/item was subdivided into two sub-items as follows; A: “*financial loss as*”, and B: “*my bank as reliable service provider*”. The second item/question is Q16: “*My decision to perform banking transaction online presents*”, this item contains only one sub-item which is; A “*significant Risk leads to a significant Opportunity*”. The third question/item was; Q17: “*My decision to perform banking transaction on the Internet presents*”, which also contains one sub-item; “*High Potential for loss High potential for Gain*”. Like other questions/items trust and risk were measured through a two-item, seven-point Likert-type scale ranging from ‘strongly agree’ (1) to ‘strongly disagree’ (7).

		Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree	
Trust and	Q15	A	8.4%	16%	16%	38.7%	10.1%	6.7%	4.2%
		B	13.4%	26.9%	15.1%	26.1%	8.4%	3.4%	6.7%
	Q16		11.8%	10.9%	16.8%	28.6%	16%	9.2%	6.7%
	Q17		7.6%	14.3%	21%	35.3%	10.1%	7.6%	4.2%

Table 6. 11: Trust and Risk

Findings from the survey pertaining to Trust and risk (Q15A&B, Q16, and Q17) reveal some interesting similarities and differences across the respondents. The overall findings of the trust and risk show that there are similarities in the figures below, as respondents were neutral in their answers.

For instance the findings suggest that the first two charts Q15A&B explain the components of Q15 and Q15A presenting (financial loss) and we can see that the scores are higher in the neutral side which mean that respondents either are not sure about the financial loss or they feel it is the same for them. The mean score was 3.63 with 1.5 of standard deviation. The differences can be seen as the second histogram is slightly differently distributed as 32 respondents moderately agree that their bank as reliable service provider with mean score 3.3 and standard deviation 1.7. Q16 and Q17 are similar to Q15A as the highest scores were for neutral (Figure 6. 15).

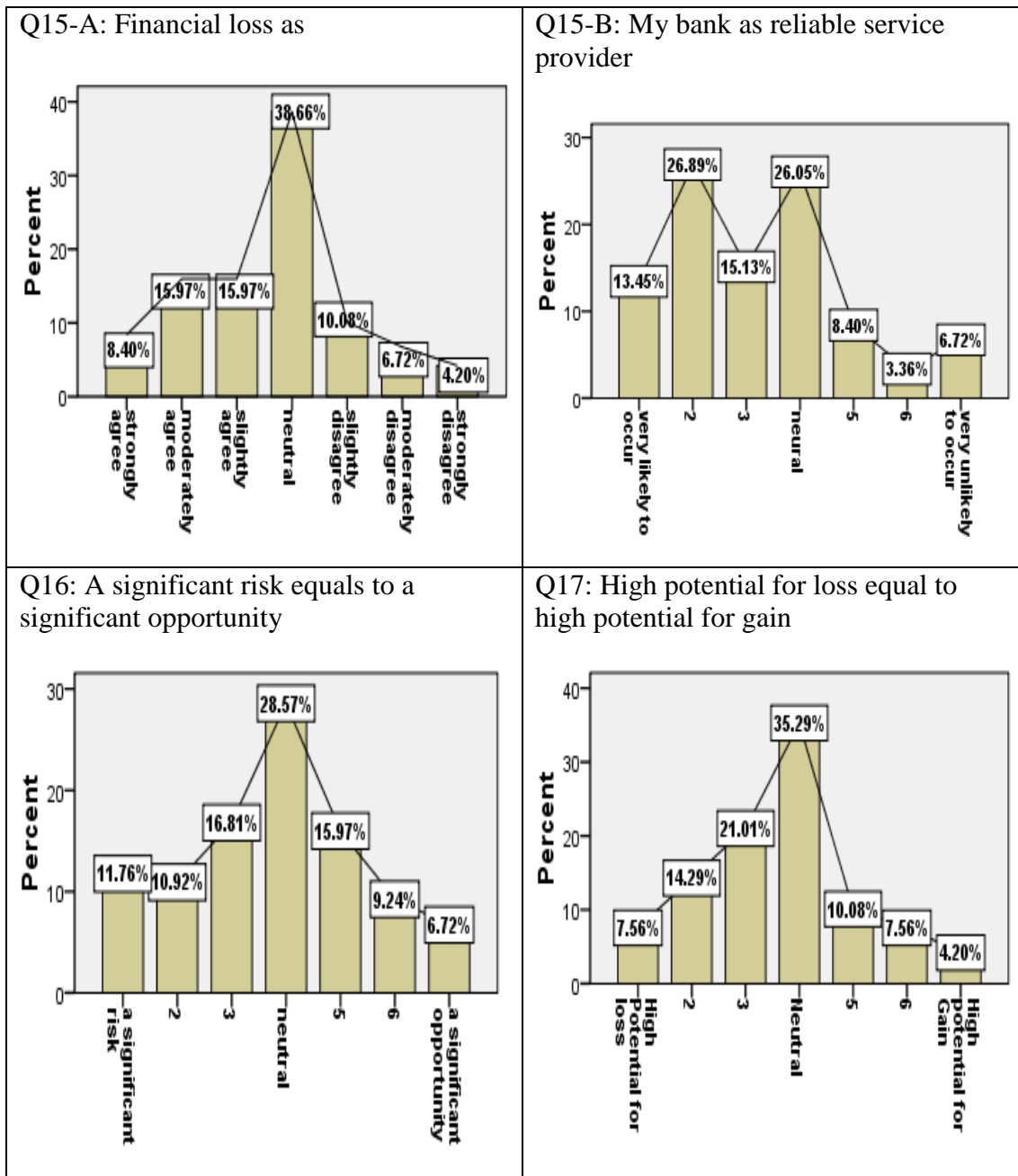


Figure 6. 15: Trust and Risk

### 6.5.3.11 Technology Readiness

This part of the questionnaire is to check the respondents' technology level and how to deal with new technology products in general and online banking related technology. The whole idea behind technology readiness questions as showed in Table 6. 12 and Figure 6. 16 are to test and show customers' level of technology and to see at which stage customers are able to deal with new technology products or aware of it.



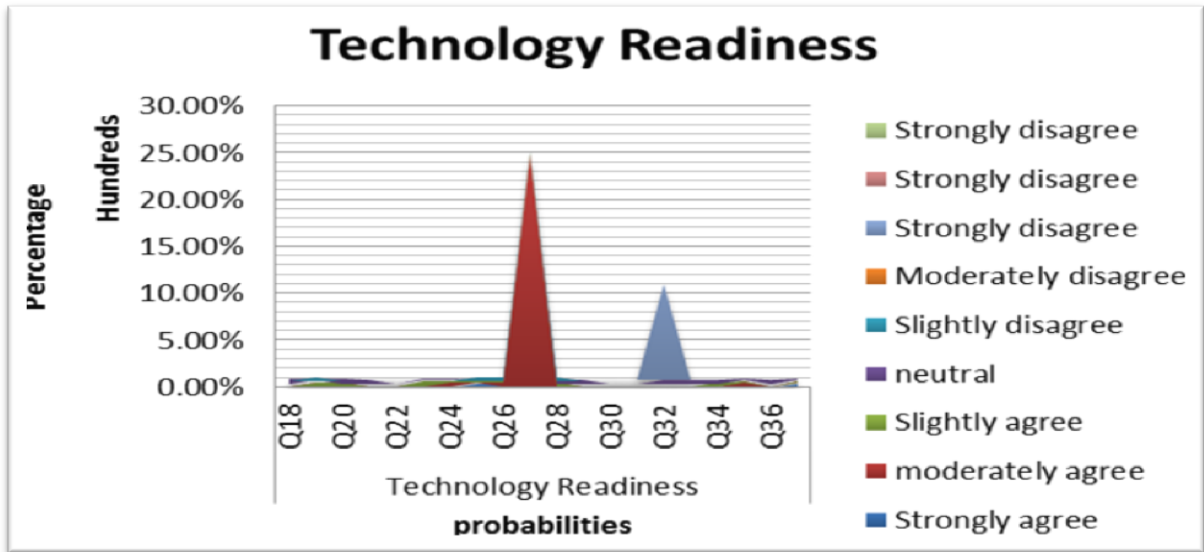


Figure 6. 16: Technology Readiness

The explanation for Figure 6. 16 for technology readiness is that the related items were divided into four categories or parts where each part of them contains five simple sub-items as follows: (Q18, Q19, Q20, Q21, Q22) and this part looks at the first category of the drivers: “*Optimism*”, the second part of the questions contains (Q23, Q24, Q25, Q26, Q27) which looks at the second category of the drivers: “*Innovativeness*”, the third part of the questions contains (Q28, Q29, Q30, Q31, Q32) which looks at the first category of the inhibitors “*Discomfort*” and the fourth part contains (Q33, Q34, Q35, Q36, Q37) which looks at the second category of the inhibitors: “*Insecurity*”.

		Strongly agree	moderately agree	Slightly agree	neutral	Slightly disagree	Moderately disagree	Strongly disagree
Technology Readiness	Q18	16.8%	16.8%	16%	31.1%	3.4%	5%	10.9%
	Q19	22.7%	18.5%	23.5%	22.7%	6.7%	3.4%	2.5%
	Q20	21%	19.3%	20.2%	23.5%	5.9%	6.7%	3.4%
	Q21	13.4%	10.9%	16.8%	26.1%	16%	11.8%	5%
	Q22	3.4%	12.6%	15.1%	27.7%	16%	10.9%	14.3%
	Q23	17.6%	26.1%	23.5%	21%	5%	5%	1.7%
	Q24	28.6%	29.4%	16.8%	15.1%	3.4%	5%	1.7%
	Q25	42%	21%	16.8%	10.1%	5%	1.7%	3.4%
	Q26	37%	26.9%	14.3%	12.6%	4.2%	0.8%	4.2%
	Q27	31.1%	24.4	27.7%	10.9%	3.4%	0.8%	1.7%
	Q28	13.4%	26.1%	17.6%	31.9%	5.9%	3.4%	1.7%
	Q29	19.3%	10.9%	12.6%	21%	19.3%	11.8%	5%
	Q30	12.6%	10.1%	12.6%	26.9%	12.6%	11.8%	13.4%
	Q31	14.3%	11.8%	10.1%	25.2%	8.4%	8.4%	21.8%
	Q32	10.9%	13.4%	18.5%	26.1%	9.2%	11.8%	10.1
	Q33	16%	19.3%	12.6%	24.4%	13.4%	3.4%	10.9%
	Q34	13.4%	16.8%	21.8%	23.5%	9.2%	5%	10.1%
Q35	31.9%	25.2%	13.4%	17.6%	3.4%	5.9%	2.5%	
Q36	18.5%	10.1%	19.3%	20.2%	12.6%	12.6%	6.7%	
Q37	42%	16%	10.1%	9.2%	3.4%	15.1%	4.2%	

Table 6. 12: Technological Readiness

Figure 6. 16 summarises the responses to the items or questions related to technology readiness

As clarified earlier in chapter three and subsequently highlighted in chapter five, customers' technology readiness and customers demographics are both playing a role of a moderator in the theoretical framework shown in chapter 5 (figure 5.1).

The current chapter and especially this section is responding to the ideas related to customers technology readiness by empirically presenting the questionnaire results presented in both, the table and the figure above and classifying them.

The Table 6. 12 and subsequently Figure 6. 16 showed high rates of satisfaction by the respondents to the second category of drivers of technology readiness as they strongly agree that, "*technology gives me more freedom of mobility and new technology products are more convenient to use*". This category as explained above is representing the Innovativeness. (See chapter three for more explanation about innovativeness).

## **6.6 Summary**

This chapter clearly reported the descriptive analysis of the survey and summarised the basic statistics related to the respondents' demographic profile and the constructs examined in the present study. This chapter started with an overview of the questionnaires by explaining all of its parts and then examined the responses rate. This chapter also conducted the reliability test using the Cronbach's Alpha method. A statement of findings from the data was clearly fitted after each factor within this chapter to empirically explain more in depth the factors that were presented through the theoretical framework. Multivariate analyses such as multiple correlation and regression will be carried out in the next chapter.

# **Chapter (7): Statistical Analysis (Correlation and Regression Analysis)**

## **7.1 Introduction**

Chapter six presented descriptive analysis of the survey data. Data analysis was first carried out using descriptive statistics, looking at the frequency of the variables in the Demographics data section of the questionnaire by means of pie chart graphs. Reliability analysis using the Cronbach's alpha analysis was carried out summarising the basic statistics related to the respondents' demographic profile and brought up vital findings. This chapter will be using correlation and regression methods of data analysis to test factors. The results from correlation and regression will help to reflect and interpret the relationships in the framework that were explained earlier in chapter five figure 5.1.

This chapter corresponds to objective four and research process stage five, which were presented in chapter four, Figure 4. 4. It will also answer the fourth research question: *“are there any perception and acceptance differences between segments of Libyan customers on the basis of their technology readiness and demographic (gender and age) characteristics?”*

## **7.2 Univariate Analysis (Correlation and Regression Analysis)**

The univariate analysis is carried out to show association between some of the factors. As the data are ordinal it is more appropriate to use non parametric techniques such as the spearman correlation to show association.

### **7.2.1 Data Preparation and Screening**

The first step in data analysis is data presentation and screening.

Multivariate analysis techniques such as multiple regression and factor analysis have a tremendous analytical power to assist the researchers in testing their hypothesis, but they are not without limitations (Hair et al. 1998). Data preparation and screening are crucial for multivariate analysis. It can be time consuming, but avoiding it can lead to failure of model estimation and crashing of fitting programmes (Kline 2005).

### **7.2.1 Correlation test**

The multiple correlation coefficient ( $R$ ) gives us a value of the strength of the relationship between variables under study. But with multiple correlation we are more interested in  $R^2$  than  $R$ , as this value tells us how much of the variation in the dependent variable can be accounted for by the predictor variables. For example, if  $R = 0.60$ , then  $R^2 = 0.36$ , indicating that 36 per cent of the variation in the dependent variable can be explained by variation in the independent variables. Please note that we use  $R$  to distinguish it from  $r$ , which is used when we are only correlating two variables (Hinton et al, 2005).

#### **7.2.1.1 Correlation Mathematical Formula**

The correlation coefficient formula is displayed below.

$$correlation = \frac{covariance(X,Y)}{SD(X) * SD(Y)}$$

Where X and Y are two variables of interest and SD is their respective standard deviation.

The correlation coefficients and their statistical significance are computed using SPSS software.

#### **7.2.1.2 The Correlation Test**

This study applies the correlation matrix test to differentiate the relationships between the moderating factors. The Correlation test examines the relationships between customers' technology level and their demographics. Customers' technology level or readiness, include three main areas; (safety and type of business transactions, readiness to provide banking information, and face to face factors). Customers' demographic factors include; Internet experience, gender, education, age, bank account. The Spearman's rho is a non-parametric method of correlation test was used to assess the statistical significance of the relationships between variables and to help select the variables with significant relationship.

The inclusive correlation test is responding to the framework relationships presented earlier in chapter five, Figure 5.1.

Technology readiness factors		Internet experience	Having a bank account	age	Gender	Highest educational qualification
People come to me for advice on new technologies	correlation	.040	.125	.122	.058	.091
	p-value	.666	.176	.187	.530	.325
I learn more than others about the new technologies	correlation	-.053	.025	.133	.099	.110
	p-value	.565	.786	.150	.282	.233
I learn first among friends to acquire new technologies.	correlation	-.066	.008	.017	-.024	.042
	p-value	.476	.932	.853	.792	.652
I have few problems in making technology work for me	correlation	.163	.138	.117	<b>-.182*</b>	<b>.191*</b>
	p-value	.076	.133	.206	.047	.037
I usually work out new high-tech products without help	correlation	<b>-.188*</b>	-.019	-.091	.060	<b>-.221*</b>
	p-value	.041	.841	.327	.520	.016
Technology gives me more control over my daily life	correlation	-.116	.107	.060	-.010	.051
	p-value	.209	.245	.515	.914	.581
Technology makes me efficient in my occupation	correlation	-.140	.032	.131	.036	.033
	p-value	.129	.726	.155	.696	.719
I like the idea of online banking as I am not limited to regular banking hours	correlation	-.178	-.091	.169	.049	.061
	p-value	.053	.323	.066	.596	.510
Technology gives me more freedom of mobility	correlation	-.112	-.072	.106	.105	.052
	p-value	.224	.435	.250	.258	.574
New technology products are more convenient to use	correlation	-.137	-.016	<b>.204*</b>	.028	.152
	p-value	.136	.863	.026	.760	.098
Technical support lines are helpful as they use simple terms	correlation	.004	.136	.115	.014	<b>.191*</b>
	p-value	.969	.140	.212	.879	.037
New technologies are often too complicated to be useful	correlation	<b>.223*</b>	.026	.178	.088	<b>.300**</b>
	p-value	.015	.781	.052	.342	.001
Technology always seems to fail at the worst time	correlation	.070	.080	-.060	.046	.159
	p-value	.448	.387	.516	.620	.084
It is safe to give credit card number over the Internet	correlation	.101	<b>.316**</b>	.102	.054	-.018
	p-value	.272	.000	.270	.563	.848
It is safe to do any kind of financial business online	correlation	.138	.131	-.035	.139	.148
	p-value	.134	.156	.703	.131	.108
I worry that information send over the Internet will be seen by other people	correlation	-.026	.051	.041	.124	.032
	p-value	.780	.585	.655	.179	.729
I do not feel confident doing business with a place that can only be reached online	correlation	.109	<b>.243**</b>	<b>.227*</b>	.071	.172
	p-value	.239	.008	.013	.440	.061
The human touch is very important when doing business with a company	correlation	-.013	-.028	<b>.213*</b>	-.142	<b>.217*</b>
	p-value	.885	.765	.020	.123	.018
If I provide Information over the Internet, I can never be sure if it really gets to the right place	correlation	.156	.131	.119	-.071	.104
	p-value	.091	.155	.197	.445	.259
When I call a business, I prefer to talk to a person rather than a machine	correlation	-.127	.072	.008	.061	.034
	p-value	.170	.434	.929	.511	.714
	**. Correlation is significant at the 0.01 level (2-tailed).					
	*. Correlation is significant at the 0.05 level (2-tailed).					

Table 7. 1: Correlation test results

Notes for correlation test:

- The Spearman's rho ( $\rho$ ) Correlation matrix test shows some figures as 0.191 or 0.204 or 0.300 and so on. Figures indicated with \*\* are significant at the 0.01 level for a one-tailed prediction. The actual p values are shown to be 0.009 for most of variables that have \*\* (2-tailed). These figures are duplicated in the matrix. A conventional way of reporting these figures would be as follows:  $\rho = 0.191$  or 0.204 or 0.300 and so on,  $N = 119$ ,  $p < 0.01$
- As the R value is reported positive and  $p < 0.01$ , we can state that we have a positive correlation between our two or more variables and our null hypothesis can be rejected. If the R value was negative this would indicate a negative correlation, where a high score in one variable is associated with a low score in the other variable.
- The Spearman's rho Correlation output matrix also shows the R value when 'some variables are correlated with themselves, and there are perfect correlations coefficient of 1.000. These values are therefore not required and deleted from the table.
- Demographics variables were distinguished in text type. Significant relationships appear in the Table 7. 1 in bold text and not significant values appear in normal text.

### ***7.2.1.3 The Correlation Results Summary***

The results from correlation test showed that, As Internet experience increases: (the Internet experience as one of demographic variables has correlated with two variables of customers' technology readiness) these variables are:

- I usually work out new high-tech products without help, decreases, showing a negative correlation with a score of (-0.188\*). (this has a negative correlation but significant)
  - New technologies are often too complicated to be useful, this variable increases and scored (0.223\*) as a positive correlation
- 1- Having a bank account: this variable is one of demographics variables was correlated with three technology readiness variables as the number of customers who have a bank account increased:



- There will be a chance for them to use online banking and the safety will be increased, this variable is described as “*It is safe to give credit card number over the Internet*”. This variable was scored (0.316\*\*) as positively highly correlated
  - Respondents will be more cautions in doing faceless business, and this variable is described as “*I do not feel confident doing business with a place that can only be reached online*” This variable scored (0.227\*) as a positive correlation
- 2- Age: As respondents age is getting older (18-60), (there is an exceptional that respondents who in earlier ages, especially in new generation may be in higher level of dealing with high-tech products or recognising their risks): this variable as a one of demographics variables was also correlated with a three technology readiness variables as:
- There will be a chance for them to recognise the benefit of new technology. This variable shown as (New technology products are more convenient to use). This variable scored (0.204\*) as a positive correlation
  - There will be a chance for them to be aware of online security. This variable was shown as (I do not feel confident doing business with a place that can only be reached online). It is positively correlated and scored (0.243\*)
  - There will be a chance for them to consider online compared to human touch. This variable shown as (The human touch is very important when doing business with a company), it was positively correlated and scored (0.213\*)
- 3- Gender: both respondents males and females are expected to correlate with technology readiness variable as:
- Males and females can be equal in facing technology challenges. This variable shown as (I have few problems in making technology works for me). Scored (- 0.182) as negative correlation
- 4- The highest education qualification: if the respondents are highly educated: (this variable is one of demographics variables was correlated with four variables of technology readiness) as follows:

- There will be a chance for them to deal with many challenges they may face to make technology work for them. This variable is described as “*I have few problems in making technology works for me*”. This variable was positively correlated and scored (0.191\*)
- They will be able to help themselves when they attended to deal with high-tech products. This variable is described as “*I usually work out new high-tech products without help*”. This variable was negatively correlated and scored (-0.221\*)
- There will be a chance for them to deal with challenges to get more benefits when dealing with new technology. This variable is described as “*New technologies are often too complicated to be useful*”. It was positively correlated and scored (0.300\*\*)
- There will be a chance for them to consider the importance of technology compared to human touch. This variable is described as “*The human touch is very important when doing business with a company*”. It was positively correlated and scored (0.217\*)

As mentioned above the correlation tested the relationships between both customers’ demographics variables and customers’ technology readiness variables. The correlation approach will not be able to give more and efficient results regarding all relationships considered earlier in the theoretical framework, another technique will be conducted which is Multiple Regression Analysis (MRA).

## **7.2.2 The Regression Model**

Multiple regression analysis (MRA) is a useful method for generating mathematical models where there are several (more than two) variables involved. The multiple regression can be seen as a more complex model as it employs more than one independent variable as a predictor of the dependent variable, and also we can examine the contribution of each independent variable to the prediction. While it is still a linear model we can no longer represent it as a simple straight line.

### **7.2.2.1 Regression Mathematical Formula**

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \dots + error$$

Where:

$Y$ : is the dependent variable,

$a$ : is a constant value which represents the average value of  $Y$  when all  $X_i = 0$ ,

$X_1, X_2, X_3$ , etc.: are the independent variables,

$b_1, b_2, b_3$ , etc.: are the coefficients of the independent variables

The interesting thing about multiple regression tests is that with a lot of variables some will be more important than others in predicting variation in the dependent variable and some will have almost no influence at all. In SPSS we can choose to include all the independent variables in our regression calculation (by the enter method). We can use a variety of other methods for the regression equation, with the appropriate number of variables. We can decide which variables to include (forward method) or exclude (backward method) in the regression calculations or both (by the stepwise method). Thus, we can end up with a model that includes the variables we believe are important in the prediction and exclude the ones that have only a trivial effect on the dependent variable.

#### ***7.2.2.2 Backwards Ordinal Regression:***

The Backwards ordinal regression is a statistical test used to predict the online banking based on all variables. Variable that have significant scores (sig. <0.05) are good predictors for the use of online banking. The regression analysis resulted in 41 steps; therefore the final and best model was included here (Table 7. 2).

Model	Coefficients a	Sig.
41	(Constant)	.677
	1. 24/7 bank services are very important for me	.016
	2. Influence my behaviour; think that I must use online banking.	.002
	3. Use Online banking to communicate with my bank	.040
	4. Use Online banking for most of my banking needs	.001
	5. Conduct banking transactions more quickly	.011
	6. do not require a lot of mental effort	.002
	7. have clear and understandable procedures	.014
	8. to become confident in my sue of the transactions on my online banking website	.004
	9. will not be lost during an online session	.063
	10. will only reach the target account	.012
	11. will only be used for the purpose of the original transaction	.001
	12. I will control the use of my information	.015
	13. does not allow unauthorized changes to a transaction	.005
	14. stop any unauthorized changes to a transaction	.001
	15. Provides a secure environment in which to bank	.007
	16. provides online banking	.000
	17. is processing my transactions accurately and on time	.020
	18. provides 24 hour access to online banking	.002
	19. is fair with its online banking customers	.003
	20. Will repay any money taken from my account through unauthorized transactions	.073
	21. online banking for its safety	.005
	22. the Internet as a reliable medium for banking transactions	.001
	23. knowledge to use online banking	.000
	24. A significant Risk equal to A significant Opportunity	.007
	25. High Potential for loss equal to High potential for Gain	.000
	26. People come to me for advice on new technologies	.092
	27. Technology gives me more control over my daily life	.040
	28. Technology makes me efficient in my occupation	.023
	29. New technologies are often too complicated to be useful	.020
	30. Technology always seems to fail at the worst time	.045
	31. It is safe to give credit card number over the Internet	.000
	32. The human touch is very important when doing business with a company	.000
	33. If I provide Information over the Internet, I can never be sure if it really gets to the right place	.000
	34. When I call a business, I prefer to talk to a person rather than a machine	.076
	35. My Internet experience is	.018
	36. The largest amount that I have spent on any online transactions was (The amount in Libyan currency or Libyan Dinar (LYD))	.054
	37. What is your Gender?	.000
38. What is your age?	.000	
a. Dependent Variable: online banking		

Table 7. 2: Regression test results, the first round

### 7.2.2.3 Regression Findings Interpretation

Backwards ordinal regression will be used to make the regression test more understandable and to clarify the factors that were explained earlier in chapter five and analysed in chapter 6. Table 7. 3 shows that the remaining variables after the backward regression are all significant predictors of the “*online banking*” except 4 variables that are marginally significant. The 4 variables are displayed as number 9 “*will not be lost during an online session*”, 20 “*Will repay any money taken from my account through unauthorized transactions*”, 26 “*People come to me for advice on new technologies*”, and 34 “*When I call a business, I prefer to talk to a person rather than a machine*” in Table 7. 3.

To be more precisely, the remaining thirty four variables can be reduced by selecting only the statistically significant variables. The final model will contain only 21 variables as shown in Table 7. 3.

<b>Model</b>	<b>Sig.</b>
<b>41</b> (Constant) <b>Variables</b>	.677
1. Influence my behaviour; think that I must use online banking.	.002
2. Use Online banking for most of my banking needs	
3. do not require a lot of mental effort	.001
4. to become confident in my sue of online banking transactions	.002
5. will only be used for the purpose of the original transaction	.004
6. does not allow unauthorized changes to a transaction	.001
7. stop any unauthorized changes to a transaction	.005
8. Provides a secure environment in which to bank	.001
9. provides online banking	.007
10. provides 24 hour access to online banking	.000
11. is fair with its online banking customers	.002
12. I trust online banking for its safety	.003
13. I trust the Internet as a reliable medium for banking transactions	.005
14. I have knowledge to use online banking	.001
15. A significant Risk equal to A significant Opportunity	.000
16. High Potential for loss equal to High potential for Gain	.007
17. It is safe to give credit card number over the Internet	.000
18. Human touch is very important when doing business with a company	.000
19. If I provide Information over the Internet, I can never be sure if it really gets to the right place	.000
20. What is your Gender?	.000
21. What is your age?	.000
Dependent Variable: online banking	

Table 7. 3: regression test results, the second round

### 7.3 A New and Consistent Version of the Framework

Considering the findings above and those from chapter six for the framework specified in chapter five to generate a newer version of the framework, this section explains the newer and empirically tested version of the framework presented in Figure 7. 1. Now if we go back to the factors that were defined earlier as components of the framework in chapter five and compare them with the remaining variables after the regression test. The new framework will be:

Part 1- Banking channels: online banking was selected as the dependent variable

Part 2- this part is no longer in the new framework because all its variables were excluded by the correlation test as they were not statistically significant (sig. >0.05).

Part 3- Intention: this part corresponds to the question of “*how intention related to online banking?*” It was also subdivided into three. The new framework contains only (if it is provided within existing Libyan banking): “*Use Online banking for most of my banking needs*”). This variable will be coded as (UON) in the new framework.

Part 4- Ease of use: this question/item looks into how the respondents think of the usage of online banking. This part corresponds to customers’ usage and beliefs of online banking. Two variables related to this question were statistically significant (sig. =0.002, 0.004 respectively), “*do not require a lot of mental effort*” this variable will be coded as (DME) and “*to become confident in my use of the transactions on my online banking website*” this variable will be coded as (CTW) in the new framework.

The next six parts (from Part 5 - Part 10) present challenges that facing customers to trust online banking technology

Part 5- Reputation issues: reputation is usually done by recommendations from people; family, friends and colleagues or by other means like media. This part focuses on issues related reputation or recommendations by people as part of challenges that affect online banking technology. It corresponds to factors that influence Libyan customers’ trust and acceptance. This part is contains one variable which is, “*Influence my behaviour*”; “*think that I must use online banking*”. It was statistically significant (sig. = 0.002) and will be coded as (IBU).

Part 6- Transactional issues: It looks into online banking transactions related issues privacy as part of challenges that affect online banking technology and it corresponds to factors that also affect online banking trust and acceptance. This part contains one variable which is; “*will only be used for the purpose of the original transaction*”. This variable was statistically significant (sig. = 0.001) and it will be coded as (WUT).

Part 7- Perceived privacy: this variable concerns the perceived privacy as part of challenges that affect online banking technology. This part contains three variables and as part six above it corresponds to factors that affect online banking trust and acceptance. Variables related to this part are; “*does not allow unauthorized changes to a transaction*”, this variable was statistically significant (sig = 0.005) and will be coded as (DUT), “*stop any unauthorized changes to a transaction*” and “*provides a secure environment*”.

Part 8- Security issues: this part concerns security issues as part of challenges that affect customers trust and acceptance. This part contains five variables as follows; “*provides online banking*” (sig.<0.001) and will be coded as (POB), “*provides 24 hour secure access to online banking*” (sig.= 0.002) and will be coded (SOB), “*is fair with its online banking customers*” (sig.= 0.003) and will be coded (FOC), “*I trust online banking for its safety*” (sig.=0.005) and will be coded as (TBS) and “*I trust Internet as a reliable medium for banking transactions*” (sig.= 0.001) and will be coded as (IBT).

Part 9- Technical and legal support issues (Q14 in the questionnaire): this is to investigate respondents’ beliefs of the technical and legal issues they face when they use or if they intended to use online banking in Libya. This part is contains one variable which is: “*I have knowledge to use online banking*”. This variable was statistically significant (sig. <0.001) and will be coded as (KUO).

Part 10- Trust and risk: this part looks into rating or assessing the risk with online banking transactions and how trust can be affected by the risk. This part contains two variables: the first variable in this part was “*a significant Risk equal to a significant Opportunity*”. This variable was statistically significant (sig. = 0.007) and will be coded (SEO). The second variable was “*High Potential for loss equal to High potential for Gain*” (sig. <0.001) and will be coded as (HEG).

Part 11- Technology readiness: to insure that the respondents' have a certain level of technology. This part contains three variables: "*if I provide Information over the Internet, I can never be sure if it really gets to the right place*", (sig.<0.001) and will be coded as (INR). The second variable was "*the human touch is very important when doing business with a company*", (sig.<0.001) and will be coded as (HBC). The third variable was "*it is safe to do any kind of financial business online*", (sig.<0.001) and will be coded as (SFO).

Part 12- Demographic profile: this part concerns demographics such *Age*,(sig.<0.001) and will be coded as (AG) and *Gender*,(sig.<0.001) and will be coded as (GN).



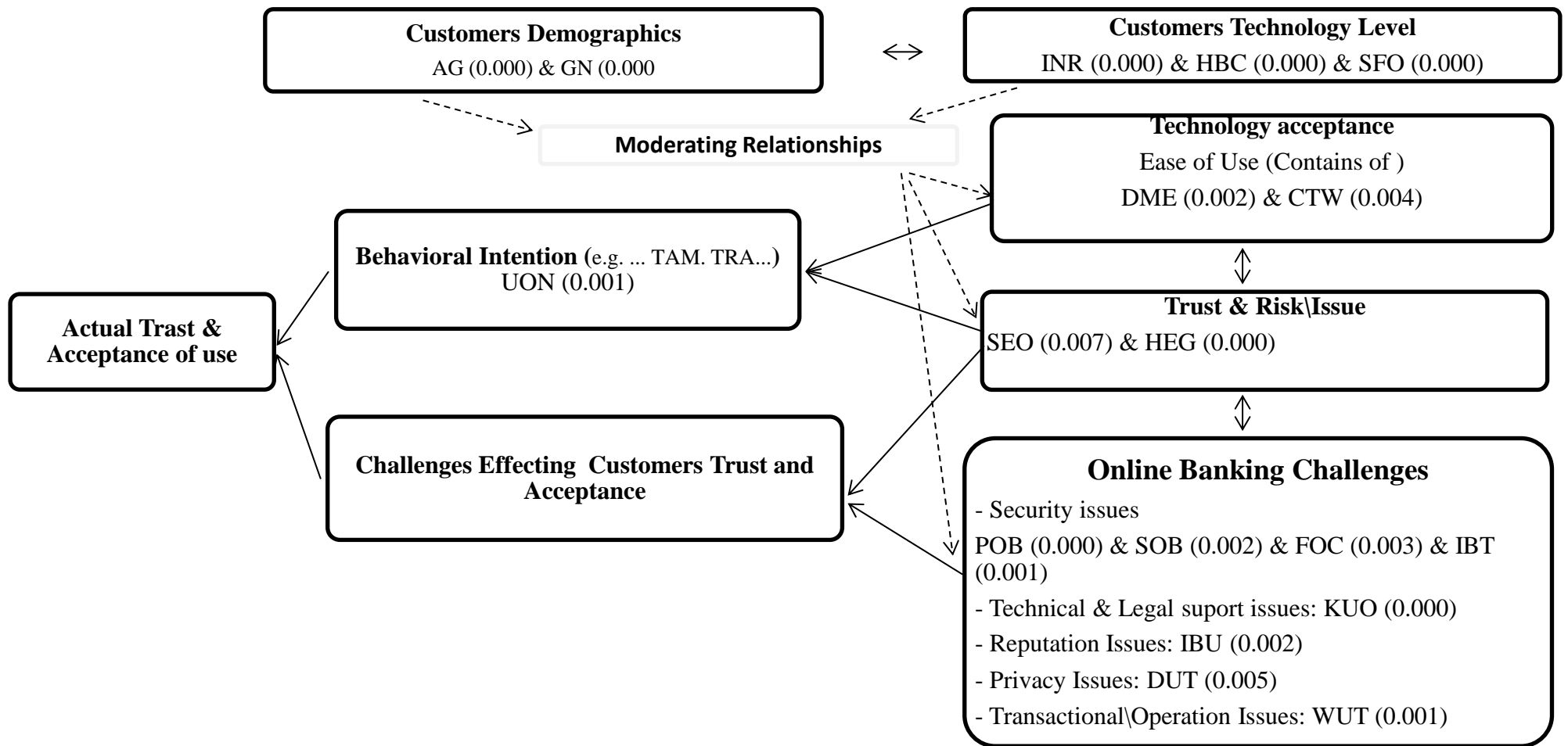


Figure 7. 1: A new and Consistence Version of the Framework

## 7.4 Summary

In this chapter univariate and multivariate analyses such as correlation and regressions were carried out. The theoretical framework presented in chapter five was improved based on findings from correlation and regressions. Findings that were presented at the end of each chapter were also considered when the new framework was recognised and restructured. The findings of the analysis that conducted in this chapter were showed after each test and used for improving the final version of the framework showed in Figure 7. 1.

Key finding:

Below are the final components of the final version of the framework. These components will be considered in the framework validation process.

- 1- online banking: was selected as the dependent variable
- 2- Intention
- 3- Ease of use
- 4- challenges facing customers to trust online banking technology including;
  - Reputation issues
  - Transactional issues
  - Perceived privacy
  - Security issues
  - Technical and legal support issues
  - Trust and risk
- 5- Technology readiness
- 6- Demographic profile (Age and Gender)

The next chapter will be validating the research framework by using qualitative methods to analyse the data.

## **Chapter (8): Framework Validation**

## **8.1 Introduction**

This chapter is one of the three chapters focusing on data analysis. It concentrates on issues related to framework validity using qualitative method to validate results found from quantitative methods. In this chapter NVIVO 10 was used to carry out qualitative method for validating data and results found in chapter six and seven. Given the exploratory nature of this research and as it is based on the findings in chapters two, three and six, this chapter

- Explores intention towards online banking technology in Libya
- Investigates customers beliefs in term of online banking usage
- Explores challenges facing customers when they intended to use online banking technology
- Explores the technological readiness of online bank customers

In order to achieve the above propositions, interviews with professionals in the field and customers of online banking in Libya were carried out. Chapter three (sections 3.2.1, 3.6 and 3.7) identifies issues related to the selected cases for this study including bank customers who were targeted in this study. Finally chapter three ended with clear and comprehensive findings. Based on that, a sample of seven online banking customers was selected for interview. This chapter also discusses the findings from the interview process and concludes by highlighting how the research framework can be validated. This corresponds to the fourth objective and subsequently the research aim has been fulfilled.

## **8.2 Aim of the Interviews**

As discussed in chapters one and five, the main aim of this research is to develop a framework to improve the Libyan bank customers' trust for online banking technology. This corresponds to the fourth objective that examines (validates) the extent to which the identified framework can improve customers' trust in online banking in Libya. This can be achieved by conducting interviews with customers and professionals in the field of IT and online banking. The aim of the interviews is to understand, describe and maintain their subjective professional experience as

suggested by Michael Crotty (2004). The semi-structured interview is conducted and subdivided into themes in line with the research question and objectives. The interview questions which build on the findings from chapter six and seven are broadly divided into seven sections as follows:

- Libyan Bank Customers/ users of online banking
- Non-users of online banking technology/community participation
- IT experts in Libya
- employees of Bank of Commerce and Development in Libya
- Policy makers/Senior management of Central bank of Libya
- Highly educated participants/university Lectures (school of accounting and finance in Libya)
- Interested researchers in the area of online banking technology in Libya/currently studying in the UK and using online banking within UK banking system.

Each of these sections are tagged with accompanying ‘what’ and ‘how’ questions in an inquiring manner. Propositions are made in order to develop questions that will be fully answered by the carefully selected respondents for the interview process and more importantly, to have an idea of what some of the emerging themes could be. Below are some of the propositions that aided in forming the interview questions. The questions based on the following propositions as concluded from chapters 2, 3 and 6 include:

- What is your belief regarding transactions conducted within online banking websites?
- How are your friends and relatives influencing your behaviour?
- What is your belief (opinion) regarding online banking information?
- How do you rate the risk in online banking transactions?
- What is your belief regarding online banking system?

These are only some examples of the common and underlying questions that inform the structure of the interviews. The interview questions are explored further in-depth in this chapter.

### 8.3 Surveyed Sample

The surveyed sample for the interviews are spread across Libyan banking customers, specifically customers of Bank of Commerce and Development (BCD) who are using or intended to use online banking technology. IT experts and financial policy makers are also involved in this interview. Table 8. 1 shows the interview selection including level of education, previous experience of online banking, place of online banking usage, date and duration of the interview.

	<b>Level of education</b>	<b>Previous experience of online banking</b>	<b>Place of usage</b>	<b>Date and duration of Interview</b>
Interviewee 1	PhD in IT and electric Engineering	A lecturer and IT advisor	In the UK	12/11/2012, 1:30- 2.30
Interviewee 2	A customer and banking & financial expert in Libya	A lecturer at university of Sebha in the field of accounting and finance	In the UK	15/11/2012, 11:00- 12.30
Interviewee 3	A Customer and member of higher education	A lecturer at university of Tripoli in the field of Engineering	In the UK	20/11/2012, 11:00- 12.30
Interviewee 4	A Customer and electronic engineer	postgraduate researcher	in Libya	20/11/2012, 11:00- 12.30
Interviewee 5	Postgraduate Researcher	Deputy manager of Central Bank of Libya, previously employed at BCD and an accountant at Commercial bank	in Libya and In the UK	21/11/2012, 01:00- 3.00
Interviewee 6	Interested Researcher In BCD and A bank Customer	A lecturer at university of Tripoli in the field of Engineering	in Libya and In the UK	06/12/2012, 01:00- 3.00
Interviewee 7	Postgraduate Researcher and a customer of BCD	Higher Education Manager	In the UK	06/12/2012, 01:00- 3.00

Table 8. 1: Interview selection

Figure 8. 1 shows the group query and relationships of participants' (Interviewees) comments and answers compared to main factors (Items), which are divided into three main factors; Intention (Ease of use; (usage perceptions in the UK) and (usage

perceptions in Libya)), online banking challenges; (privacy issues, reputation issues, security issues, technical and legal support issues, transactional issues, and trust and risk issues), and technological readiness (safety and type of business transactions, readiness to provide banking information, and face to face factors) for the framework in this research.

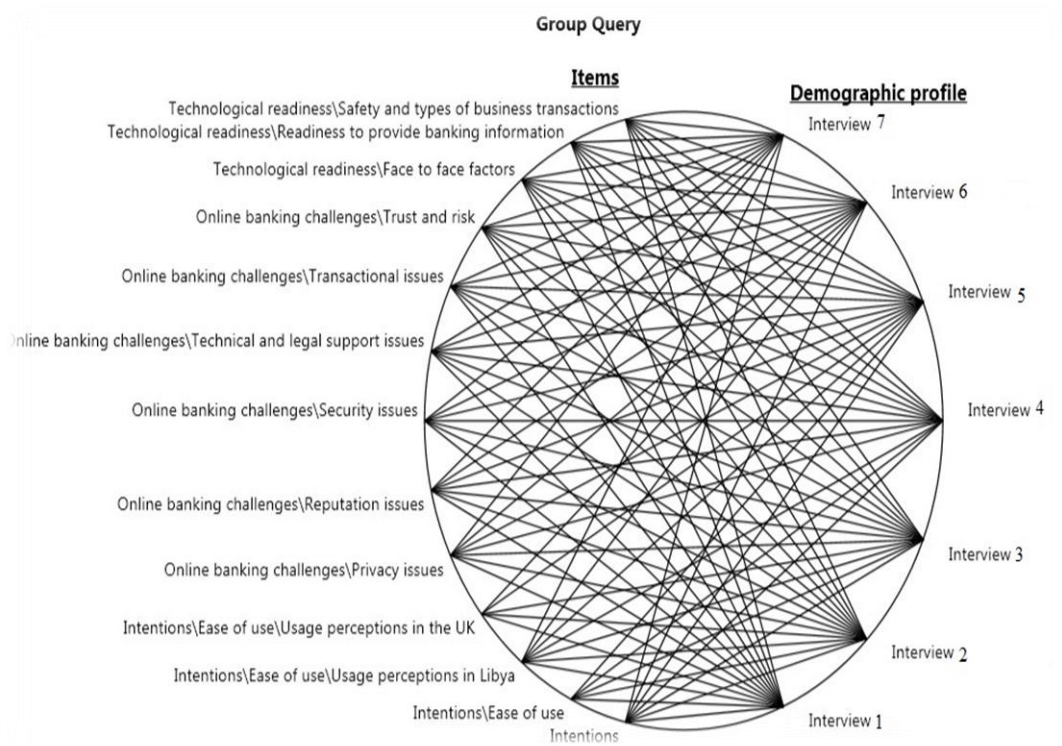


Figure 8. 1: Relationships between factors and demographic profile

### 8.4 Conducting Nvivo 10 Test in the Process of Analysis

In order to insure validity and reliability in the interview process, member checking was done on all the interviews and the respondents verified the accuracy of the transcripts. Nvivo 10 content analysis tool was then used to code the themes from the interviews into structured nodes. Coding is the process of recording the number of responses a particular respondent gave to a question. It is used to convert answers into numbers for the purpose of classification. The main types of nodes used in the coding process of this research were the tree nodes.

Name	Sources	References
Banking channels	5	11
Intentions	7	7
Ease of use	5	8
Usage perceptions in the UK	5	6
Usage perceptions in Libya	7	8
Online banking challenges	6	41
Reputation issues	7	7
Transactional issues	7	7
Privacy issues	7	21
Security issues	7	24
Technical and legal support issues	7	7
Trust and risk	7	7
Technological readiness	5	13
Safety and types of business trans	7	7
Face to face factors	7	7
Readiness to provide banking info	7	7
Place of use factors	5	17

Figure 8. 2: A screen shot of Nvivo 10 showing the nodes statement (The framework structure)

Table 8. 2 shows a statement of source for the interviews and their specifications.

Name	Nodes	References	Created On	Modified On
Interviewee 1 (IT Development in Libya)	32	47	23/11/2012 18:15	10/12/2012 17:09
Interviewee 2 (Customer and banking & financial expert in Libya)	32	71	23/11/2012 18:16	10/12/2012 17:10
Interviewee 3 (BCD customer and member of higher education)	31	70	23/11/2012 18:17	10/12/2012 17:10
Interviewee 4 (BCD customer and Electronic engineer)	28	61	23/11/2012 18:17	10/12/2012 17:55
Interviewee 5 (Deputy manager of CBL)	31	70	23/11/2012 18:18	10/12/2012 17:55
Interviewee 6 (customer and interested researcher in BCD)	16	20	23/11/2012 18:18	10/12/2012 17:56
Interviewee 7 (BCD customer & postgraduate researcher)	12	16	26/11/2012 19:40	10/12/2012 17:56

Table 8. 2: Sources statement for interviews



## 8.5 Interview Design Strategy

The previous discussion regarding the aim of this interview in section 8.2 above and owing to the findings of chapters two, six and seven. This section discusses the plan and design of the interview process adopted to validate the framework in this research.

Table 8. 3 depicts the ‘area of interest’ i.e. (the focus objective), and the strategy with which the question is asked. For example as shown in the table, in order to explore how intention towards online banking technology in Libya two questions were asked; one question related to online banking channels and the other question is investigating customers’ opinion of whether or not to use online banking technology if it is provided widely within existing Libyan banking system. The last column shows the purpose for which the question was asked. In this case, to clarify online banking related factors and to validate the related framework.

<b>Area of Interest</b>	<b>Strategy</b>	<b>Purpose</b>
<b>Objective</b>	<b>Participants interview</b>	<b>Expected Outcomes</b>
To explore intention towards online banking technology in Libya	<ol style="list-style-type: none"> <li>1- Which banking channel do you use to conduct your banking transaction?</li> <li>2- If it is provided within existing Libyan banking, will you use online banking for most of your banking needs?</li> </ol>	<ul style="list-style-type: none"> <li>-Explains how intention towards online banking</li> <li>-Validates previous results for Intention of online banking</li> </ul>
To investigate customers beliefs in term of online banking usage	<ol style="list-style-type: none"> <li>1- What is your believes regarding the use of transactions conducted within online banking websites?</li> </ol>	Explains the level of usage in online banking between Libyan customers and validate results that found from SPSS.
To explore challenges that facing customers when they intended to use online banking technology	<ol style="list-style-type: none"> <li>1- Are your friends, relatives influencing your behaviour; think that you must use online banking?</li> <li>2- What is your believes (opinion) regarding online banking information?</li> <li>3- Is your online banking system stops any unauthorised changes to a transaction?</li> <li>4- Has your bank branch provides online banking services, If yes is it for 24/7 services?</li> </ol>	<ul style="list-style-type: none"> <li>• Evaluates online banking challenges and explaining the effects of those challenges upon the customers</li> <li>• Validates outcomes that were found from previous test of SPSS</li> </ul>

	<p>5- Do you trust online banking for its safety?</p> <p>6- Do you trust the Internet as a reliable medium for banking transactions?</p> <p>7- Do you think you have the knowledge to use online banking?</p> <p>8- How do you rate the risk in online banking transactions?</p>	
To explore the technological readiness of online bank customers	<p>1- Is it safe to do any kind of financial business online?</p> <p>2- Is the human touch is important for you when doing business with a company?</p> <p>3- If you provided Information over the Internet, will you be sure it really gets to the right place?</p>	Evaluates and validates results regarding customers' level of technology

Table 8. 3: The framework explanation summary

## 8.6 Findings from the Interview

This section explores the contents of the findings from the interview and analyse them qualitatively. From the conclusions in chapter two and three and findings in chapter six, this chapter analyses the results from the interview process. The sections covered are online banking Intention (ease of use), online banking challenges including reputation issues, transactional issues, privacy issues, security issues, technical and legal issues, trust and risk, and technology readiness.

### 8.6.1 Online Banking Intention

The cohesion and intergration themes of this research were informed by literature review findings in section 2.8, which emphasised on the theoretical basis of factors in the framework such as Intention which includes the percieved ease of use. The questions in this section focus on intention towards online banking technology in Libya by investigating participants of what banking channels they currently use and if online banking technology was provided within the existing banking channel in Libya will they be using it. Customers beliefs regarding online banking transactions and how easy they are, are also included in this theme. The majority of participants are using or have used online banking in the UK as they have been in the UK for a period of time. That could help them to clearly assess and give them the ability to give their

openion on online banking in Libya and comparing it with the development of online banking in the UK.

Figure 8. 3 and Table 8. 4 show the responses on online banking intention. It shows that there were seven references (comments or answers) made from the seven sources (respondents) who commented on the issue. The inferences made from the responses are dicussed in the following.

It was realised that the intention of online banking is very important in insuring the acceptance and trust of online banking technology. According to Interviewee 1 when he was asked about his beliefs regarding transactions conducted within online banking websites;

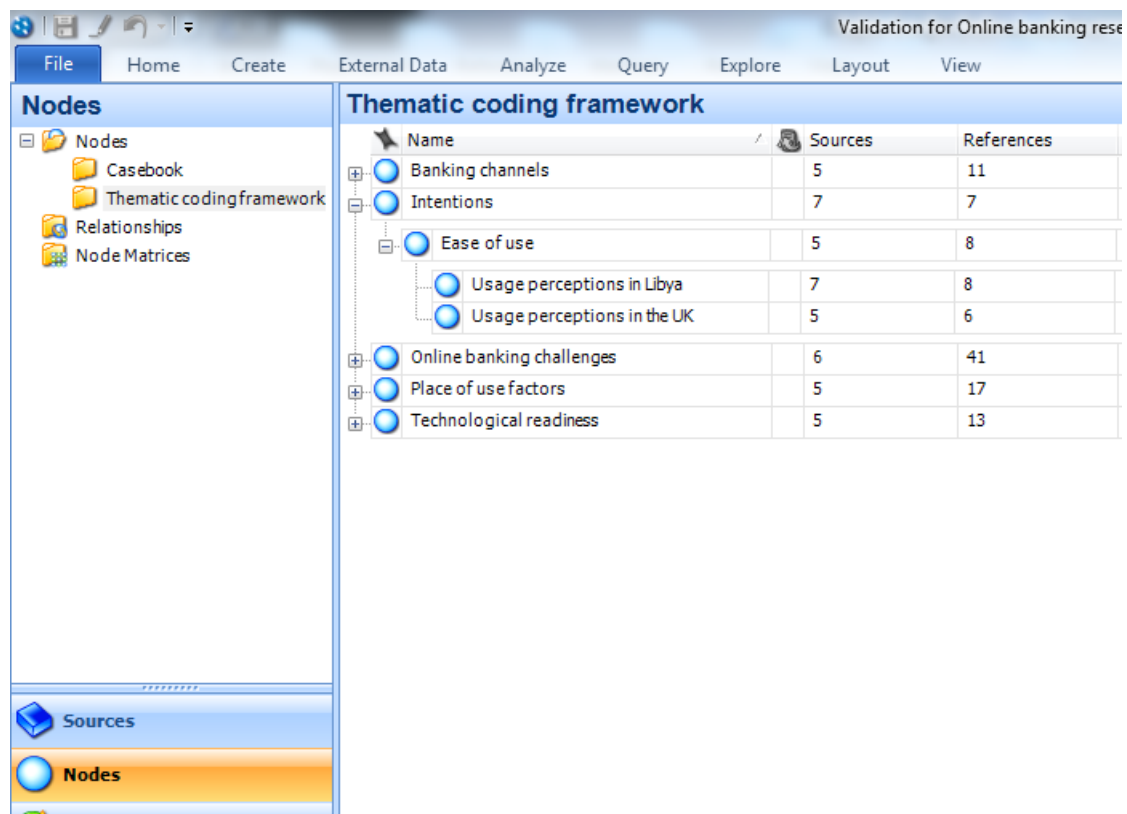


Figure 8. 3: A screen shot of Nvivo 10 showing the nodes on online banking intention

Tree node		No of Sources	No of References
Online banking Intention		7	7
Ease of use		5	8
1	Usage perceptions in Libya	7	8
2	Usage perceptions in the UK	5	6

Table 8. 4: Summary of online banking intention nodes

He answered that; *Depends on the level of availability of the systems and how secure they are.* He also added that; *In Libya, I have no access to online banking and in the UK I am not quite happy with my bank services in the UK due to the complexity of the transactions. I think that there are very restricted security regulations in my bank which is NatWest bank. There is always a need to use a card reader for each transaction. It is quite difficult to keep the card reader with you all the time, and where ever you travel. So it is not a practical way of keeping the level of security and at the same time ease the online banking. My attitude is that I am not happy about the service up to level that I may switch to a new bank.*

Interviewee 2 in his answer to the question related to transactions conducted within online banking website. He stated that, *In Libya: I do not use online banking, because my bank does not provide this kind of services within its existing banking services. But In the UK: I am always concerned of security, and I am not 100% trusting online banking, but the website is clear and easy to use.*

Interviewee 3 was not so different from the other responses but he added that, *In Libya: I only use the Branch for most of my transactions It is also the easiest way to do banking transaction in Libya. In the UK: I am a long time user of online banking; it is easy and a straightforward.* Those are the common examples for this item which is the Intention to use online banking technology, others like online banking challenges may need to be looked at more in depth.

### **8.6.2 Online Banking Challenges**

Online banking challenges as showed in the framework in this study includes; reputation issues, transactional issues, privacy issues, security issues, technical and legal issues, and trust and risk issues. Figure 8. 4 shows the nodes on online banking challenges and the included factors in this item.

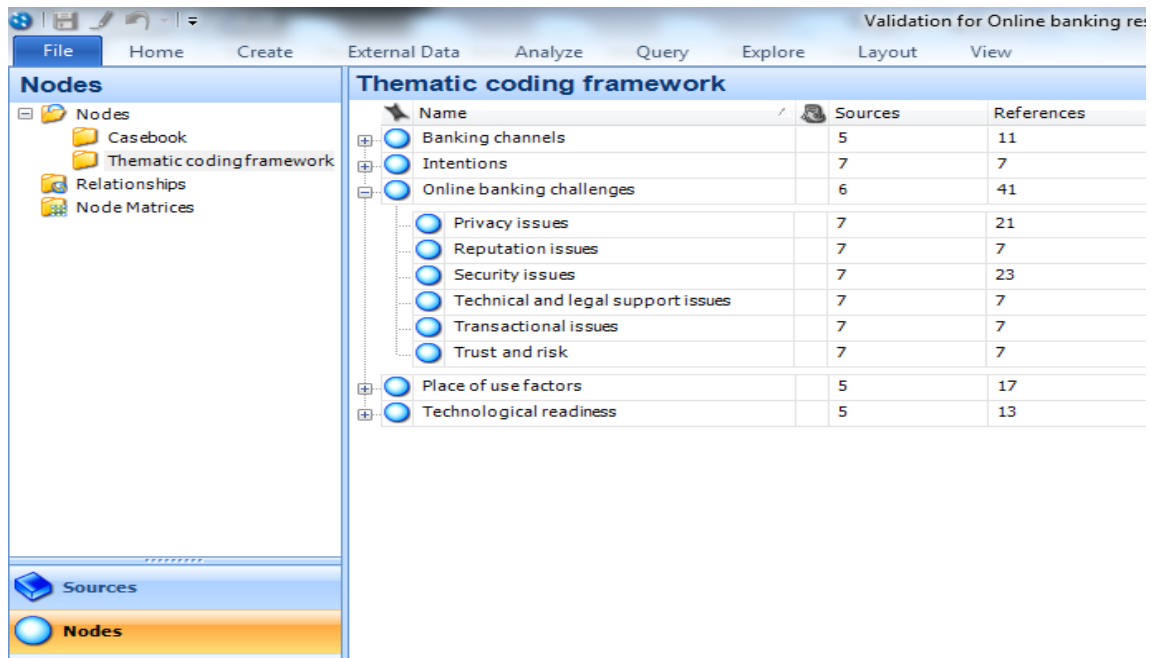


Figure 8. 4: Nvivo 10 showing the nodes on online banking challenges

Table 8. 5 below summarises the tree nodes of online banking challenges.

Tree node	No. of Sources	No. of references
Online banking challenges	6	41
1 Privacy issues	7	21
2 Reputation issues	7	7
3 Security issues	7	23
4 Technical and legal support issues	7	7
5 Transactional issues	7	7
6 Trust and risk	7	7

Table 8. 5: Summary of online banking challenges nodes

- Privacy issues:** In term of privacy issues, participants were asked about their beliefs regarding online banking system and their privacy. The results show that there are twenty one references or answers from the seven sources replying to this question. For example interviewee 1 stated that, *it is a good way of saving time as well as managing, transferring, and receiving money and I am satisfied with my banking system in the UK and I hope my Libyan bank branch will have the same system.*

Interviewee 2 however did not completely agree with that as he stated that, *it is ok, but I have faced a transaction issue in the UK while I was trying to transfer a thousand pound from my bank account to a friend's account and my transaction was delayed couple of hours in order to check some detailed information about*

*me and finally it was done., I was quite worried about my money being lost somewhere I do not know but after that I was happy that it was secured and my privacy is looked after.* Both Interviewee 3 and Interviewee 5 agreed that their bank branch provide a secure environment and they have no concern about their privacy.

Interviewee 4 on the other hand has a negative opinion towards his bank branch as he mentioned that, *In my view, the banking system in my branch in Libya is still very archaic and they mainly deal face to face with customers, so customers need to stand in long queues to cash their cheques or to put their money in their accounts.* Another question in this item looked at whether or not their online banking system stops any unauthorised changes to a transaction. The answers and results for this question show that the majority of the responses agree that their online banking system in the UK stops any unauthorised changed and Interviewee 2 went further as he stated that, *yes, my bank stops any unauthorised changes and I faced it once when I tried to transfer my money. When I entered my password wrongly the system blocked changes or unauthorised transaction.*

- **Reputation issues:** On the question regarding reputation issues, participants were asked: Do their friends or relatives influence their behaviour? Do they think that they must use online banking? Seven references from seven sources were found as a result of this item, confirming participants' answers and opinions regarding reputation issues in online banking.

The majority of participants agree that their friends influence their decisions towards the use of online banking. For instance Interviewee 1 stated that, *to some level yes they influenced my behaviour to use online banking and I trusted them.* To emphasise their friends' role of using online banking, Interviewee 4 for example said, *Yes of course, because if anyone of my friends or relatives have a positive experience in online banking technology so he/she may advise me to use online banking.*

- **Security issues:** As discussed in chapter two (section 2.5.4.1) and highlighted in chapters five and six, the security issues are the crucial challenges facing customers when thinking to move to or use online banking technology, Especially in Libya as it is one of the developing countries in Arab region

planning to adopt this technology within its existing system. To this point, the main question the participants were asked is if they trust online banking for its safety and whether they trust the Internet as a reliable medium for banking transactions.

Twenty three references were gained from seven sources as a result of this item. Those references clearly present participants' views regarding online banking security issues. For instance while describing issues related to security in online banking, Interviewee 2 mentioned that, *I do not trust online banking 100% and in my view the problem is internet environment which includes many issues such as hacking, intrusion, identity theft, and fraud. But I still trust my bank for all of my transactions.* Moreover Interviewee 1 emphasised that, *In the UK yes I trust online banking for its safety, but in Libya definitely not, especially now due to the lack of laws and regulations and the corruptions in the marketing and business sectors.*

However Interviewee 3 was more optimistic as he stated that, *yes I trust online banking for its safety, because I have been using online banking for long time without any problem.*

- **Technical and legal support issues:** Seven references from seven sources were found as a consequence of this item and participants were asked about the technicality and legal support and whether or not they are aware or have the knowledge to use online banking technology. Knowledge here means the technical and legal awareness for them and their ability to use online banking technology and they understood that well.

The majority of participants agree that they have the knowledge to use online banking if they have been given support by their bank branch. Interviewee 1 for instance stated that, *I have the knowledge, and my bank website is clear enough and easy to understand and my bank has given me more explanation on how to open an account online and how to use online banking and how to deal with any problem that I may face while I am using of online banking.* Another example is Interviewee 6 in his statement, *yes, but somehow, but in Libya I think the language can be major problem for many potential users.*

- **Transactional issues:** Participants were investigated for their opinion regarding online banking transactional information and related issues. As presented in

Figure 8. 4 and Table 8. 5 the findings from this item showed that there are seven references or answers gained as a result from total of seven sources. The majority of participants agree that the transactional information of their online banking is fair and most of them have not faced any concern or issues related to their online banking information.

One of the answers from Interviewee 5 as an example shows that, *it actually depends on the bank that provides this information, for example, while I am in the UK I am using online banking through Royal Bank of Scotland RBS, which uses a different online banking system compared to Lloyds TSB bank or HSBC bank. I also have other online bank accounts with Lloyds TSB bank and HSBC and all banks are providing different information*, he added. He also declared that, *each bank provides their customers with its own information. The information provided in a particular bank can be slightly similar or different than other banks.*

- **Trust and Risk:** As presented in Figure 8. 4 and Table 8. 5, the outcomes of this item show that there are seven references or answers from seven sources or interviews. In term of trust and risk participants were given a question on how they rate the risk in online banking transactions. Participants' answers of this item vary. The common answers of this interview agree that the expected opportunities of online banking customers can get are more than the expected risks.

For example Interviewee 2 indicated that, *high gain and opportunities of online banking technology is more than its risks.* Interviewee 3 in a more positive statement responded that, *I would say it is very good, because I heard from a friend of mine who experienced a hacking incident in his online banking account and his bank dealt nicely with him and solved his problem and all of his lost money returned back to him. That would encourage me to accept online banking and trust it for most of my transaction.* Interviewee 8 however disagrees as he stated that, *in my view online banking has a higher risk in comparison to fewer benefits.*

### **8.6.3 Technological Readiness of Online Bank Customers**

As explained earlier in chapter three the technological readiness of online banking customers defined as the person's tendency to interact with technology based



products. The technology readiness was also highlighted in chapter five and explained as one of the controlling factors in the theoretical framework.

The results of quantitative analyses for the technological readiness factors in chapter six and seven highlighted the following items, safety and type of business transaction, face to face factors, and readiness to provide banking information. Those items were retested qualitatively for the preciseness and validity of data analyses. Figure 8. 5 and Table 8. 6: Summary of Technological Readiness for online banking technology show the nodes on technological readiness of online bank customers.

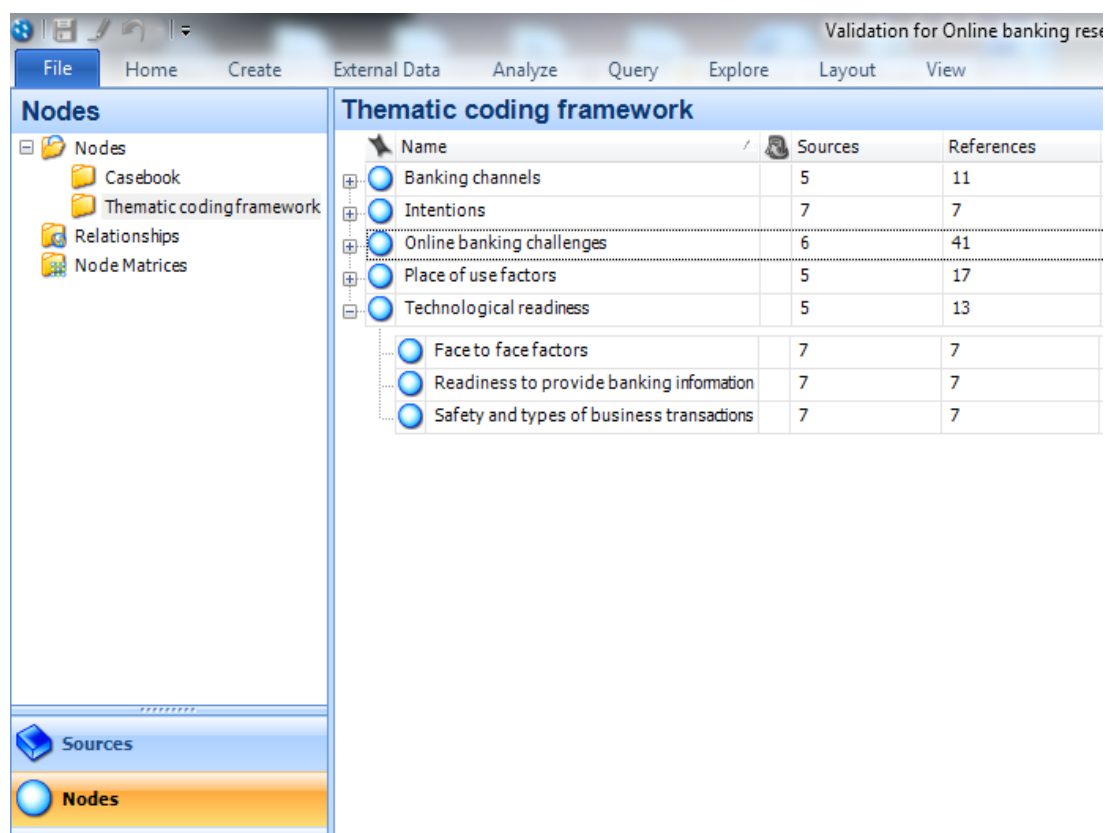


Figure 8. 5: A screenshot of Nvivo 10 showing the nodes on technological readiness

Tree node		No. of Sources	No. of References
Technological Readiness		5	13
1	Face to face factors	7	7
2	Readiness to provide banking information	7	7
3	Safety and type of business transactions	7	7

Table 8. 6: Summary of Technological Readiness for online banking technology

To explain technological readiness of online bank customers, participants were investigated in three areas. Those areas include face to face factors, readiness to provide banking information, and safety and type of business transactions. As it shows in Figure 8. 5 and highlighted in Table 8. 6, the overall answers or comments counted 13 answers from 5 sources. The findings from the interviews regarding the three factors of technology readiness are described as follows:

- **Face to face factors:** In this item participants were asked about whether or not the human touch is important for them when doing business with a company. All answers came for yes to the importance of face to face when doing business with a company and some answers went further and added that if security was provided with purely online banking channels they would use it. For instance, Interviewee 4 stated that, *Yes face to face is important but sometimes not important if the online system for the business company is secured enough.* Interviewee 6 was not so different as commented that, *I think you can convince people with face to face transactions but online banking makes life easier.*
- **Readiness to provide banking information:** In this part participants were asked if they provided information over the Internet would they be sure that the information get to the right person. Participants answers were altered as some of them were not sure because of the Internet is an open environment and the information may be hacked. Interviewee 7 as an example stated that, *I am not sure, because the network that is used by Internet might be hacked or affected by technical issues.* However Interviewee 2 *did not* agree and indicated that, *for company with which I have a long time business/transaction I can be confident but for those with which I am in business for not a long time could be harmful for your business. However, company who have a good reputation will care more for their credibility..*
- **Safety and type of business transactions:** this part investigates participants' and seeking their opinions about the safety of doing business online. The answers on this part vary and participants' views were divided into two, some of them said yes they agree doing business online at any time. However, the other views connected doing business online with the security of a company that intended to do business with.

For instance, Interviewer 3 has no doubt of trusting the online business and noted that, *I think so, I used to do it for to buy many goods and I think it is safe enough to this kind of business.* Interviewer 1 however as an example of the second views stated that, *I think it depends on the business bodies. If their reputation is trustful then no problem, but if there are no clear rules that can protect customers from fraud as the situation in Libya, I would not trust online business.*

## 8.5 Summary and Key Findings

This chapter looked at issues related to framework validity using qualitative method to validate results found from quantitative methods. In this chapter NVIVO 10 was used to validate the qualitative data and verify the results that were found in previous chapters such as chapter six and seven. This chapter relates to the previous chapters where theoretical and empirical framework was discussed and as a result four main areas were looked at. First, intention towards online banking technology in Libya was explored, and second customers' beliefs in term of their online banking usage were investigated. The third area of this chapter looked at challenges that face customers when they intended to use online banking technology and finally, the fourth one explored the technological readiness of online bank customers.

The key findings from this chapter can be presented as:

- The Intention to use online banking is affected by many factors but the main factor as found in the interview findings was the ease of use. The ease use factor in this chapter was divided into two parts depending on the place of online banking usage; the first is the usage of online banking in Libya, and the second is in the UK.
- Online banking customers' concerns of the challenges they face in relation to various issues such as privacy issues, reputation issues, security issues, technical and legal support issues, transactional issues, trust and risk.
- The technological readiness of online bank customers reflects three factors that affect customers' trust and accept of online banking technology. Those factors include face to face factors, readiness to provide banking information and safety and type of business transactions.
- All factors regarding participants' demographic profile which includes age, gender, and place of use.
- Both demographic profile and technological readiness of online banking customers monitor the relationships for both theoretical and empirical framework.

## **Chapter (9): Conclusion, Implications and Directions for Future Study**

## 9.1 Introduction

The primary objective of the present study as mentioned in chapter one, is to provide a conceptual framework that determines the drivers of customers' trust and acceptance towards online banking technology on the one hand and their relationship to the use of online banking, on the other hand. To achieve the research objectives the following questions were expressed: How are intentions towards the technology of online banking made and to what extent are they related to the actual use of online banking? (2) What are the beliefs that Libyan customers hold about online banking and how do these beliefs affect their trust of online banking? (3) What is the role of customers' trust and acceptance of online banking? (4) Are there any perception and acceptance differences between segments of customers on the basis of their technology readiness and demographic (gender and age) characteristics? In order to answer these questions, a systematic literature review was conducted.

Chapter two presented and compared the most important theories of customers' behaviour and trust in the literature and suggested that the Technology Acceptance Model (TAM) was the most appropriate theory to be selected as a base for the framework. However it was acknowledged that the TAM's fundamental constructs (perceived usefulness/advantages and perceived ease of use) are not enough to reflect upon the online banking trust and acceptance and therefore a need for additional variable was identified.

Chapter three clearly reviewed the field study which was Libyan banking industry and their customers. The chapter considered the moderating effects of two key personality characteristics technology readiness and demographics (age and gender).

Chapter four positioned the current research within the Ontological, Epistemological and Methodological paradigms and selected drop and collect survey method for the main data collection process. This chapter was also mentioned interview as a data refinement and validation process. Chapter five summarised the literature review and integrated variables associated with technology acceptance constructs (relative advantages/Perceived usefulness, perceived ease of use), online banking challenges (, privacy issues, reputation issues, security issues, technical and legal support issues,

transactional issues, and trust and risk), and customers' personal characteristics (technology readiness, age and gender, internet experience, occupation, etc.) into a coherent theoretical framework.

Chapter six was presented the demographic profile of the sample and descriptive analysis of the survey responses. Next, statistical analysis including correlations and regression tests were carried in chapter seven. Finally in chapter eight, qualitatively confirmed and refined the findings and the hypothesised relationships were examined using Nvivo 10 software.

The final chapter discusses the findings of this research and explain their implications for theory and practice. It also points out the direction for future research.

## **9.2 Key Findings and Contributions**

Having thoroughly explored the main issues regarding online banking trust and acceptance in the field of Libyan online banking, this research presents the following as its main and first set of findings:

First, perceived ease of use (PEU) has a significant effect on behavioural intention, confirming that possible extending the TAM into the online banking context to explain its acceptance. However, the effect of perceived usefulness (PU) on intentions and trust was not significant. The results showed on the new and consistence version of the framework in figure 7.1 (Chapter 7: pp. 163) suggests that PEU has a strong direct effect on intention. Thus PEU will affect the use when the intrinsic character of the technology contributes to the actual outcome. The sample for the present study consisted of experienced online banking users, and as users gain experience with the technology more cognitive considerations will emerge and gain significance in determining the intended behaviour.

Given that the effect of PU on intentions was small significant for female and older respondents, the future research could attempt to differentiate between the personal characteristics of the customers and more precisely examine the moderating effect of this factor on the proposed relationship.

Second, trust and perceived risk/issue are shown to be direct antecedents of intention, suggesting that uncertainty reduction is a key component in the customers' trust and acceptance of online banking especially in Libyan banking industry, thus, it deserves particular attention.

Third, online banking issues such as reputation issues, security issues, privacy issues, technical and legal issues, transactional issues and trust and risk have direct relationships to the challenges that effecting online banking to be trusted and accepted by bank customers. The significant effect of perceived trustworthiness on the following: reputation issues, security issues, privacy issues, technical and legal support issues, and transactional issues, validates the fact that trust only occurs when the customers are assured of the bank's willingness and ability to deliver the obligations. Thus, for the perception of high security, reputation, privacy, technicality and legality, and perceived transactions to exist, the customers have to believe that the bank has both the ability and motivation to reliably deliver online banking services to the quality expected by the Libyan bank customers. The study also highlights the importance of using security and privacy as two distinct concepts, even though they are conceptually related.

Fourth, Customers' technology readiness to use online banking can be presented through three categories; face to face factors, readiness to provide banking information, and safety and type of business transactions (see also chapter 3, pp.62). Finally both respondents' gender males and females are expected to correlate with technology readiness variable as males and females can be equal in facing technology challenges.

## **9.3 Implications for Research and Practice**

### **9.3.1 Implications for Research**

The present research has significant implications for research on online banking customers. The potential impact of internet-related technology on customer behaviour became unclear to researchers. While conventional customer behaviour is well described by economic and market theories an evidence suggests that technology-



related variables have become as crucial as traditional factors in predicting online customer behaviour (Jarvenpaa et al. 2000; Mcknight and Chervany 2002; Pavlou 2003). Findings from this study suggest that it is crucial for customer behaviour researchers to examine the role of uncertainty in situation where trust, acceptance and perceived risk are likely to affect system use.

### **9.3.2 Implication for Practice**

The most significant implication for the banking sector is the need to recognise that online banking trust and acceptance should be managed with objectives of creating a useful service and of building trusting relationship with the customers.

While the explicit essence of the customer's relationship with the bank is to get a useful and efficient online banking service, the customer's trust and its antecedents are an essential aspect of this relationship contribute to its value. The banks should build websites that are not only useful and easy to use, as TAM suggests, but it should also include trust-building mechanisms. The findings of this research provide some guiding principle as to the relative importance of investing in a trusting relationship with the customer in comparison with providing an efficient and useful online banking

## **9.4 Limitations and Directions for Future Studies**

### **9.4.1 Limitations**

This study has several limitations, which suggest directions for future work.

Firstly, there is always the issue of generalizability in the customer behaviour studies, and this study is no exception. The data in this study was collected from customers of a single Libyan established bank which is the Bank of Commerce and Development (BCD). This bank was the first to introduce the technology of online banking as add on channel to its customers. It may be more useful to assess the effect of these factors by applying the same methodology to the entire banking sector, including domestic banks, development banks and specialist banks.

Secondly, the data was collected in exceptional circumstances as the research field study of which is Libya was in comprehensive civil war which has a great impact on both the participants and the organisation that selected for this study as it is working in exceptional circumstances which are affecting the answers and details that provided within data in this study. It is not only that but the bad impact of this situation affected the researcher himself as a Libyan and a matter of concentration by any mean may occurred during and after data collection as it was in the same time when the war started in 2011.

Thirdly, this study has mainly employed a non-parametric methodology in order to evaluate the trust and acceptance of online banking technology within Libyan bank customers'. It may be possible to evaluate the trust and acceptance of online banking and the impact of online banking related challenges on banking performance by applying different frontier approaches i. e. a parametric methodology, and to compare the results of the different methods. This might provide an empirical identification of the impact of both online banking related challenges and customers' trust and acceptance of banking in general and in the online banking in particular.

#### **9.4.2 Directions for Future Studies**

Future research needs to determine the extent to which the findings of the present study can be extended to include other persons, settings, and time (Cook and Campbell 1979). One way of doing this is to extend the work to include other banks and financial firms.

#### **9.5 Conclusion**

The primary objective of this study was to develop framework that improves the trust and acceptance of online banking technology between Libyan bank customers. It is also drivers of customers' intentions towards the use of online banking. Integrating variables associated with behavioural and environmental into a coherent framework, the present study examined the role of customers' trust (trust and risk), in online banking acceptance perceived usefulness/advantages and ease of use), and perceptual differences among customers on the basis of their technology readiness and

demographic characteristics of gender and age. The empirical results related to four research questions, revealed that:

- Intentions translated over time to actual behaviour as assumed and
- Trust and risk/issues, online banking issues (privacy issues, security issues, reputation issues, technical and legal support issues, and transactional issues), are all the elements of challenges that effecting customers' trust and acceptance of online banking technology.
- Perceived risk/issue and perceived usefulness/ advantages, are suggesting uncertainty reduction as a key component of customers' acceptance in the behavioural intention of online banking.
- Different type of customers, defined by their demographic characteristics (age and gender) and customers' technology readiness, develop different views towards the same technology.

The technology acceptance and trust have been studied for years in behavioural and marketing environment. The present study has combined these streams by proposing and validating a coherent framework to improve the trust and acceptance of online banking in Libya. The study has placed views from; customers, experts, and researchers' to the phenomenon examining how the relative importance of these concepts and their effects differ on the bases of technology readiness and demographic characteristics.

To conclude, customers' trust and acceptance of online banking remains complex, indefinable, yet extremely important phenomenon. The online banking trust and acceptance framework proposed and validated in this advanced research and theory on these important issues.

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## Appendices

### *Appendix (A): Questionnaire Survey*

Dear customers\ employees of bank of Commerce and development

My name is Ahmed Mohamed PhD student at The University Salford; I would like to seek your help in filling some of my PhD questionnaires on improving the Libyan customers trust and acceptance of online banking technology

The reason for this questionnaire is to support the research findings and to broaden my knowledge on this topic, as a questionnaire survey has become imperative way of collecting data.

All I need from you is to spare 5 minutes to fill the paper questionnaire are handed in to you by me or other person, and I will come and collect them tomorrow if that is ok to you.

Any concerns please do not hastate to contact me contact me on my numbers stated below the questionnaire.

Many thanks and I appreciate your efforts to help me in this research

Ahmed Mohamed

### **CONSENT FORM FOR QUESTIONNAIRE SURVEY AND INTERVIEWEE**

**Full title of the research: Improving the Libyan customers trust and acceptance of online banking technology**

#### **Name, position and contact address of Researcher**

Ahmed. E. A. Mohamed, PhD candidate, School of Built Environment, Email:  
A.E.A.Mohamed@PGR.salford.ac.uk

Please initial box

- 1- I confirm that I have read and understand the information sheet for the above study.
- 2- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.
- 3- I agree to take part in the above study
- 4- I understand that the information that I give will be used solely for the purpose of this research and will not be divulged to any third party.

Name of Participant

Date / / /

Signature

## **A- CONSENT/INFORMATION SHEET**

### **Study Title: Improving the Libyan bank customers' trust and acceptance of online banking technology**

#### **Invitation paragraph**

You are being invited to take part in a research study. Before you decided whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information.

#### **What is the purpose of this study?**

This research is informed on the grounds of trust and acceptance of online banking looking to the Libyan bank customers' opinion about whether or not trust and accept online banking if it is provided within the existing banking services. As a result of this, this research aims to develop framework to improve the Libyan bank customers' trust and acceptance of online banking technology and looking to the problems that may effecting the Libyan bank customers' trust and acceptance of online banking in Libya.

To achieve this aim, the researcher will have to survey customers and employees of Bank of Commerce and Development (BCD), as it is considered as a public pioneer in the trust and acceptance of technological innovation in Libya, being the first public bank that has started to introduce online banking technology. Semi-structured interview is also conducted with the same sample for validation purposes.

#### **Why have I been invited to participate?**

As mentioned earlier, some interviews will be held on a one-to-one basis with some experts, academic researchers and customers of the Central Bank of Libya (CBL), but to get very wide view of the nature of the problem at hand so as to propose a broad scoping solution, there is a need for survey questionnaires which will be sent to the customers of Bank of Commerce and Development. Hence the reason why you have chosen is because your opinion and personal experience is greatly valued and might help shape the ultimate outcome of this research.

#### **Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part, please simply fill in the questionnaire and sign the consent. If you decide to take part you are still free to withdraw at any time and without giving a reason.

#### **What will happen to me if I take part?**

This questionnaire is simply asking you to answer the following questions; it should not take more then 5-10 minutes of your time and the answers you give are completely anonymised.

#### **What are the possible disadvantages and risks of taking part in this research?**

This survey should not cost you anything more than the time to fill it. It poses no disadvantages to you.

#### **What are the possible benefits of taking part?**

The benefits of this study are many, some of them are that the results will further our understanding of the benefits of online banking if it is provided within the existing banking channels in Libyan banking; if the outcomes are translated into policies, it will go a long-way in benefitting our banking industry and Economy as a whole.



**D. Audio Recording Consent Addition**

I agree to audio recording at \_\_\_\_\_ on \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

I have been told that I have the right to hear the audio before they are used. I have decided that I:

\_\_\_\_\_ Want to hear the record

\_\_\_\_\_ Do not want to hear the record

Sign below if you do not want to hear the recording. If you want to hear the record you will be asked to sign after hearing them.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address

Contact for Further Information:

Ahmed Mohamed  
PhD Candidate,  
School of Built Environment  
University of Salford  
A.E.A.Mohamed@pgr.salford.ac.uk.

Study Title: **Improving the Libyan Bank Customers' Trust and Acceptance of Online Banking Technology**

**Banking channels**

<b>Q1: I use the following for my banking transactions...</b>  (Please circle as applies to you)	<b>Daily</b>	<b>Few times a week</b>	<b>Once a week</b>	<b>Once a month</b>	<b>Few Times a year</b>	<b>Once a Year</b>	<b>Never</b>
...Branch Banking	1	2	3	4	5	6	7
...Telephone Banking	1	2	3	4	5	6	7
...Cash Machine	1	2	3	4	5	6	7
...Online Banking	1	2	3	4	5	6	7

**Relative Advantages**

<b>Q2: I believe that...</b>	Strongly Agree ← Neutral Strongly Disagree →						
...Seven days and 24 hours bank services are very important for me	1	2	3	4	5	6	7
...Transaction done online are cheaper	1	2	3	4	5	6	7
...My transaction done by online banking are as correct as those done at bank branches.	1	2	3	4	5	6	7

### Reputation Issues

Q3: I believe that people (Friends, Family, & colleagues) who...	Strongly Agree ← Neutral Strongly Disagree →						
	1	2	3	4	5	6	7
...Influence my behaviour; think that I must use online banking.							
...Are important to me, strongly support the use of online banking.							

### Intention

1

Q4: If it is provided within existing Libyan banking I will start to...	Strongly Agree ← Neutral Strongly Disagree →						
	1	2	3	4	5	6	7
...Use Online banking to communicate with my bank.							
...Use Online banking for most of my banking needs.							
Use online banking							

2

Q5: I believe that online banking...	Strongly Agree Disagree ← Neutral Strongly Disagree →						
	1	2	3	4	5	6	7
...Presents great benefits to me.							
...Is very easy to use.							

3

Q6: I believe that online banking enables me to...	Strongly Agree ← Neutral Strongly Disagree →						
	1	2	3	4	5	6	7
...Conduct banking transactions more quickly.							
...Make the best of my time.							
...Manage my financial resources more effectively.							

### Ease of use

Q7: I believe that online banking websites...	Strongly Agree ← Neutral Strongly Disagree →						
	1	2	3	4	5	6	7
...do not require a lot of mental effort							
...have clear and understandable procedures							



<b>Q8: I believe that it was easy for me...</b>	<b>Strongly Agree ← Neutral Strongly Disagree →</b>						
...to learn how to perform the transactions available on my online banking website	1	2	3	4	5	6	7
...to become confident in my use of the transactions on my online banking website.	1	2	3	4	5	6	7

**Transactional issues**

<b>Q9: I believe my online banking transaction information...</b>	<b>Strongly Agree ← Neutral Strongly Disagree →</b>						
...will not be lost during an online session.	1	2	3	4	5	6	7
...will only reach the target account.	1	2	3	4	5	6	7
...will only be used for the purpose of the original transaction.	1	2	3	4	5	6	7
...will be shared with others with my account	1	2	3	4	5	6	7

<b>Q10: while using online banking, I believe that ...</b>	<b>Strongly Agree ← Neutral Strongly Disagree →</b>						
...I will know exactly what information is collected.	1	2	3	4	5	6	7
...I will have full knowledge of the par.	1	2	3	4	5	6	7
...I will control the use of my information.	1	2	3	4	5	6	7

**Perceived Privacy**

<b>Q11: while using online banking, I believe that online banking system...</b>	<b>Strongly Agree ← Neutral Strongly Disagree →</b>						
...will confirm my identity before disclosing account information.	1	2	3	4	5	6	7
...will confirm my identity before processing transactions.	1	2	3	4	5	6	7
...does not allow unauthorized changes to a transaction.	1	2	3	4	5	6	7
...stop any unauthorized changes to a transaction.	1	2	3	4	5	6	7
Provides a secure environment in which to bank							

### Security issues

Q12: I believe that my bank...	Strongly Agree ← Neutral → Strongly Disagree						
	1	2	3	4	5	6	7
...provides online banking.	1	2	3	4	5	6	7
...is processing my transactions accurately and on time.	1	2	3	4	5	6	7
...provides 24 hour secure access to online banking.	1	2	3	4	5	6	7
...is fair with its online banking customers.	1	2	3	4	5	6	7
...Will repay any money taken from my account through unauthorized transactions.	1	2	3	4	5	6	7
...is acting in my best interest.	1	2	3	4	5	6	7
...has consistent online practices and policies.	1	2	3	4	5	6	7

Q13: I trust...	Strongly Agree ← Neutral → Strongly Disagree						
	1	2	3	4	5	6	7
...online banking for its safety.	1	2	3	4	5	6	7
...my bank as reliable service provider.	1	2	3	4	5	6	7
...the Internet as a reliable medium for banking transactions.	1	2	3	4	5	6	7

### Technical and legal support issues

Q14: I believe that...	Strongly Agree ← Neutral → Strongly Disagree						
	1	2	3	4	5	6	7
...I have the best equipment necessary to use online banking (e.g a personal computer and Internet connection)	1	2	3	4	5	6	7
...I have the knowledge to solve any problems with my expected use of online banking.	1	2	3	4	5	6	7
...If I need help using online banking, I know people who would help me.	1	2	3	4	5	6	7
...knowledge to use online banking	1	2	3	4	5	6	7

### Trust and Risk

<b>Q15: whilst performing online banking transactions, I would rate the risk of...</b>	<b>Very Likely to Occur      Neutral      very Unlikely to Occur</b> 						
...financial loss as:	1	2	3	4	5	6	7
...my bank as reliable service provider.	1	2	3	4	5	6	7

<b>Q16: My decision to perform banking transaction online presents...</b>	<b>A significant Risk      Neutral      A significant Opportunity</b> 						
...A significant Risk → A significant Opportunity	1	2	3	4	5	6	7

<b>Q17: My decision to perform banking transaction on the Internet presents...</b>	<b>High Potential for loss      Neutral      High potential for Gain</b> 						
...High Potential for loss → High potential for Gain	1	2	3	4	5	6	7

The purpose of the following statements is to understand your level of Technological Readiness. Please circle the appropriate number to indicate your level of agreement with the following statements. Please note that the term “new technology” refers to new hi-tech products (e.g digital and electronic products such as mobile phone, Digital Camera and Internet banking)

### Technology Readiness

No		<b>Strongly Agree      Neutral      Strongly Disagree</b> 						
1.	People come to me for advice on new technologies	1	2	3	4	5	6	7
2.	I learn more than others about the new technologies	1	2	3	4	5	6	7
3.	I learn first among friends to acquire new technologies.	1	2	3	4	5	6	7
4.	I have few problems in making technology work for me.	1	2	3	4	5	6	7
5.	I usually work out new high-tech products without help	1	2	3	4	5	6	7
6.	Technology gives me more control over my daily life.	1	2	3	4	5	6	7
7.	Technology makes me efficient in my occupation.	1	2	3	4	5	6	7

8.	I like the idea of online banking as I am not limited to regular banking hours.	1	2	3	4	5	6	7
9.	Technology gives me more freedom of mobility.	1	2	3	4	5	6	7
10	New technology products are more convenient to use.	1	2	3	4	5	6	7
11.	Technical support lines are helpful as they use simple terms.	1	2	3	4	5	6	7
12.	New technologies are often too complicated to be useful	1	2	3	4	5	6	7
13.	Technology always seems to fail at the worst time.	1	2	3	4	5	6	7
14.	It is safe to give credit card number over the Internet	1	2	3	4	5	6	7
15.	It is safe to do any kind of financial business online.	1	2	3	4	5	6	7
16.	I worry that information send over the Internet will be seen by other people.	1	2	3	4	5	6	7
17.	I do not feel confident doing business with a place that can only be reached online.	1	2	3	4	5	6	7
18.	The human touch is very important when doing business with a company.	1	2	3	4	5	6	7
19.	If I provide Information over the Internet, I can never be sure if it really gets to the right place.	1	2	3	4	5	6	7
20.	When I call a business, I prefer to talk to a person rather than a machine.	1	2	3	4	5	6	7

**Now just a few questions about yourself, Please select the appropriate box for the following questions:**

### **Demographic Profile**

1. How long have you had a bank account?

0-12 Months

1-3 years

Over 3 Years

2. from where do you usually use Internet

From Home

Form office

From Internet Café

I have no access to Internet at all

Other (Please specify).....

3. My Internet experience is...

- Under 1 Year
- 1-5 Years
- 6-10 Years
- Over 10 years
- Other (Please specify).....

4. Have you ever done or heard about shopping on the Internet?

- Yes:** (If yes Please go to **question 5**)
- No:** (If no, please go to **question 6**)

5. The largest amount that I have spent on any online transactions was (The amount in Libyan currency or Libyan Dinar (**LD**)) ...

- Under 50 LD
- 51-100 LD
- Over 100 LD

6. What is your gender?

- Male
- Female

7. What is your age?

- 18-25 years
- 26-45 years
- 46-60 years
- Above 60 years

8. What is your highest educational qualification?

- No educational qualification
- Secondary School/ College
- Professional Diploma
- University (Undergraduate)
- University (Post Graduate)

9. What is your occupation?

- Housewife/Husband
- Retired/Pensioner
- Student
- Professional
- Clerical staff
- Technical staff
- Self-employed
- Other (please specify).....

*Appendix (B): In Detailed survey questionnaire*

**Questionnaire survey**

Study Title: **Improving the Libyan bank customers' trust and acceptance of online banking technology**

**Banking channels**

Q1: I use the following for my banking transactions... (Please circle as applies to you)	Daily	Few times a week	Once a week	Once a month	Few Times a year	Once a Year	Never
...Branch Banking	1	2	3	4	5	6	7
...Telephone Banking	1	2	3	4	5	6	7
...Cash Machine	1	2	3	4	5	6	7
...Online Banking	1	2	3	4	5	6	7

**Relative Advantages**

Q2: I believe that...	Strongly Agree ← Neutral → Strongly Disagree						
...Seven days and 24 hours bank services are very important for me	1	2	3	4	5	6	7
... Transaction done online are cheaper	1	2	3	4	5	6	7
...My transaction done by online banking are as correct as those done at bank branches.	1	2	3	4	5	6	7

**Reputation Issues**

Q3: I believe that people (Friends, Family, & colleagues) who...	Strongly Agree ← Neutral → Strongly Disagree						
...Influence my behaviour; think that I must use online banking.	1	2	3	4	5	6	7
...Are important to me, strongly support the use of online banking.	1	2	3	4	5	6	7

**Intention**

1

Q4: If it is provided within existing Libyan banking I will start to...	Strongly Agree ← Neutral → Strongly Disagree						
...Use Online banking to communicate with my bank.	1	2	3	4	5	6	7
...Use Online banking for most of my banking needs.	1	2	3	4	5	6	7
Use online banking	1	2	3	4	5	6	7

2

Q5: I believe that online banking...	Strongly Agree ← Neutral → Strongly Disagree						
...Presents great benefits to me.	1	2	3	4	5	6	7
...Is very easy to use.	1	2	3	4	5	6	7

3

Q6: I believe that online banking enables me to...	Strongly Agree ← Neutral → Strongly Disagree						
...Conduct banking transactions more quickly.	1	2	3	4	5	6	7
...Make the best of my time.	1	2	3	4	5	6	7
...Manage my financial resources more effectively.	1	2	3	4	5	6	7

**Ease of use**

Q7: I believe that online banking websites...	Strongly Agree ← Neutral → Strongly Disagree						
...do not require a lot of mental effort	1	2	3	4	5	6	7
...have clear and understandable procedures	1	2	3	4	5	6	7

Q8: I believe that it was easy for me...	Strongly Agree ← Neutral → Strongly Disagree						
...to learn how to perform the transactions available on my online banking website	1	2	3	4	5	6	7
...to become confident in my use of the transactions on my online banking website.	1	2	3	4	5	6	7



**Transactional issues**

Q9: I believe my online banking transaction information...	Strongly Agree ← Neutral → Strongly Disagree						
...will not be lost during an online session.	1	2	3	4	5	6	7
...will only reach the target account.	1	2	3	4	5	6	7
...will only be used for the purpose of the original transaction.	1	2	3	4	5	6	7
...will be shared with others with my account	1	2	3	4	5	6	7

Q10: while using online banking, I believe that ...	Strongly Agree ← Neutral → Strongly Disagree						
...I will know exactly what information is collected.	1	2	3	4	5	6	7
...I will have full knowledge of the par.	1	2	3	4	5	6	7
...I will control the use of my information.	1	2	3	4	5	6	7

**Perceived Privacy**

Q11: while using online banking, I believe that online banking system...	Strongly Agree ← Neutral → Strongly Disagree						
...will confirm my identity before disclosing account information.	1	2	3	4	5	6	7
...will confirm my identity before processing transactions.	1	2	3	4	5	6	7
...does not allow unauthorized changes to a transaction.	1	2	3	4	5	6	7
...stop any unauthorized changes to a transaction.	1	2	3	4	5	6	7
Provides a secure environment in which to bank							

**Security issues**

Q12: I believe that my bank...	Strongly Agree		Neutral		Strongly Disagree		
...provides online banking.	1	2	3	4	5	6	7
...is processing my transactions accurately and on time.	1	2	3	4	5	6	7
...provides 24 hour secure access to online banking.	1	2	3	4	5	6	7
...is fair with its online banking customers.	1	2	3	4	5	6	7
... Will repay any money taken from my account through unauthorized transactions.	1	2	3	4	5	6	7
...is acting in my best interest.	1	2	3	4	5	6	7
...has consistent online practices and policies.	1	2	3	4	5	6	7

Q13: I trust...	Strongly Agree		Neutral		Strongly Disagree		
...online banking for its safety.	1	2	3	4	5	6	7
...my bank as reliable service provider.	1	2	3	4	5	6	7
...the Internet as a reliable medium for banking transactions.	1	2	3	4	5	6	7

**Technical and legal support issues**

Q14: I believe that...	Strongly Agree		Neutral		Strongly Disagree		
...I have the best equipment necessary to use online banking (e.g a personal computer and Internet connection)	1	2	3	4	5	6	7
...I have the knowledge to solve any problems with my expected use of online banking.	1	2	3	4	5	6	7
...If I need help using online banking, I know people who would help me.	1	2	3	4	5	6	7
...I have knowledge to use online banking	1	2	3	4	5	6	7



26.	Technology gives me more freedom of mobility.	1	2	3	4	5	6	7
27.	New technology products are more convenient to use.	1	2	3	4	5	6	7
28.	Technical support lines are helpful as they use simple terms.	1	2	3	4	5	6	7
29.	New technologies are often too complicated to be useful	1	2	3	4	5	6	7
30.	Technology always seems to fail at the worst time.	1	2	3	4	5	6	7
31.	It is safe to give credit card number over the Internet	1	2	3	4	5	6	7
32.	It is safe to do any kind of financial business online.	1	2	3	4	5	6	7
33.	I worry that information send over the Internet will be seen by other people.	1	2	3	4	5	6	7
34.	I do not feel confident doing business with a place that can only be reached online.	1	2	3	4	5	6	7
35.	The human touch is very important when doing business with a company.	1	2	3	4	5	6	7
36.	If I provide Information over the Internet, I can never be sure if it really gets to the right place.	1	2	3	4	5	6	7
37.	When I call a business, I prefer to talk to a person rather than a machine.	1	2	3	4	5	6	7

Now just a few questions about yourself, Please select the appropriate box for the following questions:

### Demographic Profile

10. How long have you had a bank account?

- 0-12 Months                       1-3 years                       Over 3 Years

11. from where do you usually use Internet

- From Home  
 Form office  
 From Internet Café  
 I have no access to Internet at all  
 Other (Please specify).....

My Internet experience is...

- Under 1 Year  
 1-5 Years  
 6-10 Years  
 Over 10 years  
 Other (Please specify).....

12. Have you ever done or heard about shopping on the Internet?

- Yes: (If yes Please go to question 5)  
 No: (If no, please go to question 6)

13. The largest amount that I have spent on any online transactions was (The amount in Libyan currency or Libyan Dinar (**LD**)) ...
- Under 50 LD
  - 51-100 LD
  - Over 100 LD
14. What is your gender?
- Male
  - Female
15. What is your age?
- 18-25 years
  - 26-45 years
  - 46-60 years
  - Above 60 years
16. What is your highest educational qualification?
- No educational qualification
  - Secondary School/ College
  - Professional Diploma
  - University (Undergraduate)
  - University (Post Graduate)
17. What is your occupation?
- Housewife/Husband
  - Retired/Pensioner
  - Student
  - Professional
  - Clerical staff
  - Technical staff
  - Self-employed
  - Other (please specify).....

*Appendix (C): Interview for the Validation of the research*

Study Title: **Improving the Libyan bank customers' trust and acceptance of online banking technology**

((Please note: your opinion is needed so please write as much as you can to answer the interview questions))

**Banking channels**

Which banking channel do you use to conduct your banking transaction?

**Intention**

If it is provided within existing Libyan banking, will you use online banking for most of your banking needs?

**Ease of use**

What is your believes regarding transactions conducted within online banking websites and?

Online banking challenges

**Reputation Issues**

Are your friends, relatives influencing your behaviour; think that you must use online banking?

**Transactional issues**

What is believes regarding online banking information?

**Perceived Privacy**

What is your believes regarding online banking system?

Is your online banking system provides a secure environment?

Is your online banking system stops any unauthorized changes to a transaction?

**Security issues**

Has your bank branch provides online banking services?. If yes is it for 24/7 services?

Do you trust online banking for its safety?

Do you trust the Internet as a reliable medium for banking transactions?

**Technical and legal support issues**

Do you think you have the knowledge to use online banking?

**Trust and Risk**

How do you rate the risk in online banking transactions?

**Technology Readiness**

The purpose of the following statements is to understand your level of Technological Readiness. Please circle the appropriate number to indicate your level of agreement with the following statements. Please note that the term “new technology” refers to new hi-tech products (e.g. digital and electronic products such as mobile phone, Digital Camera and Internet banking).

Is it safe to do any kind of financial business online?

Is the human touch is important for you when doing business with a company?

If you provided Information over the Internet, will you be sure it really gets to the right place?

**Now just a few questions about yourself**

**Demographic Profile**

What is your gender?

What is your age?

## *Appendix (D): Ethical Approval*

Academic Audit and Governance Committee

Research Ethics Panel  
(REP)

To Ahmed Mohamed  
cc: Dr Y Arayici, Prof M Kagioglou  
From Tim Clements, Contracts Administrator  
Date 18<sup>th</sup> June 2010



MEMORANDUM

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**Subject:** Approval of your Project by REP  
**Project Title:** Improving the Libyan customers trust and acceptance of online  
**RGEC Reference:** REP10/057

Following your responses to the Panel's queries, based on the information you provided, I can confirm that they have no objections on ethical grounds to your project.

The Panel have asked me to pass on that there is a comment in response to Question 9 that data "may" be destroyed, should this read "will".

If there are any changes to the project and/or its methodology, please inform the Panel as soon as possible.

Regards,

Tim Clements  
Contracts Administrator  
TC/JH

For enquiries please contact  
Tim Clements  
Contracts Administrator  
Contracts Office  
Enterprise Division  
Faraday House  
Telephone 0161 295 6907 Facsimile 0161 295 5494  
E-mail: t.w.clements@salford.ac.uk



### ***Appendix (E): Published Papers***

- Ahmed E A Mohamed and Dr. Yusuf Arayici (2012) *Online Banking in Libya, Customers Trust and Acceptance Perspective, SPARC conference, Salford University, Salford, UK, pp.1-15.*
- Ahmed E A Mohamed and Dr. Yusuf Arayici (2013) *Improving the Libyan Customers' Trust and Acceptance on online banking Technology, IPGRC2013 conference, Salford, UK, Paper Number: 348. pp. 1-10*
- Ahmed E A Mohamed and Dr. Yusuf Arayici (2013) *Electronic Banking: The Adoption of E-banking, SPARC conference, Salford, UK, pp.1-15*
- Ahmed E A Mohamed and Dr. Yusuf Arayici (2013) *Customers' trust and acceptance of banking technology, the case of Libyan banking, Singapore Economic Review Conference 2013 (SERC 2013), Singapore, Paper Number: 324.*
- Ahmed E A Mohamed and Dr. Yusuf Arayici (2013) *Empirical investigation of Customers' Perception and Adoption Towards Online banking Technology, The Case of Libya, The 9th International Symposium on Econometric Theory and Applications (SETA2013), Seoul, South Korea, July 2013, Paper Number: 91, pp.1-12.*