

UNIVERSITY OF SOUTHERN QUEENSLAND



**Consumer Perceptions of the Barriers to Adoption of
Internet Banking: A Case Study in Libya**

A thesis submitted in fulfilment of the
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By

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ABSTRACT

Banking services have been impacted by developments in information technology and considerable funds have been invested in the development of communications technology in the banking sector. E-banking is the major platform for adopting and using highly-developed IT systems in banking services. Evaluating an individual's acceptance of using e-banking technology, and Internet banking in particular, is a key issue facing the banking sector. Arguments remain about the most important factors that impact upon customers' willingness to adopt Internet banking, despite considerable attention being paid to issues of assessment of the adoption of e-banking services in general, and Internet banking in particular. This study reviewed relevant IT literature which informed the development of an extension of the Technology Acceptance Model (TAM) by adding external factors with the aim of being more relevant for developing countries such as Libya. This study proposes an assessment methodology model to foster the adoption of Internet banking in Libya.

The study model included six constructs: Trust, Security, Customer Support, Internet Network Quality, Perceived Ease of Use and Perceived Usefulness. The study model considered perceptions of bank customers about these constructs relating to the adoption of Internet banking services. The instrument was designed to measure the attitudes of bank customers towards the adoption of online banking. A quantitative study was conducted with survey responses received from 536 Libyan bank customers. The findings confirmed that the study model is valid and reliable to measure the adoption of Internet banking from the point of view of customers' perceptions; and the study model supported the relationships among the seven constructs.

The findings of the study indicate that Libyan bank customers perceive Internet banking to be risky but essential to development and growth of the economy. Bank customers are planning to adopt banking services through the Internet despite their concerns relating to factors such as security, trust, support and Internet quality that relate to Perceived Ease of Use (PEOU), and Perceived Usefulness (PU) of the new technology. The adoption of Internet banking technology may expand extensively in the Libyan banking sector in the near future. The use of Internet banking still presents number of challenging issues. Assessing the acceptance of Internet banking usage is seen as an important issue encountered by the banking sector. The key reasons behind the reluctance by users towards use online banking services include the persistence of factors that impact upon the adoption of e-banking services. The quantitative analysis of results from the survey questionnaire confirmed all the relationships in the traditional TAM, as well as the importance of trust and security in the new technology and issues relating to Internet network quality and support. Factors such as PU were confirmed in terms of their impact upon user or non-users' intentions towards using new technology. PEOU was another major determinant factor influencing customers' intention towards the use of Internet banking technology.

The study aims to make a contribution to practice and theory by providing a validated model to measure the willingness of consumers to adopt Internet banking services. This study provides recommendations to Libyan commercial banks to assist them in the development of online banking services

CERTIFICATION OF DISSERTATION

I certify that the ideas, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

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LIST OF ABBREVIATIONS

α	Cronbach's alpha
AGFI	Adjusted Goodness-of-Fit Index
AVE	Average Variance Extracted
β	Results of regression
BCD	The Bank of Commerce & Development
BJ	Bank Journal
BN	Bank of the Nation
CBL	Central Bank of Libya
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
DCB	Development and Commerce Bank
GDP	Gross Domestic Product
GFI	Goodness-of-Fit Index
GNC	General National Congress
GPC	General Planning Council
GPCCM	General People's Committee for Culture and Media
IDT	Innovation Diffusion Theory
IMF	International Monetary Fund
Int	Intention to use
IQ	Internet Quality
IS	Information system
IT	Information Technology
JB	Jumhouria Bank
L.D	Libyan Dinars
LFB	Libyan Foreign Bank
LIG	Libyan Interim Government
LNC	Libyan National Congress
LSM	Libyan Stock Market
NAB	National Agricultural Bank
NCB	National Commercial Bank
NPS	National Payments System
PEOU	Perceived Ease of Use
PCI	Perceived Characteristics of the Innovation
PU	Perceived Usefulness
RMR	Root Mean-square Residual
RMSEA	Root Mean Square Error of Approximation
S	Security
SB	Sahara Bank
SEM	Structural Equation Modelling
SMC	Squared Multiple Correlation
Sp	Support
SPA	Service Provider Applications
SRMR	Standardised Root Mean-square Residual
T	Trust
TAM	Technology Acceptance Model
TL	Transparency-Libya
TPB	Theory of Planned Behaviour

TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
WB	Wahda Bank
WFE	Wikipedia The Free Encyclopaedia

CHAPTER ONE

This Chapter provides the introduction for this study. The first part of this Chapter describes the main issues affecting the Internet Banking adoption. The next part of the chapter provides the background of Libya, following by section of Libyan Economy. The other parts provide the research approach, research motivation and contribution, research objectives. The research problems and statement of the problem are outlined in Chapter Six, followed by an explanation of the significance of the study.

1. CHAPTER ONE: INTRODUCTION

1.1. Introduction

The contemporary world is witnessing significant development in the field of Internet Banking—a major electronic activity which is now prevalent worldwide. The widespread use of the Internet for commercial transactions is one of the most significant phenomena in commercial and banking activities; and, in particular, information and communications technology has had a clear and significant impact on the banking industry.

This Chapter provides a general introduction into online banking adoption in Libya, and is divided into two main parts. The first section (1.1, 1.2, 1.3, and 1.4) outlines the use of banking services via the Internet, followed by a brief overview of Libya, including information on its geographical location, population and history (ancient and modern). The second section provides an introduction to the Libyan economy, describing Libya's economic resources and its most important economic sectors. It also includes an overview of the Libyan banking sector (Islamic banks and commercial banks). Chapter Two provides a more in-depth analysis and discussion of the use of information technology in the Libyan banking sector.

The second part of this Chapter focuses on the presentation of the research methodology, including sections 1.5 1.9. It shows the motivation and contributions of the research, research objectives and an explanation of the research problem and questions of the study, in addition to defining the importance of the study. Chapter Five describes in detail the research methodology adopted for this study.

1.2. Online banking services

Internet banking is a global phenomenon which has contributed to the creation of a global market in the most advanced countries (Akinici, Aksoy & Atilgan 2004; Black et al. 2001; Chong et al. 2010; Freeman & Elgahwash 2011; Riffai, Grant & Edgar 2012). Developing countries or developing economies are clearly late or slow in the adoption of modern technology usage (Abukhzam & Lee 2010; Emzio 2010; Gikandi & Bloor 2010; Nasri & Charfeddine 2012; Tingari & Abdelrahman 2012). Issues of awareness, education, infrastructure and culture undoubtedly play an important role in adopting technology for economic growth. Arab countries are made up of many developing countries in terms of culture; and religion has a strong influence on individuals' business and social behaviour. This thesis examines the adoption of online banking in Libya, a country located in North Africa. The research proposes a framework consisting of a set of factors that are likely to assist in identifying the behaviour of Libyan banking customers towards the adoption of banking services via the Internet.

Globalisation, deregulation, liberalisation, information technology, and demographic changes are the major trends that affect financial markets in most countries. Liberalisation and deregulation in the banking sector means increased opportunities for competition between banks and other financial institutions in the financial services sector. Advances in information technology have reduced the number of branches among the traditional commercial banks reflecting the progressive globalisation of interaction of the economies of the world (WorldBank 2000)

The internal and external forces impacting the banking sector via the Internet contribute to a better understanding of the competitive banking environment and the rapidly increasing impact of online banking. Subsequently, there are five external forces at play, namely: the environment, technological, political, economic, and social conditions (Jayawardhena & Foley 2000; Nellis 1998). Online banking has contributed to economic and political changes, and has influenced the rights and behaviour of customers. Legislation has also contributed to increased competition in the financial services industry and the banking sector. The social environment includes changing the nature of the banks' mature clients. Mature customers are the most important new challenge for financial services providers. Social changes have also occurred in cultural values, beliefs and attitudes toward technology and society. According to a study by Jayawardhena and Foley (2000), the internal forces in the banking environment have the greatest impact on the financial sector. Jayawardhena and Foley (2000) classified the internal forces into three categories, namely, the threat of new entrants, increase in number of customers, and the volatility of supply. One of the biggest drawbacks for commercial banks that offer their services online is the threat of new entrants (Jayawardhena & Foley 2000). An important question in a competitive future market is how banks can increase the number of customers who are loyal to their bank. The answer to this probably lies in providing superior online services via the Internet.

The increase in customer loyalty power means that the power has switched from the banks to their customers. Customers are able to control virtually all of their financial transactions and loans through the Internet. Volatile forces of supply have had a profound impact on the banks' services: reductions in the number of bank branches and bank deposits of individuals have changed the banking sector. As a result, customers are able in a restricted sense to use Internet service delivery channels instead of having a traditional network of widespread branches with appropriate staff levels. It can be expected with the implementation of these delivery mechanisms that more Internet changes will ensue. Banks are investing heavily in online customer service channels in order to provide fast delivery of Internet services to save time, effort and a personalised service. The emergence of new banking technology creates a highly competitive market and has an important influence on consumer behaviour. Actual providers of online banking services need to better understand the behaviour of their customers and their attitudes towards technology in general. If banks succeed in this, they will be able to influence, and even determine, consumer behaviour and desires. This will become one of the most important key issues in creating a competitive advantage in the future (Gikandi & Bloor 2010).

A number of specialists in banking affairs in Libya have emphasised the importance of orientation towards global banking systems (CBL 2013b). They believe that Libyan banks should work on the implementation of advanced and safe technology adopted by international banks. This will create a banking sector commensurate with the size of local and international businesses. This is especially important in a country such as Libya, which has a mounting financial state budget. For example, this rose from 2 billion in 2003 to 9 billion in 2010. After the fall of the former regime in 2011, it exceeded 68 billion dinars for the national budget in 2012. In the year 2013, it has allocated a budget of 66.861 billion (CBL 2013a; LIG 2013b). The state budgets after the February revolution of 2011 are the most significant and comprise the largest amounts allocated in the history of Libya to financial and economic industries. In addition to the financial allocations from the General

National Congress as emergency budgets (3-7 billion dinars, 2011-2013), it includes the budgets of compensation for the damage of the war in Libya in 2011.

Additionally, the reserves of Libyan assets inside and abroad are estimated to be more than 170 billion USD in 2012 (LIG 2013b). The head of the Central Bank of Libya notes that Libya is in dire need of a modern banking system (CBL 2013a). He also refers to the magnitude of the future work required in Libya and the large investment projects needed to finance this huge change. This requires having high quality financial systems, and making sure banking is safe and sufficiently sophisticated for the anticipated growth of Libya (CBL 2013b).

The increase and expansion in the scope of the provision of banking services has resulted in high competition between banks, as well as changes in global market conditions. Banks in the Arab countries—and developing countries in general, and Libya in particular—are at risk because these developing countries are late adopters of new technology compared to developed countries. A report shows that in Arab countries the use of the Internet has been effective to a large extent, and perhaps also in many of the world's least developed countries (Aladwani 2003; Loch, Straub & Kamel 2003; PC-Magazine 2008). However, there is a distinct delay or hesitation in the adoption of e-commerce technologies. E-commerce is considered one of the most important issues in economic development, especially in financial and banking sectors. Developing countries need to introduce advanced technologies that are routinely used in the developed world to promote and improve the quality of basic services for individuals and institutions and, subsequently, encourage consumers to increase their use of online banking. This has become a necessity for all countries that want to be successful in the advancement and development of their economies. In this current study, the researcher will focus on the dissemination and adoption of banking technology in Libya.

Technological development has become a key factor for growth in the Libyan banking sector. Libyan banks need to focus on advanced technology and the evolution of the banking systems and their use in the financial sector. They also need to develop all the investments and services required in a contemporary banking environment to elevate their banking business, based on the standards of international electronic services (CBL 2013b).

1.3. Background to Libya

1.3.1. Geographical location and population

Libya is located in North Africa on the southern coast of the Mediterranean Sea. It is bordered to the east by Egypt and Sudan in the south-east; in the south are Chad and Niger, Algeria in the west and Tunisia in the north-west. Libya is a member of a number of international and regional organisations/groupings including the United Nations, the African Union, the Arab Maghreb Union, the Arab League, Non-Aligned Movement, the Organisation of Islamic Cooperation, the Organisation of Petroleum Exporting Countries, and Common Market for Eastern and Southern Africa (COMESA).

Tripoli is the capital and the largest city in the country in terms of population density, followed by the city of Benghazi. The third largest city in the country is Misrata and the fourth-largest city is the city of Al-Bayda. In addition to other major cities such as Alzawa which restricts the capital Tripoli from the west and Tobruk in the far-east of the country, Sabha is the largest city in the south.

In terms of Libya's population—which was 6,154,623 in the year 2012—the Libyan population is small compared to the area of the country (which is in the range of 1,774,440 km²) (GPCCM 2008). Libya is seventeenth in the world in terms of area, and the fourth largest country in Africa. Libya has the longest coastline between the countries bordering the sea with an average length of about 1,955 km. Historically, Libya consisted of three regions: Tripoli (west), Cyrenaica (East) and Fezzan (North). Most people (more than 70%) live in the narrow coastal strip next to the Mediterranean Sea. More than half the population (approximately 65%) lives in the two major cities of the country, Tripoli in the west and Benghazi in the east.

Based on its geographical location, Libya is an important bridge linking Africa and Europe. Libya is on the southern coast of the Mediterranean, which has had an impact on its fortunes since ancient times. Libya has been directly influenced by important historical events that have defined the Mediterranean region. Ports suitable for the reception of ships are the ports of Benghazi and Tripoli. These outlets provide valuable trade with the outside world between African countries such as Niger, Chad and Mali. This puts Libya in a strategic location and provides an important link between the eastern and western Arab world and demonstrates the meeting and mixing of currents of Arab-Islamic culture and civilisations.

In terms of climate, drought is commonplace in Libya. It experiences significant fluctuations in temperature due to the Sahara in the south and the Mediterranean Sea in the north which determines the Mediterranean climate of the whole country. The coastal area in winter experiences moderate temperatures, despite occasional snow at some heights. The average temperature does not fall below 5°C. The summer is considered relatively hot, where the temperature in August can exceed the average monthly rate of heat (30°C) since rain does not generally fall during the summer. In mountainous regions such as the western mountains (Nafusa Mountain) and the Green Mountain (East) the height and proximity to the sea affects temperatures. In the desert region the average temperature is over 30°C during the summer and does not exceed 5°C during winter. Rainfall is uncommon in the desert areas despite occasional rainstorms or snow falls (WFE 2013b). Overall, Libya enjoys a mild climate characterised by the diversity of the Mediterranean climate on the coast to

the desert climate in the south, which makes it an attractive and important ingredient for elements of the tourism industry.

1.3.2. The history of Libya

Historically, Libya was named as the territory in North Africa between Egypt and Tunisia. Its name comes from and is related to the Libo tribe that inhabited this region for thousands of years. The Greeks emigrated from the island of Crete around the eighth century BC to establish the five Greek cities and Cyrenaica. These cities were the most prosperous cities in North Africa in that era. Existing historical records indicate that Libya was inhabited by ancient Berber tribes and on the west coast by Phoenicians Qatanna—who migrated from the western Mediterranean coast at the beginning of the tenth century BC. In the fifth century AD Libya came into the hands of the Vandals and was then under the control of the Byzantines in the sixth century AD. In the seventh century, Muslim Arabs joined the succession of Al Rashidiya Caliphate, the Umayyad Caliphate, and then the Abbasid Caliphate. The most important dynasties that ruled and became prosperous included the Aghlabids in the ninth century AD, and Ziriun at the start of 972 AD. They are of Berber origin, belonging to the Fatimids (WFE 2013b).

1.3.3. Italian colonial period

Libya at the end of the nineteenth century was the only part of the Arab world in North Africa that was unable to repel European colonisation. Because of Libya's proximity to Italy it experienced the major goal of Italy's colonial policy. It was not difficult for Italy to fabricate flimsy pretexts to occupy Libya and they declared war against Turkish colonialism in Libya on 29 September 1911. The war began between the Ottomans (Turkish) and the Italians—with the latter seizing Tripoli on 3rd October in the same year.

The banner of the resistance against the Italians arose in the Nafusa Mountains in the west and Green Mountain in the east in 1911. The resistance by Libyan forces and the Ottomans against the Italians was for a short period only. Subsequently, Turkey ceded Libya to Italy under the Treaty of O'Shea concluded between the two countries on 18th of October 1912. Libyans realised that they now needed to organise their ranks and repel Italian colonialism. The Libyan resistance intensified against Italian forces, and prevented the control of coastal cities. But when Italy entered World War I in 1915, Ahmed Sharif led the resistance against the Italian invasion in Cyrenaica (east) along with Turkey against the allies, but after the defeat of his forces ceded leadership to Idris al-Sanusi (king of Libya from 1949 to 1969) who led the resistance in the Green Mountain area with Omar Mukhtar and a number of Arab tribal elders. In the central region and the western region, the war against Italian colonisation was led by a group of leaders and tribal elders. In 1949 Cyrenaica declared its independence to be the eighth of an independent Arab state. In 1951 three states (Tripoli, Cyrenaica and Fezzan) united under the banner of the United Libyan Kingdom and under the Constitution of 1951 to be Libya unified (Borders) and independent after the decision of the United Nations in 1951.

1.3.4. Libya's political history

After independence from Britain and France following the Second World War, Libya formed a constitutional monarchy in the country. It had a 'representative government'

in a quasi-democratic regime. After a military coup in September 1969, Libya was controlled by Colonel Gaddafi, who was coup leader unilaterally, until the revolution of February 17 2011 saw the eventual overthrow of al Gaddafi and his regime. During the period between January 1972 and November 1977, Libya was in a union with Egypt and Syria that was not actually implemented (WFE 2013b)

Libya's foreign policies have been regarded—since the 1970s—as ‘hostile’ to a number of Western countries. During the 1980s Libya was involved in several conflicts with the United States (Imperial). The policy of Libya has been ‘hostile’ toward some European countries, particularly Britain, France and even Italy (as recently as the mid-nineties). Libya was punished via an economic blockade and air embargo throughout the period 1992 - 2003; and the United States bombed targets in Tripoli and Benghazi in 1986 during the reign of the late U.S. President Ronald Reagan. Libya restored international relations after the lifting of the air embargo and the end of the Lockerbie problem. Libya also voluntarily abandoned in 2003 its secret program to develop weapons of mass destruction (WFE 2013b).

1.3.5. The Revolution of 17th of February

On 1 September 1969, a group of low-ranking officers led by Lieutenant Gaddafi's military coup proclaimed the Libyan Arab Republic. In 1977, Gaddafi transformed the political system of ‘republican system’ to ‘public order’ which, as he was said, was implemented and built on the theory of popular decision-making conferences, and popular committees. On 17 February 2011, a revolution occurred in the form of protests and demonstrations against the regime of Gaddafi—which was seen as an oppressive regime. Demonstrations were launched in the city of Benghazi on February 15 over the arrest of a lawyer of victims in Abu-Salim prison (1269 persons “victims” have been killed in Abu-Salim prison as of 29/06/1996). He supported the victims' families and the public could see no reason for his detention. On 16th of February 2011 the demonstrators began to demand the overthrow of the regime in eastern Libya (especially after the first young man was killed in the demonstrations on 17 of February in the city of al-Bayda), then demonstrations spread to many parts of Libya, including Zentan, Alzawa, Tripoli and Misrata cities in the west. On 27 February 2011 Libya witnessed the establishment of the National Transitional Council (NTC), which became the revolutionary government. The rebels succeeded in controlling many of the coastal cities in the east and some areas in the south-east. The Libyan people in the eastern area (Tobruk and Al-Mareg cities) raised Libya's flag of independence in 1951. The previous flag of the United Kingdom of Libya, 1951-1969 had been cancelled when Gaddafi gained power in 1969.

After the liberation of eastern Libya in a short time period, the rebels took control of cities such as Zentan, Misrata, and Alzawa in the west of the country, and others in many parts of the Nafusa Mountains. Most areas of the country were liberated after the liberation of the capital city (Tripoli) on 20 August 2011. On 16 of September 2011 the United Nations recognised, through the majority of the members of the General Assembly, the National Transitional Council (NTC) as the only government in Libya. The Council subsequently assumed the seat of Libya in the international organisation. On 23 October 2011, the liberation of Libya was complete with the official announcement that Gaddafi had been killed on 20 October 2011.

After the overthrow of Gaddafi and the announcement of liberation, the NTC was formed on 27 February 2011. The NTC attested to Libya's transition to the

establishment of a constitution and a new system of government. The handover of power (a peaceful transition for the first time in Libya's political history) of the NCT to the General National Congress (GNC) took place on August 2012. The election of members of the GNC (200 members) on July 2012 was a first in the history of the country; and the GNC maintained the management of the affairs of the country for a year and a half. The GNC worked in the first session—by Constitutional Declaration—to elect a GNC president and vice president via a secret ballot and—within thirty days—the GNC choose the head of government (Dr Abdu-Al Rahim Al-Keap). The second stage prepared for the election of members of the Constitution Drafting Committee (GNC 2013a).

The General National Congress (GNC) announced the issuance of the Law on Election of the constituent body to draft a permanent constitution for the country (known as the 60 Commission) in the city of Al-Bayda. Accordingly, the constituent body consists of 60 members. This method was chosen based on the body that drafted the first constitution of the country in 1951, which was a sixty-member body. The Commission will be composed of 20 members from the three regions (Cyrenaica, Tripoli and Fezzan) and the GNC will begin formulating general national laws and lead Libya to full parliamentary elections after a new constitution in 2014 (GNC 2013b).

1.3.6. Religions

Libya is religiously homogeneous, where the majority of the population are Islamic Muslims (97%), and 3% belong to other religions—mostly foreigners and non-permanent residents (WFE 2013e). Most Christians who are in Libya are part of foreign communities of African refugees, Copts or Europeans working in Libya. There is also a small community of Anglican faith, and refugee workers from Africa and India in Tripoli belonging to the Egyptian Episcopal religion. There are monotheistic churches in Tripoli, Benghazi and in several cities in Libya, but older churches are mostly closed. Catholic monks and nuns work in most of the coastal cities and mountainous regions. There is one priest in the city of Sabha, and most of the others work in hospitals, shelters or assisting the disabled and the elderly. The monks and nuns dress in religious clothes and the researcher is not aware of any recorded cases of religious discrimination or harassment.

Libyan Jews left the country either individually or and in groups after 1967. There may be a small number of Jews in Libya, mostly in the old city of Tripoli. In 1974, the World Council of Jews indicated that there are no longer Jews in Libya (other than about twenty). The Jewish minority numbered 36,000 after the end of World War II. The Jewish population left to settle in Italy, Israel and other countries over various stages between 1948 and 1967 (WFE 2013e).

Islam was introduced to Libya at the time of the succession of Omar bin al-Khattab, and since some Muslims settled in Libya at different times on their way from Medina to the rest of the Arab Maghreb countries, the Islamic method (School) of Maliki has become the Islamic curriculum and is followed by the vast majority of Muslims in the country. More than 5,000 centres for the memorisation of the Quran exist in Libya. According to estimates by the World Islamic Call Society, a fifth of the population of Libya in 2010 memorised the Quran; and Quran certificate holders are treated on an equal footing with holders of a university degree (Quryna New Magazine 2010).

1.3.7. Libya's judicial system and legislation

Libya's legal system is based on a combination of civil law and Islamic legal principles. Judges apply the principles of Islamic law on issues relating to personal status. Libya is the first Arab state to regulate the issuance of the first historic legislative database in the Arab countries. It consists of forty volumes covering the stages of the Italian occupation and contemporary events; and issues supplements on a regular basis. This is a historical encyclopaedia proactive in supporting regimes in some Arab countries; and has been used as a case in the federal system applied in the United Arab Emirates (UAE), based on the federal experience in Libya (1951-1963).

1.4. Libyan economy

The most important natural resources in Libya are oil and natural gas. Oil and gas are the main sources of income for the country. The total certain oil reserves in Libya is 41.5 billion barrels, placing Libya among the top African countries in this field. Oil accounts for about 94% of the proceeds of Libya's foreign exchange, 60% of government revenue and 30% of GDP (WFE 2013b). Libya produces 2 million barrels of oil per day and plans to increase production to three million barrels per day in the near future. The rate of gas production is 399 billion cubic feet; with certain gas reserves of 52.7 trillion cubic feet. The most important products and industries are iron and steel, cement and building materials, caustic soda, urea fertilisers and other petrochemical industries. The main agricultural products are barley, wheat, tomatoes, potatoes, olive, vegetables, fruit and meat. Libya uses the policy of support for the prices of basic food commodities, and also supports prices of fuel and electricity. Education and health services are provided free of charge. The government plans to alter its program during 2013 to cancel the policy support of basic commodities and fuel and, instead, offer Libyan citizens direct cash support from the beginning of 2014 (LIG 2013a).

The Libyan Dinar (LD) is the basic unit of currency in Libya. It consists of 1000 Dirhams. The LD is covered by gold and a basket of foreign currencies and is convertible into foreign currencies. There are no restrictions on cash transfers to and from Libya. The U.S. dollar is equivalent to approximately 1.28 dinars. Categories of paper currency in Libya are 1 LD, 5 LD, 10 LD, 20 LD and 50 LD (there is a note that the decision was made to cancel paper 50 dinars from 26 February 2012). The coin categories in Libya are 50 Dirhams, 100 Dirhams, 250 Dirhams and 500 Dirhams (CBL 2013c).

The tourism sector in Libya has not marketed the country as a tourist destination, predominantly because of the blockade and the country's dependence on oil resources. However, in recent years, tourism continues to grow in Libya, especially since the lifting of the air embargo and normalising of relations with Western countries. Tourism in Tripoli has expanded significantly in recent years, and has seen the establishment of urban renaissance hotels, shopping centres, modernisation of the road network and the building of the new Tripoli International Airport. The Tripoli International Airport is able to provide services for 20 million passengers annually. In addition to the construction of tourist resorts, projects have been launched in the Green Mountain area and other areas. Benefits from the recent oil boom have allowed the state to support basic infrastructure for tourism. The significant features of the tourism sector in Libya can be summarised as follows:

1. Libya is the largest state with Roman ruins outside Italy.
2. Libya has the longest coastline on the Mediterranean Sea—which benefits tourism investment.
3. The country possesses one of the largest and amazing deserts in the world, which attracts tourists to activities such as desert safaris.
4. Libya has numerous charming picturesque and natural areas—particularly in the Green Mountain area, which exceeds the size of Lebanon.
5. Libya has a history of Grecian, Roman, Turkish, and Italian times in cities including Lepda, Sabratha, Cyrene, Toulmeatha and Sousse.
6. Libya attracts a large number of tourists from Italy, Britain, France and Australia specifically to visit attractions such as cemeteries and military sites from World War II.
7. During 2013, historians on a mission from Britain announced the discovery of relics from three civilisations in Libya. This establishes Libya as a desired tourism destination because of its historical background, archaeological discoveries, and the various hunting trips and safaris offered to enthusiasts.
8. Libya has a pleasing climate with its moderate ‘Mediterranean Sea climate’.
9. Libya possesses the ability to attract tourists because it is classified as a tourist destination promising new and exciting destinations and activities.
10. The tourism sector has the ability to attract investments that can create a balance in the state budget—which currently relies entirely on the oil and gas sector (WFE 2013a).

Transportation is lacking in Libya, which has not had an operational railway since 1965 when it was dismantled. Currently, a huge rail project is underway to link Libya to neighbouring countries. This rail line will run for more than 2,000 kilometres and is aimed at connecting the African and European continents. Libyan signed a contract worth \$4 billion with a Russian company to create a rail line linking the cities of Sirte and Benghazi, which was due to open in 2012. However, because of the revolution of 17 February, it has stopped planning and is awaiting fresh action by the new authority to implement the project.

Libya's economy depends mainly on revenues from the oil sector. Oil contributes to most of its export revenue and more than half of its GDP. This has led to oil revenues with a small number of the population of Libya's highest per capita nominal GDP in Africa. Since 2000, Libya held the highest Human Development Index in Africa and the fourth highest GDP in the continent in 2009, after the Seychelles, Equatorial Guinea and Gabon (World Economic Outlook Database 2009). This is due to its vast oil reserves and low population. Libya has the tenth largest proven oil reserves in the world and ranks seventeenth in global oil production. It has recorded favourable growth rates with a growth rate estimated at 10.6% of GDP in 2010. Libya witnessed fantastic growth rate, but this proved unsustainable in the face of the global recession on oil and international sanctions. Thus, GDP per capita shrank by 40% in the 1980s. Successful diversification and integration into the international community helped the current GDP per capita and saw a further deterioration of a mere 3.2% in the 1990s.

The GDP per capita in Libya was around 40 USD in the early 1950s, and rose to \$1,018 by the year 1967. In 1966 alone, the per capita Gross Domestic Product (GDP) was 42 per cent. The following table shows the direction of GDP of Libya

market prices according to estimates by the International Monetary Fund. The figures are displayed in millions of Libyan dinars (LD) during the period from 1980 to 2010.

Table 1-1 GDP of Libya (1980-2010)

Years	GDP	USD to LD	Inflation Index Consumer Prices (Annual %)	Per Capita Income (as % of USA)
1980	10,882	0.29 LD	9.73	104.37
1985	8,227	0.29 LD	9.14	46.13
1990	8,185	0.28 LD	8.45	30.42
1995	10,679	0.34 LD	7.24	24.45
2000	17,668	0.51 LD	- 2.90	20.70
2005	50,693	1.22 LD	2.65	18.49
2010	80,442	1.26 LD	2.46	12.28

Source: International Monetary Fund (2012). (<http://www.imf.org/external/country/LBY/index.htm>)

Before the fall of the former regime in 2011, the Libyan government—which is overly dependent on the oil sector—implemented limited reforms to diversify its economy. The banking sector, though still largely state-owned, saw some marginal liberalisation and the introduction of foreign banks. Rules of the law are weak; and systematic corruption and largely marginalised private sector activity in the informal economy exists. The Libyan economy is now going through a reconstruction phase because the government faces enormous challenges in the stability of the economic environment and the implementation of much-needed reforms in the wake of the revolution. The need in the short term is to ensure a peaceful political transition while maintaining macroeconomic stability. Rebuilding the economic infrastructure has been degraded significantly since the revolution of 17 February 2011 and economic uncertainty remains very high. The interim government is struggling to restore the rule of law and the establishment of a new system of effective governance (LIG 2013b).

1.5. Libyan banking sector

The banking sector is one of the most important elements of modern society because of its key role in the financial industry, which is to mediate between the depositors—who provide the supply of money in the banking system—and borrowers requesting these funds. In addition, the banking system aims to collect and mobilise national savings and convert them into investments in machinery and equipment, buildings and infrastructure, and goods and services that attract foreign investment. However, the banking sector and financial enterprises are struggling to become more efficient, productive and profitable.

The banking system plays an increasingly important role in the areas of economic reform and transformation, including the exact pricing of banking products and the expansion of long-term loans. In addition, the availability of commercial banks is important to the national economy; and the ensuing benefits of many of its services in other areas include:

1. The provision of payment services for the national economy to facilitate the exchange of goods and services.
2. The provision of credit to maintain national spending levels, as well as storing purchasing power in the future in the form of deposits, bonds, shares and other securities.
3. To provide protection against risks to institutions and individuals using the tools of future protection, such as options and futures (Akel 2008).
4. To ensure the banking system cooperates with government policies aimed at promoting economic growth, reducing unemployment, and fighting inflation.

1.5.1. Islamic banks

After the issuance of the decision by the GNC in October 2013 banning interest on financial transactions, the Libyan banking system will be oriented towards Islamic financial instruments (GNC 2013b). Deputy Governor of the Central Bank of Libya has stated that the application of the Islamic system in a number of Libyan banks will commence soon. He said in a press statement that the transition to Islamic banks in Libya will gradually open windows to provide this service. After this process the intention is to evaluate the experience and measure how it contributes to the national economy. Accordingly, Libya will create a new Islamic banking system. Deputy Governor of the Central Bank of Libya stressed that the work on the Islamic banking service will take place before the end of the year 2013 in the traditional (commercial) banks (CBL 2013a).

The economic reality in Libya currently requires the development of financial instruments in the national economy and creating new tools to stimulate the financial market movement inside Libya and delve into all transactions to stimulate the circulation and the opening of new markets. The Islamic instruments typically attract Islamic capital, especially after the increase in the number of banks and investment funds. The Islamic institutions started complaining of a lack of financial instruments that are consistent with Islamic legislation. This has been addressed by the issuance of legislation and laws that allow the existence of a product in accordance with Islamic law.

The funding of Islamic instruments is linked to the main financier and based on production processes; so that puts them in the same trench—whether in profit or loss. The idea of issuing instruments of legitimate transactions is by typical leasing and other speculative approaches such as development of financing requirements as an alternative to bonds that deal with banking interest. Once the instruments are established they will spread as a contemporary tool accepted by Muslims and non-Muslims worldwide at a fast rate.

The World Islamic Organisation for Islamic finance and economy has tried to take advantage of the new political climate in Libya. They recently held a workshop in cooperation with the Libyan Islamic finance body. The organisation intends to raise the spirit of the Islamic economy and Islamic banking, and contribute to the organisation by lifting old restrictions through partial adjustments to take into account the present, and meet some of the aspirations of the Libyan people according to the legal and regulatory framework of Islam. The World Islamic Organisation for Islamic Finance and Economy and the Libyan Society of the Islamic Financial and Program of Islamic banks in the Arab Academy has established a number of training programs aimed to contribute to the training of a number of cadres to work in Islamic of Libyan banks (TL 2009).

1.5.2. Libyan commercial banks

During a period of international sanctions during the past few years there have been tremendous changes in the Libyan economy and banking. There has been a strong determination by the Central Bank of Libya (CBL) to build a practical financial sector while diversifying the economy of the country (Banker 2011). There are no 100%-owned commercial banks in the public sector and the government encouraged foreign banks to acquire stakes in private banks. Within a few years the financial culture in Libya changed. Foreign banks obtained new banking licenses, and are expected to continue to expand and enhance the competitiveness of the banking sector. Between the currently listed 16 commercial banks in Libya, there are nine banks owned by the private sector—although none of these banks is a major player in the country (Banker 2011).

The establishment of the Libyan Credit Information Centre (LCIC) in April 2009 is one of the approaches implemented to strengthen the financial infrastructure in Libya. This brought about the Gross Settlement System in real time, automatic exchange of information, and automated check processing—all of which are now operating effectively (Banker 2011). The global economic turmoil is unprecedented and despite the decline in oil prices and production constraints, Libya has succeeded in keeping its non-oil economic growth strong, while its assets have grown to about 170 billion USD. While neighbouring countries such as Greece are experiencing troubles and worries about debt and key macroeconomic factors, Libya is advancing its program of economic reform and its development of the non-oil sector, softened by gas reserves and the second largest oil reserves in Africa and the absence of external debt (WorldBank 2011).

To date, the arrival of online banking has not been supported by Libyan banks (CBL 2009); however, the need for facilities for electronic banking in Libya is clear. Currently, customers conduct banking services mainly in the branches and most transactions can only occur during official working hours (CBL 2009). For more

about the commercial banks in Libya, see Chapter Two which focuses on the banking sector in Libya.

1.5.3. Information technology in commercial banks

Technological developments, mainly in the field of communications and information technology, are revolutionising the banking industry. The benefits of information technology are especially apparent in the electronic banking industry via the provision of more personalised banking services to consumers; as well as lower processing costs and the creation of new business opportunities. There is an ongoing trend, one that is supported by plans already in place by banks to increase the adoption and acceptance of online banking by customers. There are currently thousands of online banking websites worldwide, but despite the fact that online banking has been fully implemented in many countries, it has not yet been adopted fully in Libya (Abukhzam & Lee 2010; Emzio 2010; Faraj 2011; Freeman & Elgahwash 2011; Hamed 2009; Twati 2008).

Libyan banks continue to grow in this increasingly competitive market. There is considerable interest in the field of e-commerce, which is seen as an enabling tool for greater productivity and efficiency (Twati & Gammack 2006). Given the importance of online banking services, it has become part of the overall e-commerce strategy in Libya (Hamed 2009) as it strives to persuade more banks to adopt this new technology for them to remain competitive and for online banking to be successful in Libya. However, bank customers need to be willing to adopt the new information technology; and the Libyan government is ready to invest in e-commerce infrastructure. The ultimate success of e-commerce, including online banking, is still dependent on consumer perceptions and attitudes and whether they are willing to use online banking (Suh & Han 2003).

Much of the literature on the adoption of online banking tends to focus on developed countries. Libya is different from other countries since it has only boosted its economic growth in recent years and the infrastructure for e-commerce is still less developed compared with developed countries (Hamed 2009). The main objective of this research is to understand the perception of consumers in Libya towards adoption of online banking. This study will identify factors that can predict the intention of individuals to use online banking services. Given that many factors can affect the use of online banking services, the results of this study will provide information for decision-makers in the Libyan banking sector to focus on those factors that contribute to the possibility of the adoption of online banking by their customers. As a result, the study will fill the gap that has been identified in research attempts to explore and identify factors that could affect customer acceptance of online banking in Libya.

1.6. Research approach

The research develops and tests an extension of the theory of Technology Acceptance Model (TAM) relating to the acceptance of information technology (Davis & Cosenza 1993; Davis, Bagozzi & Warshaw 1989; Davis 1986). It will identify factors that affect the adoption of information technology usage through the Internet in the Libyan banking sector and, specifically, online banking services provided by commercial banks. It examines the importance of these factors, and raises questions about the factors that contribute to accepting or rejecting the adoption of new information technology via the Internet network by commercial bank customers in Libya.

The TAM variables such as Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are used to explain individual behaviour relating to the adoption of new technology. Both PEOU and PU have an effect on individuals' behaviour and their attitudes towards acceptance of modern technology. They also have a later effect on behavioural intention to use the technology. In line with the original theory of TAM (Davis, Bagozzi & Warshaw 1989), this research recognises external stimuli in the model such as Trust and Security on the humanitarian side, Support on the part of banks, and the Quality of Telecommunications Infrastructure (Internet Network). This study contributes to enhancing the understanding of acceptance of new information technology in Libya.

TAM theory has demonstrated its status as an effective model to predict the individual's behaviour and the approval of the direction of the technology usage. TAM developed instruments to measure these original beliefs and were subsequently ratified by Davis (1986; 1989; 1993). These instruments have been widely used by researchers investigating a range of issues in the field of user acceptance of information technology.

This study has selected TAM theory which is the basis of the theory of Reasoned Action (Fishbein 1979) as a research framework. It is possible to look at the study of these phenomena in collaboration with external variables of Trust, Security, Internet Quality and Banks' Support. Through the theory of TAM and the additional external variables, this research will explain individuals' perceived attitude towards the adoption of Internet banking services available in Libya.

1.7. Research Motivation and Contribution

Since electronic banking has not been fully adopted in the Libyan banking industry, this study will depend on the existing literature on technological developments in trade banks (Abukhzam & Lee 2010; Emzio 2010; Faraj 2011; Lee 2009; Ullah, Kamal & Ghani 2013; Wu et al. 2010). This research aims to make a number of contributions to the development and improvement of the use of online banking services in Libya, as well as identifying the factors that affect Libyans' intention to use online banking. The study seeks to identify barriers that play a key role in the adoption of online banking services from the perception of Libyan bank customers. This study also seeks to ascertain the most important factors that affect the behaviour of customers in the adoption of new technology such as online banking services in Libya. The result of this study will enable Libyan banks to develop effective strategies to attract more customers to use online banking services and maintain their competitiveness in the Libyan banking sector. Finally, the research aims to identify

strategies that can guide e-banking implementation projects in the future in Libya and in its commercial banks.

The research motivation and contribution can be summarised in the following points:

1. Banking products and services online is a worthwhile subject to study, especially in the Arab and developing countries, to draw attention to the quality of services in the Libyan banking sector and how they can be strengthened and developed for the future.
2. Several studies in the literature suggest that there is a problem, reluctance or hesitation in the use of information technology in Arab countries and developing countries; and there is a lack of expertise amongst individuals, companies and most of the potential users and non-qualified staff.
3. Online banking services have been studied extensively in developed countries. While some studies have been conducted in developing countries, online banking services have not been investigated from the viewpoint of individuals in Libya.
4. This study could guide the Libyan government on how it can contribute to the development of the Libyan economy and enhance the lifestyle of Libyans by accepting the use of modern information technology.

1.8. Research objectives

Although consumers in developing economies have shifted to using online banking services because of its benefits, many Libyan bank customers are still not using banking products and services via the Internet. Thus, this requires an assessment of factors that affect customers' perceptions of the adoption and acceptance of online banking in Libya. The main determinants are the subject of research and the study of the Libyan banking sector which exhibit economic and social disparities (political and cultural) compared with other developing countries. There are few studies that have looked at the key factors behind the client's decision to accept online banking services in Libya (Abukhzam & Lee 2010; Emzio 2010; Twati 2008; Twati & Gammack 2006). This study is intended to fill this gap, and focuses on the factors that control the decisions of customers to adopt online banking in the Libyan banking sector. The study seeks to determine the objectives of the research as follows:

1. Identify barriers affecting customers' decision to adopt online banking in Libya.
2. To determine the most important factors that need to be addressed for the successful adoption of electronic banking applications and the order of importance of these factors for the Libyan banking sector.
3. Research the effects of the variables on customers' intention to adopt online banking in Libya.
4. Identify the problems perceived by individuals in Libya in the adoption or use of these new technologies.
5. Suggest a strategy for individuals and organisations to detect hidden problems, thereby improving the use and acceptance of online banking.

1.9. Statement of the problem

The growth of reliable and convenient public e-banking is essential for Libya's economic improvement. Libyan authorities are currently attempting to reform the highly centralized banking system (CBL 2009). This study will explore barriers that

influence the growth of the banking sector and the ability to attract private investors. In the past, it had been a challenge to adopt online banking business despite the rise of availability and usage of this technology in Libya. To meet the rising need for an efficient banking system, electronic banking enables banks to provide inexpensive services and a direct way of conducting banking business, such as exchanging information, and selling or buying products and services (Chong et al. 2010; Guides 2006). Most customers in Libya do not know whether or not their bank offers an online service. The Bank of Commerce and Development (BCD) was the first privately operated Libyan banking service provider of electronic banking services. The bank actively promoted these services, but some customers were reluctant to adopt them as they feared the risks involved (Guides 2006).

Banks handle sensitive data such as bank accounts. When transmitted over the Internet the IS sensitive data can be exposed to security breaches. It is becoming more widely accepted that it is vital for organisations to encourage and support Information System (IS) innovations as they adopt Internet technologies (Twati 2008). A key concern in banking is trust between customers and their banks (Schafersman 1994), yet customers fail to see the other side of the coin. Further, without an appropriate telecommunications system and quality Internet networks, the innovation of IS/IT would be difficult to launch. The result of this is that, compared to other Arabic nations, the banking sector in Libya has a reputation for having ‘the finest bankers but the worst bank services’ (LibyanInvestment 2009). This research seeks to analyse the barriers to adopting electronic banking in relation to developing banking services in Libya. It is necessary to market electronic banking to increase people’s awareness about e-banking; and people need clear information about the uses and benefits of electronic banking. This will help bank customers do more than just check their balances, transfer funds, and pay bills (Otman & Karlberg 2007).

1.9.1. Research Questions

The following research questions were formulated:

- 1. What are the barriers to adopting Internet Banking in Libya based on consumers’ perceptions?**
- 2. How important are the barriers to the successful adoption of Internet Banking in Libya?**

1.10. Significance of the study

Recent research has focused, to a large extent, on the electronic delivery of financial services and electronic banking services. This study contributes to this area of research by exploring the adoption of online banking in Libya. This study focuses on a relatively unknown phenomenon in Libya, as few studies have been conducted in this area. Internet technologies are increasingly available to all consumers, and computers have become part of the normal suite of products and services of banks (Twati 2008) as customers adopt new technologies that include mobile technologies. Mobile technology has transformed the lives of many Africans and countries such as Libya, providing not just communications but also basic financial access through phone-based money transfers and storage (Asongu 2012, 2013; Khbresh 2012). The results of this study will help service providers and banks improve their understanding of customers and justify their marketing decisions, thus, providing better services to their customers.

1.11. Chapter summary

The introductory Chapter presented an overview of this study, followed by introducing the research topic of online banking services and the issues related to adoption of these types of services, the background to Libya and the Libyan economy. Then the researcher detailed the research approach, research motivations for conducting this study and contribution, followed by the research objective and research problems to be investigated. Finally, the significance of the research to current knowledge in evaluating the adoption of online banking services was outlined.

CHAPTER TWO

The aim of this chapter is to introduce the Libyan banking sector. The first section briefly presents the development of the financial sector in Libya, the second section illustrates how banks are organised in Libya, the third section describes the technology used in the Libyan banking sector, and fourth section discusses the most important reforms in the banking sector, the fifth section explains the importance of the control of Libyan commercial banks, and sixth section describes the structure of the banking sector in Libya.

2. CHAPTER TWO: LIBYAN BANKING SECTOR

2.1. Introduction

The banking system plays an important role in the economies of developed and developing countries alike. It has a direct impact on the daily lives of individuals and institutions in the public and private sector. Part of the importance of the banking system is its role as mediator in the compilation of savings from different sources and directed towards investment in different purposes according to the economic and social policies adopted to achieve the goal of growth and prosperity (Abukhzam & Lee 2010).

2.2. About the banking sector in Libya

Despite Libya's abundant energy resources, the country has one of the least-diversified economies of all the oil-producing countries in the Maghreb region (Otman & Karlberg 2007). In the early seventies, Libya chose to base its economic system exclusively on investment within the limits established by the state. It imposed strict restrictions on foreign trade, instituted price restrictions and numerous forms of support, and dismissed the private sector almost entirely (St John 2008). The government intervention in the economy from 1969–2003 was seen to have led to a continuous deterioration in the business climate, low economic growth, low living standards, fragility of the macroeconomic conditions, and increased vulnerability of the economy to external shocks (CBL 2011; Libyan Investment 2007). The weak institutions and inefficient governance caused economic conditions to begin to deteriorate in the mid-eighties with the decline in world oil prices, and conditions then worsened in the nineties as a result of international sanctions (Otman & Karlberg 2007).

The Libyan banking sector is a group of financial institutions, and is composed mainly of the Central Bank of Libya (CBL), commercial banks, private banks, specialised banks, and representative offices of foreign banks. The most important goal of these financial institutions is to act as a broker at the level of individuals and institutions as well as at the macroeconomic level. Their role is to work as a mediator between available and saved financial resources and draw investment, and thus contribute to increased employment and economic growth, which are measures of the efficiency of the financial system in its ability to achieve these goals. At the micro-level, the primary objective of these institutions should be to maximise the shareholders' equity, achieving a big payoff on the capital invested in these institutions while maintaining the strength of their financial position. For example, enabled the Libyan banking sector to survive despite the crisis that gripped the country during the popular movement against the former regime on 17 February 2011. This is due to the solvency enjoyed by commercial banks, and keeps it from private funds and liquidity surpluses and balances with the CBL (CBL 2012c). Although partitions were imposed on the departments of banks in the eastern region, particularly during the revolution and before the complete liberation of all Libyan territories and her operational risks, Libyan commercial banks still managed to restore integrity in banking operations and restore normalcy at the lowest cost and in record time (CBL 2012c).

This is because the stability of the banking sector allowed the CBL to continue to exercise supervisory and regulatory powers, which helped to restore and maintain the

vitality of banking activity despite all the difficult operating conditions. The procedures and policies pursued by the central bank to address the liquidity crunch also played an important role in helping the national economy overcome the crisis and achieve financial and monetary stability. For example, the consolidated balance sheet of the banks on 12/31/2011 (Year of 17 February Revolution) recorded growth of 8% and a lower rate of growth at the end of 2010. Growth in the consolidated balance sheet of the banks in the year 2011 was due to a 23% increase in private sector deposits. The banking sector also maintained the distribution of its assets ratios, with the CBL accounting for 49% of the total assets in the Libyan banking sector. The balance sheets also showed consolidated earnings for the banks at 345.7 Million Libyan Dinars (LD) “before tax”, and a drop of 47% that resulted from the impact of net interest and commission income received, which led to a 9.9% decline in net revenue from 2010 to the end of 2011. The drop was also due to lower-interest income, which increased by 29.6%, and lower interest rates on certificates of deposit issued by the Central Bank of Libya (CBL 2012c).

Table 2-1 Assets & Liabilities of Central Bank of Libya

Foreign Assets				Domestic Assets		General reserve	Capital	End of
Portfolio Investment	Participation International	Foreign currencies	Fixed & other Assets	Credit Facilities to:				
				Commercial Banks	Public Enterprises			
-	972.3	28541.4	2187.2	1.0	1705.0	200.0	100	2004
-	983.9	49229.2	1977.6	1.8	2725.5	0.0	500	2005
1304.3	1124.2	70041.7	4073.4	61.5	2924.1	0.0	500	2006
1469.1	1052.3	90084.3	5369.0	52.9	3400.3	250.0	500	2007
2843.0	5266.5	105713.8	4162.7	52.2	2343.5	749.3	500	2008
2594.5	4262.4	11313.4	7763.6	51.9	969.0	909.1	500	2009
30420.5	6300.9	89292.2	9616.2	0.1	623.6	909.1	500	2010
24430.8	6234.1	92712.8	10209.8	0.0	407.9	909.1	500	2011
19063.8	8514.2	111907.4	10932.9	0.0	549.7	1000	500	2012

Source: Central Bank of Libya (2013)

The commitment of the Central Bank of Libya in Benghazi and Tripoli on business continuity in the banking sector and commercial banks' cohesion is seen to have mitigated the degree of operational risk, especially during the period in which the revolution of 17 February 2011 occurred (GPC 2012). These enabled banks to restore their normal procedures after the restrictions imposed on them were lifted. The CBL was able to eliminate the parallel market activity of foreign currency during the revolution and address the problem of liquidity, which maintained the purchasing power and stability of the value of the Libyan dinar against foreign currencies (St John 2008).

Law No. 5 of 1997 was of the most important pieces of financial legislation in Libya (CBL 2012b). Along with banking laws No. 1 and 2 for the year 2005; it promoted foreign capital investment and worked to create a general economic policy on economic reform, privatisation, and liberalisation of the economy. The decision to nationalise banks and foreign companies in Libya was made in 1970. This decision contributed significantly to the opening of Libya to foreign direct investment, including the massive amounts of investment needed in various sectors, especially to replace obsolete technology in the oil and gas and petrochemical industries, to rebuild roads and communications and railway infrastructure, and to activate the sectors of industry, tourism, and services (CBL 2012c).

Some studies have reported (Alfaro et al. 2004; Borensztein, De Gregorio & Lee 1998; Levine & Zervos 1996) that the economy's ability to take advantage of potential opportunities for foreign direct investment can adversely affect development institutions and local markets. In other words, the country will not be able to meet or absorb any short or long-term capital flows due to the lack of organised and strong financial markets (Borensztein, De Gregorio & Lee 1998). These studies have also shown that "foreign direct investment (FDI) plays an important role in contributing to economic growth. However, the level of development of local financial markets is crucial for these positive effects to be realised (Alfaro et al. 2004).

In analysing the roles of different types of financial institutions, Levine and Zervos (1996) said that in spite of the efficiency of banks and stock markets in providing a variety of different financial services, the stock market, bank liquidity, and development all positively predict economic growth and capital accumulation and improve productivity (Levine & Zervos 1996). Looking at the record of the Libyan government in recent years in its reform of financial institutions, we note that the process had already begun, although there is still a long way to go to ensure investments and foreign investors in Libya. compared to a number of developing countries to choose from in a globalised world, Libya is attractive for individual investors and companies with capital to invest (Otman & Karlberg 2007).

2.3. Development of Libyan banking sector

The financial and banking sectors in Libya are based on the force of law, especially after the nationalisation of banks that occurred after the 1969 revolution (CBL 2012c). Even before then, such laws as law No. 4 of 1963 changed the name of the National Bank to Central Bank of Libya (CBL). The law also contained provisions to create and manage the bank, authorised to be million Libyan pounds, gave the Bank the exclusive right to issue currency, identified the external value of the currency with Libyan responsibility to maintain monetary stability, and included provisions for the regulation of credit. Article 25 of the law No. 4 stated that "the face value of the Libyan pound is equal to 2.48828 grams of pure gold" while in November of 1967 the Libyan currency was linked to the sterling pound until the devaluation of the sterling pound later that year (Libya: Ministry of Planning 2006; Otman & Karlberg 2007).

Article 92 of the law No. 4 dealt with a wide range of topics related to the bank, including the selection of a board, management, buying and selling currencies, import and export, and liquidity management. Article 92 also discussed the issuing of currency and the value of gold, the regulatory role of the bank, the issuance of licenses for banking activities, commercial banking supervision, and reserve ratios, and to some extent included legislation to transparently identify the roles and functions of the CBL and the monetary authority set forth in the law (CBL 2012a).

In November 1969 the banking sector, along with many other sectors, changed significantly, so when all the banks in Libya asked the Libyan government to be wholly owned and controlled by Libyan management, control of buying 51 percent of commercial banks that did not turn out already to the ownership of the Libyan state. In July of 1970, the Libyan government decided to acquire 100 percent "nationalisation" to control four of the major banks in Libya at the time, with minority foreign ownership. In December 1970, the government bought all banks,

with some foreign minorities participating in the merger, bringing the total number to five commercial banks (Libyan Investment 2007; Otman & Karlberg 2007).

In 1972, the Libyan Foreign Bank was established by the CBL as a wholly owned subsidiary, not subject to legislation or control of the CBL, as the only bank in Libya that deals with the outside world. It was created to encourage regional and international development, to become active in the international financial markets, to participate in financial and banking operations outside the country, to act as an agent externally to the government and commercial banks, especially with countries friendly to Libya, and to serve as a means to provide assistance from Libya to other countries. To achieve its goals of diversifying new channels of investment and maintaining a strong position in regional and international markets, the bank has significantly increased its balance sheet; for example, in 2004, it showed a growth rate of 18.1% totalling U.S. \$11.2 billion, and was the only Libyan financial institution capable of dealing with foreign accounts during the period of international economic sanctions (1992–2003), dealing with more than 38 subsidiaries in 25 countries around the world (LFB 2012).

In 1987, the National Commercial Bank (NCB) was joined by other commercial banks such as Wahda Bank (WB), Jumhouria Bank (JB) (formerly known as Barclays Bank), Sahara Bank (SB) (formerly de Banco Sicily), the Bank of the Nation (BN), which was later merged with JB during the Libyan government merger of five other banks. Since the mid-1990s, the Libyan government has actively encouraged the setting up of regional and civil banks and issued several new banking licenses. As a result, by 2005 there were a total of 54 banks in the Libyan banking sector, including five commercial banks, four banks specialising in agriculture, real estate, and industry, and 45 regional or civil banks (Otman & Karlberg 2007; St John 2008).

In addition to these commercial banks owned by the Libyan state, the Libyan government also owns the National Agricultural Bank (NAB), Industrial Bank, savings and real estate investment bank, the Libyan Foreign Bank, the Libyan Development Bank, and the NAB Foundation, which is a specialised financial institution established in 1957 to help farmers and promote the agricultural sector through the provision of interest-free production loans. For example, the NAB Foundation provides medium-term loans of up to five years for machinery and materials, and long-term loans of up to 15 years for land reclamation projects, irrigation, and agricultural construction. In addition to buying products from farmers, NAB engages institution profit content and sells supplies at subsidised prices. The real estate development and industrial banks provide loans and credit to the industrial sector, and the financing agency facilitates the provision of loans to Libyans to buy and build houses. In 1981, the Development Bank was established under Law No. 8 to replace the previous administration of the Industrial Bank and Industrial Real Estate and Real Estate Bank, which has become known today as bank savings and investment real estate (Otman & Karlberg 2007).

In 1993, Law No. 1 replaced Law No. 4 of 1963, and the most important provision of the law was that it increased the authorised capital of the CBL to 100 million dinars. In theory, this allowed foreign banks to open branches in Libya after obtaining the approval of the CBL and the Council of Ministers. As a result of this law, Arab Banking Corporation opened a representative office in Misrata in 1996, and the West

Maltese, based in Valletta, and the Bank of Egypt, in the city of Suez, were also able to open (CBL 2012b).

In 1994 The Bank of Commerce & Development (BCD) was established with 2000 private sector shareholders, and was the only commercial bank owned by the private sector in the Libya. The bank started its operations and banking services in 1996. Since that date, the BCD expanded quickly compared to state-owned banks, from one branch in Benghazi to eleven branches throughout Libya. It was a pioneer in the use of modern technology, including the telephone, computers, and online banking services. While the government-owned banks focused on corporate banking and the huge public service sector, and there was no government guarantee on the asset base in the BCD, it was still able to provide customers with services such as ATMs and credit cards, and so opened up a competition with other commercial banks regarding which could provide the finest services, and thus contributed to the progress of modern banking in Libya (BCD 2012).

2.4. Organising the Libyan banking sector

Banking laws No. 1 and No. 2 of 2005 were the most comprehensive banking laws in Libya to date, and through these laws the leadership of the banking system in Libya has tried to achieve their aspirations of International Economic Development and enrolment in the era of globalisation. The law No .1 designates the Central Bank of Libya(CBL) as the number one authority, and determines its legal relationship with the state, given the importance of the issue of speculation in Libya. Law No. 2 effectively deals with the phenomenon of money laundering and its links with terrorism and international crime, and also deals with issues of financial corruption in Libya (CBL 2012b; Otman & Karlberg 2007).

Article 2 of Law No. 1 clearly defined the relationship of the CBL and the government. According to this article, the CBL is under the supervision of the legislature (the National Congress) in the performance of its duties and in the framework of the general policy of the state. The CBL is authorised to adopt principles and procedures appropriate to achieve this end, and sets the rules and regulations relating to the financial and administrative operations according to the decrees of the Council of Legislators of the CBL.

Article 4 of the same law authorised the CBL to increase capital to 500 million LD, and to allow further increase by a decision of the National Congress on the recommendation of the Board of Directors of the CBL in collaboration with the Ministry of Finance. Article 5 lays out the prospects of economic changes and the powers and responsibilities of the CBL in the overall economy. Its most important provisions are:

1. The CBL may issue currency and maintain stability within and outside Libya.
2. Establishing a department to house the government's gold reserves and foreign currency.
3. Organisation of monetary policy and supervision of currency conversion transactions inside and outside Libya.
4. Regulation of credit and banking policy and supervision of its implementation within the framework of the general policy of the state.
5. To achieve the goals of economic policy in terms of the stability of the general price level, and to maintain the integrity of the banking system.

6. Liquidity management of the national economy.
7. Regulation and supervision on the foreign exchange market.
8. To provide advice to the government on matters related to financial and economic policies of public (CBL 2012b).

Article 9 defines the functions of the CBL and its relationship with public entities, public authorities, companies, and commercial banks owned by the state. The following rules define the services provided by the CBL:

- The CBL is to exercise all banking operations necessary for managerial units and is to deposit their assets in the CBL. The bank will not pay any benefits for public entities' deposits deposited with the bank. Additionally, the accounts of public managerial units may not take any fees for banking services offered to general managerial destinations.
- The Bank may also accept deposits and provide services for public entities and institutions that determine the price of banking services according to a list issued by the Board of Directors of the CBL.
- The CBL may also, after the approval of the Ministry of Finance, mandate commercial banks to keep account balances of administrative units according to the limits and conditions issued by a decision of the Board of Directors of the CBL (CBL 2012b).

Article 11 sets the relationship of the CBL with the Ministry of Finance. The CBL may make temporary advances to the public treasury to cover shortfalls in revenue in the state budget according to the terms agreed to between the Ministry of Finance and the CBL. The most important of those conditions is that such advances may constitute no more than 1/5 of the total revenue estimated in the general budget. Also, they must be paid in advance of the end of the fiscal year of the state, and, in the case of non-payment of the advance, may not get another before the repayment of advances from the previous year. Additionally, by the end of the last day of each month the CBL is to prepare a leaflet about the strengths and weaknesses of its finances, and send a copy of the report to the General National Congress and the relevant authorities such as the Ministry of Finance (CBL 2012b).

And in accordance with Article 14 is the appointment of the governor and deputy governor of the CBL by a decree issued by the National Congress for a period of five years, with the possibility of re-appointment for a second term. The four members are appointed for three years by decision of the National Congress in consultation with the governor, and can be reappointed for a second term.

Regarding the rapid changes in the international arena and their impact on exchange rates, which have driven economic reform diversification and privatisation in the Libyan economy, Article 32 provides that the CBL in collaboration with the Ministry of Finance determine the exchange rate of the Libyan dinar against foreign currencies in accordance with the financial and economic interests of the national economy. After the return of Libya to the international scene recently (2003) and especially with the United States and Europe, in Article 56 the law specifies that the CBL is developing rules necessary to confront the phenomenon of money laundering and terrorism financing. Chapter II of the Act states that the first task of the CBL is to supervise and control commercial banks, and to establish local and foreign banks (CBL 2012b).

Finally, Article 120 of the law provided for the abolition of the law No. 1 of 1993 on banks, cash, and credit as well as the cancellation of decrees and other laws in effect and that were inconsistent with the provisions of this law.

2.5. Technology in Libyan banking sector

In recent years, the Libyan state has embarked in economic reforms in many areas, especially reforms of the banking system, and these have manifested through the issuance of laws and regulations to facilitate compatibility with banking environment variables. This is part of the transition to a market economy and integration into the global economy (St John 2008). Perhaps the most important new idea to emerge in these efforts is the decision to enter so-called electronic banking. In this section we try to highlight the most important technology used in the banking system and describe what role this technology plays in providing electronic banking services as a modern trend for the development and modernisation of banks in Libya (Elgahwash & Freeman 2013; Twati 2014).

2.5.1. The national payments system

The national payments system is a project that aims to advance the level of banking service and provide better services. The system goals, which include providing factors, become urgent to synchronise Wheel of Time, improving the speed of transactions, and providing security systems for the transmission of these transactions, can be achieved only through the transition from a manual system to one subject to all the technical requirements. On this basis, foreign companies contracted to provide these systems have been relying on implementation at the national level, and through this project payment systems have seen important developments in recent years (CBL 2012e). They have come to rely on advanced applications, allowing the development of electronic means of payment and contributing to the diversity, speed, and accuracy of banking and financial services of all kinds, and have also opened new investment horizons.

These factors have prompted CBL to take steps towards the development of the banking sector to increase its ability to keep up with global developments. In particular, CBL has launched the National Payments System (NPS) the project and prepared technical studies and strategic plans relating to it. The CBL has also taken steps to contract with a group of specialised international companies to implement the components of the NPS project, which includes the implementation of the following systems:

1. Communications and Networks.
2. Real Time Gross Settlement System.
3. Automated Clearing House.
4. Debit system, POS, and cards (ATM/POS, CMS).
5. Automated Check Processing.
6. Core Banking System.
7. Data Centres.

The benefits of the training centre will also include banks' increased ability to provide distinct services to customers, including:

- Extracting consolidated financial centres to customer accounts in all branches of the bank.
- Increasing investment opportunities for clients through the possibility of the implementation of automatic financial transfers between all customer accounts in bank branches.
- The possibility of supplying major customers of companies and institutions with electronic files containing information on daily centre movement.
- Increasing the speed of banks' response to customers and market requirements, supporting the provision of 24-hour banking services throughout the week, facilitating the handling of accounts in all branches, SMS notification to support banking services through Internet banking, and the provision of services for automatically paying utility bills.
- Support for communicating with the basic components of the NPS (electronic clearing system, distributor self-drawing machines and immediate POS system adjustments, and support for direct communication with the SWIFT system.
- Enabling Libyan banks to effectively implement policies and standards related to risk, to control departments' credit, and to facilitate anti-money laundering initiatives (CBL 2012e).

2.5.1.1. Communications and Networks

The draft communication uses several techniques to link the regions of Libya, including satellite technology (v-sat). This provides fast delivery because it does not rely on the infrastructure needed by the project on a larger scale (at the level required for communication between the regions of Libya), such as the ability to send signals (up-down) within each region to facilitate communication between branches via wireless technology. Work has now been completed in most areas, mainly the Tripoli area, as well as Alzawia, Misurata, Benghazi, Bayda, Tobruk, Derna, and Sebha. The project is built on optical fibre to provide quick and secure communications for bank branches scattered across the country (CBL 2012e).

2.5.1.2. Real Time Gross Settlement

Work on this system began in early 2008 to take advantage of developments in information technology and improve the structure of the banking business. The CBL and commercial banks initiated the implementation of the program because they aspire to develop systems of remittances with the ability to provide electronic signatures and data encryption, and to enable participating banks to manage liquidity and control their own money orders. They also desire the ability to settle accounts among banks and public entities with the CBL and instantaneously convert high-value money between banks before the end of the business day. The CBL currently transfers 10,000 LD each day (CBL 2012e).

2.5.1.3. Automated Clearing House

Work on the electronic payment system began in August of 2008. The system automates the implementation and processing of numerous small values (less than 10,000 LD) remittances such as pay checks and electricity bills. These remittances are instantly settled during two periods of exchange, the first at 11 a.m. and the second at 1:30 p.m. (CBL 2012e).

2.5.1.4. Debit system, POS, and cards (ATM/POS/CMS).

Such a system provides the infrastructure for a distributed national cloud, which can be the way customers access accounts in any of the banks and complete cash withdrawals using a national ID card through the national networks. The system also allows for the use of universal cards such as the Master Card and Visa through global networks, and enables merchants and their customers to provide services and receipts electronically using internationally recognised electronic financial operations.

2.5.1.5. Automated checks processing

This system works on the bank clearing instruments electronically adoption method of scanning and digital files, Net migration operations to Automated Cleaning House to allow the settlement of the values of instruments between banks with ease and safety (CBL 2012e).

2.5.1.6. Core Banking System

Definition phase has been completed products. Alignment with the new general ledger and the data included on the new general ledger with the end of 2008. The products that the bank staffs define and work on the transfer of data, as well as work to meet and complete data. Through the application of the system integrated banking works CBL to publish a single environment for information technology relies mainly on Service Provider Applications (SPA), which covers electronic banking services for banking operations for individuals and companies together. The most important characteristic of this system is to support multiple branches, that is, to explore the possibility of implementing financial transactions through any branch without reference to the other branch);support of multiple means of communication and payment multi channels; and centralised databases about customers and accounts, and support accounts in different currencies (CBL 2012e).

2.5.1.7. Data Centres

Data processing centres, including one major centre, back-up centres, and a support (disaster recovery) centre, have been created for the project according to the best international standards. These data centres will ensure business continuity in the national banks at all times and will allow automatic networking between the main data centre and the emergency centre to avoid any malfunctions and ensure continuity of service around the clock (CBL 2012e).

The most important services and benefits of the use and implementation of these systems for banks and customers in Libya include:

1. Reduced costs and time using sophisticated electronic services.
2. Reduced risk in commercial activities and payments.
3. Facilitation of grant and loan administration and project allocations.
4. Accelerated disbursement of pensions, grants, allowances, and loans.
5. Facilitation of the preparation of national budgets for different sectors.
6. Enabling the CBL to control services and accounts.
7. Enabling individuals, businesses, and public entities to pay service fees automatically (CBL 2012e).

2.6. Banking sector reform

Much of the copious literature on banking reform in the countries undergoing economic transition describes a useful way to distinguish and decide on reform methodologies through the use of two methods, namely, through either new entry or rehabilitation. Senior economist Claessen (1995) argued that “approach involves the introduction of a new break even spontaneous and privatising banks existing government, and the entry of new banks is many, and in some cases liquidation old, Illustrated best approach in terms led to the rapid expansion in the number of banks in Russia and Estonia” (Claussen et al. 1999).

In practice, the early stages of the reform process could include reform aspects of both approaches. In Libya, and in many countries, the situation is more complicated than the fact that banking reform does not take place in a vacuum, but is closely linked to the plan overall reform that aims to privatise state-owned companies on both ineffective many, as well as a conscious effort on the part of government to attract foreign direct investment into industries such as tourism, agriculture and industry. Seen this is crucial in order to diversify the economy away from over-reliance on revenues from oil and gas.

There is no doubt that the process of financial reform is influenced by the pace of legal reform and legislation, where the work of banks depends on the force of legal system, including regulating procedures and safeguards, bankruptcy, and the important role of performance monitoring companies. In Libya, the Commercial Code of 1953 and the Civil Code and the Civil Procedure of 1954 adopted most of their legal materials from the Italian and French Civil Codes. After the revolution of 1969, Libya added the legal principles of Islamic law to create the basis of its commercial laws, especially those relating to the banking sector (St John 2008).

The most important major legislation recently is in Law No. 21 of 2001, which tried through regulation, on the exercise of economic activities (which were amended by Law No. 1 of 2004) to develop rules covering each of the Libyan national companies as well as foreign companies through a comprehensive set of rules and regulations relating to contract law (Otman & Karlberg 2007).

As part of the reform of the banking and financial sector, in recent years Libya has embarked on an ambitious program for the development of the emerging financial sector, as well as the privatisation of banks. Libya is partially privatising banks and encouraging competition. The CBL was restructured and updated using the latest technology with the help of the International Monetary Fund (IMF). One of the most important observations about the IMF is related to the capital market and the financial markets, which are still lagging and played a very limited role in the economy until February of 2011 (GPC 2012) and the following Table (2-2) shows companies listed on the Libyan Stock Market (LSM) in 2003.

Table 2-2 Companies Listed in Libyan Stock Market 2013(Million L.D.)

Portfolio Investment	Foreign Assets			Domestic Assets		General reserve	Capital	End of
	Participation International	Foreign currencies	Fixed & other Assets	Credit Facilities to:				
				Commercial Banks	Public Enterprises			
-	972.3	28541.4	2187.2	1.0	1705.0	200.0	100	2004
-	983.9	49229.2	1977.6	1.8	2725.5	0.0	500	2005
1304.3	1124.2	70041.7	4073.4	61.5	2924.1	0.0	500	2006
1469.1	1052.3	90084.3	5369.0	52.9	3400.3	250.0	500	2007
2843.0	5266.5	105713.8	4162.7	52.2	2343.5	749.3	500	2008
2594.5	4262.4	11313.4	7763.6	51.9	969.0	909.1	500	2009
30420.5	6300.9	89292.2	9616.2	0.1	623.6	909.1	500	2010
24430.8	6234.1	92712.8	10209.8	0.0	407.9	909.1	500	2011
19063.8	8514.2	111907.4	10932.9	0.0	549.7	1000	500	2012

Source: Libyan Stock Market. Website:

<http://www.lsm.ly/English/Inclusion/Pages/IncludedCompanies.aspx>

In addition, there is a small market for foreign exchange markets, and no government or private debt. On the other hand, some progress has been made in the liberalisation of banking services. Foreign banks such as HSBC in the UK now operated in Libya, and Standard Chartered Bank has applied for operating licenses in Libya. The Libyan Stock Exchange was established in March 2007, and is the first stock exchange of its kind in the country. A cooperation agreement was forged between the Libyan Stock Market and the London Stock Exchange (GPC 2012).

Enable the financial sector in Libya largely deal flexibly with the global financial crisis, but much less proven ability to deal with internal conflicts, which severely damaged in the formal sector. Access to financial services deteriorated already very limited to a large extent. With recovery, the financial sector is improving but that the transitional government should not only make up for setbacks suffered during the war 2011, but also work to address the problems before the conflict.

Financial authorities in Libya are well aware of the weaknesses in the Libyan financial sector. As a result, they have developed products and services and undergone a banking sector modernisation program in order to be able to deal with non-performing loans. The financial sector modernisation also allows it to use the latest technology, and, through the establishment of the NPS, to facilitate the use of payment instruments other than cash, with the development of new standards for accounting and training. To strengthen the financial sector, the Libyan government's intention is to ensure that any reforms implemented go deeper than those of the previous government. This will mean the re-establishment of some institutions from scratch to ensure the elimination of corruption and improve transparency.

2.6.1. Privatisation of commercial banks

In early 2005 it was announced that the Libyan government plans to sell two of the largest commercial banks in Libya, Sahara Bank and Wahda Bank, to investors in the private sector. The Sahara Bank was established in July of 1964 as a securities company in Libya. In 1966, it sold Banco di Sicilia 29% of Bank of America and 51% of its capital to investors in the private sector, was maintained at 20% of the bank's capital, which has become a national bank, and now known as company Sahara Bank. After the reorganisation and the nationalisation of banks and the merging of banks with the CBL, the Sahara Bank now owns 47.92% of the share capital and 52.08% of the shares to the private sector. The value of the bank's assets more than doubled during the ten years between 1994 and 2003, from 808 Million

Libyan Dinars (LD) in 1994 to 1,716 million LD in 2003 (Bengdara 2008; CBL 2012c; Otman & Karlberg 2007). Table (3) displays the percentages of owned shares in the biggest commercial banks in Libyan Banking system (CBL 2012c).

Table 2-3 Percentage of banks owned

N	Company	Type of ownership	Capital	Formation year
1	Libyan Insurance Company	60 % State - 40 % Private	50,000,000	1964
2	United Insurance Company	100 % Private	10,000,000	1997
3	Sahara Bank	47.92% State - 52.08 % Private	252,000,000	1970
4	Assaray Bank	100% Private	33,333,330	1997
5	Wahda Bank	54 % State - 46 % Private	108,000,000	1970
6	Development and Commerce Bank	100 % Private -	50,000,000	1996
7	Sahara Insurance Company	100 % Private	15,000,000	2004
8	Libyan Stock Market Company	45 % State - 55 % Private	50,000,000	2006
9	Development company for medicine manufacturing and medical products	100 % State	51,725,762	2008
10	Libyan Tobacco Company contribution	100 % State	75,780,000	1972

Source: Central Bank of Libya (2008)

In June 2005, the CBL announced an IPO to sell 50% of its stake in Sahara Bank at 10 LD per share. At the beginning of 2006, the results showed that the divestment of Sahara Bank was not successful, with only 15% of the shares covered by the public Libyan institutions. This also highlighted the governor of the CBL's gradual approach to reform banking through the assessment of the Wahda Bank (WB) in Benghazi for privatisation, which was announced at the end of June 2005. Despite the new law No. 1, which allowed foreign banks to operate in Libya, it was clear that the CBL's strategy was to privatise local banks first before opening the way for foreign participation in the Libyan banking sector (St John 2008).

2.6.2. Standards of conduct for companies in the banking business

Based on the decision of the governor of CBL, the CBL management committee approved a plan for the distribution of companies and bureaux de change in the cities of Libya. The committee also set standards and controls that are the basis of acceptance of applications and approval of licensing and developed a set of criteria that will be on the basis of the distribution of companies and bureaux de change in Libyan cities. The commission developed a package of standards and controls to be the basis of licensing, including the population in the region or city and the number of commercial and industrial companies, tourists, and service areas, as well as the size of branches or banking agencies, and taking into account the specificity of the region in terms of the seaports, land, airports, free zones, hotels, and expats. The

Board of Directors issued the CBL Resolution No. 35 for the year 2012 amending some provisions in its resolution No. 16 of 2012 on the rules governing the work of exchange according to the Commission's decision, which demanded the amendments to some articles of the resolution on the rules governing the work of the offices and currency exchange companies (Banks 2012).

2.6.3. Abolition of bank interest

At the beginning of 2013, the Libyan National Congress (LNC) approved a law prohibiting bank interest on transactions between citizens and legal entities represented in state institutions. The law passed after bitter debate by members of Congress who disagreed about the appointment, which required legal persons (state institutions and foreign companies), and amended the National Conference of Article 3 of the law before granting approval, so that the law will go into effect in January of 2015 instead of January 2014, the deadline for application for Prevention Act financial benefits in banking transactions between Libyan legal entities. The LNC spokesman confirmed that the draft of the Law on the Prevention of Usury Transactions year was adopted unanimously as a general principle to bring dealings in Riba in Libya in line with Islamic law and with the constitutional declaration. The spokesman emphasised that it is possible to go to a system of Islamic banking by starting off usury between natural persons and legal persons from the beginning of 2014. was initiated one step, a stop dealing in Riba between natural persons and legal persons, according to the opinion of the Dar al-Ifta, should stop masturbation completely, and this is what the attic official position of the LNC will stop usury year as a whole in Libyan financial sector (Banks 2012; GNC 2013a).

2.7. Banking Supervision

The CBL works to achieve the goals of stability in the financial sector in general and in financial and banking institutions in particular, recognising that financial stability and the stability of the general price level are necessary conditions to support economic growth and sustainable development in the national economy. CBL efforts are focused on the development of banking supervision and the enhancement of the possibilities of supervision of the banking sector (CBL 2012a). The process of bank supervision in the Libyan state accords with the provisions of Law No.2 of the year 2005, the Banking Act, and Libya business law, and controls the ways banks work at three key levels:

1. Internal control of commercial banks through internal control systems (risk departments, internal audit departments).
2. Audit of banks by the auditors in accordance with the provisions of Article 83 of Law No. 1 for the year 2005.
3. Control of the CBL of sector oversight of banks and cash, in addition to the supervision of the securities market for banks listed on the market (CBL 2012a).

The goal of the supervision of banks is to maintain financial stability and the strength and integrity of the banking sector, to protect the funds of depositors and customers, to preserve the rights of shareholders, and to ensure the ability of banks to contribute to the growth of the national economy. As part of CBL's efforts to develop the banking sector, the bank has prepared a strategic plan for the years 2009–2011, with a view to strengthening and activating the CBL's control of banks operating in the Libyan state. CBL's Strategic Plan was based on the application of the basic

principles for effective banking supervision. According to the paper issued by the Basel Committee on Banking Supervision in 2006, the plan is based on several development initiatives that can be summarised as follows:

1. Develop an extensive database and integrate efforts to strengthen oversight of field and office.
2. Reliance on information technology, and the use of electronic archiving.
3. Keep pace with developments in the field of banking supervision, and check out the FAQ in order to develop.
4. The practice of banking supervision, both in the office and the field, in accordance with the standards of the CAMELS, to ensure the integration and coordination between them.
5. Application of international accounting, auditing, and financial disclosure standards.
6. Develop an operational framework for the application of the Basel 2 standards for capital adequacy.
7. Application of consolidated banking supervision methods to banking groups.
8. Building and the training and development of human resources required for the implementation of banking supervision.
9. Cooperation with the regulatory authorities in other countries.

The CBL divides supervision of banks into two types:

First: Censorship office:

The CBL monitors and follows the financial situation of banks through data sent from the banks and through financial information. It reviews and analyses the data and calculates the most important financial ratios to determine the financial position of the banks, and see how its commitment to laws, regulations, and instructions (CBL 2012d).

In order to strengthen its oversight office, CBL has placed great importance on the subject of analysis and study data, as well as to the development of banking statistics and the monitoring of credit risk and follow-up banking, in order to apply the latest methods of the control office, which is considered one of the most important pillars of the early warning system (CBL 2012a).

Second: control field:

This type of control is to carry out field inspection missions of banks to ensure compliance with laws and banking legislation in Libya and the regulations and instructions issued by the CBL. These missions also serve as a means to assess the conditions of all banks operating in the country, ensure the safety of their financial and efficiency departments, and follow corporate governance standards and the adequacy of control systems and internal audit and risk management. The CBL takes actions on the banks as stipulated by Law No. 1 of 2005. And ranging of these measures prevent the bank concerned to do some banking activities to stop the Director General or the Governing Council on the work, and to assign to the Commission an interim administration and access to merge the bank another bank or revocation of the license (CBL 2012a).

2.8. Structure of the banking sector in Libya

The ability of financial and banking systems are capable of mobilising financial resources and allocated them efficiently to serve the purposes of producers is one of the key requirements for achieving high and scalable growth rates. When we talk about the financial sector in any country, we find that it consists of commercial banks, specialised banks, insurance companies, investment funds, sovereign funds, leasing companies, exchange companies, brokerage firms, hedge funds, and the financial market. This section will focus on commercial banks and private banks currently under study and research, in addition to the CBL the figure 1 show the structure of Libyan Banking system as follows (CBL 2011).

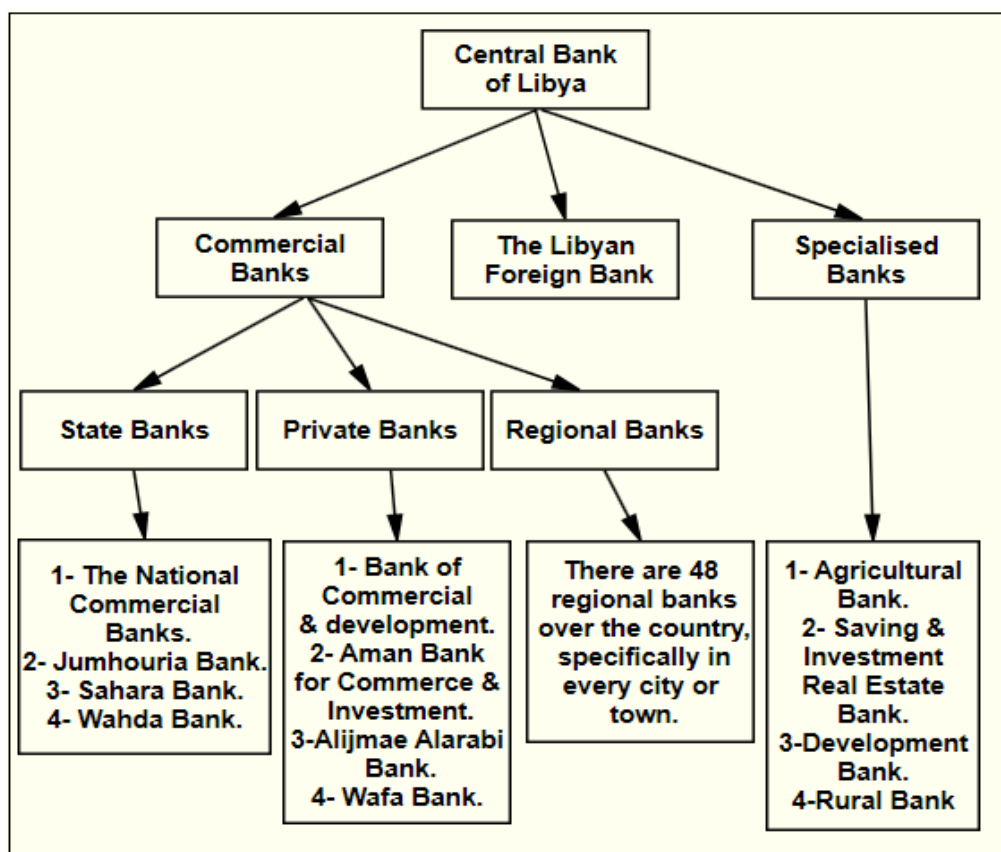


Figure 1 Structure of Libyan Banking System

Source: Central Bank of Libya.

2.8.1. Central Bank of Libya (CBL)

The Central Bank of Libya (CBL) is an independent financial institution wholly owned by, and representing the monetary authority of, the state of Libya. I have discussed the laws establishing the CBL (see section 2.2) as well as the subsequent legislation, the latest of which was the Banking Law No. 1 of 2005. The most important objectives of the CBL includes maintaining monetary stability and achieving growth in the national economy in the framework of the general policy of the state.

The Board of Management of the CBL discharges the administrative and financial affairs of the bank and implements the internal regulations relating to its operations. The CBL's Governing Council is considered conservative, and consists of the

conservative president and the Deputy Governor as Vice-Chairman, and five other members. And is the CEO of the bank which is administered by and autonomy regular supervision board. The headquarters of the General Administration of the CBL are in the city of Tripoli, and the bank provides services to commercial banks all over the country through its branches in Benghazi, Sirte, Sabha, and the cities of Gharyan and Albayda.

CBL was established on the first of April 1956 and replaced the Libyan Monetary Commission, which was established in 1951. Its initial functions included maintaining coverage of issued currency assets payable. When it was first established, CBL did not have any role in the control of cash or bank credit or the supervision of banks.

2.8.1.1. The most important functions of the CBL

First: the issuance of currency regulation

The national currency, the Libyan Dinar (LD), is divided into thousand dirham's, which have been linked with a basket and Special Drawing Rights (SDR) since 03/18/1986 at a fixed rate which was last modified on 06/14/2003 and then equaled 0.5175 SDRs for each Libyan dinar. The CBL publishes exchange rates of the Libyan dinar against foreign currencies according to the change of those currencies against the SDR. It is the entity authorised by law to issue the national currency (notes and coins), and typically covers issued currency in gold and convertible foreign currency (CBL 2012d).

Second: Management of reserves and foreign exchange control

The CBL manages Libya's reserves of gold and foreign currency, and chooses the tools of appropriate investment and value of each currency, taking into account developments in exchange rates and the financial markets so as to ensure the safety and profitability of these investments. The Bank also allows commercial banks to keep as assets foreign currency in accordance with the instructions issued by the CBL to ease foreign exchange controls and liberalisation of the current accounts and promote economic stability and the stability of the general price level (CBL 2012d).

Third: State Bank

The CBL is the financial agent of the state that maintains accounts of public financial income and expenses, manages the transfer and collection of funds locally and abroad, manages letters of credit on behalf of its customers, and provides various banking services to the general administrative units (CBL 2012d).

Fourth: Bank of banks

The CBL cash reserves retain them mandatory minimum required by commercial banks as a percentage of customer deposits (usually 15%) in addition to accepting deposits of these banks against the benefits. It is the bank of last resort for commercial banks, and can grant unusual loans in the face of exceptional circumstances that threaten the stability of the monetary and banking systems in Libya (CBL 2012d).

Table 2-4 Deposits in Central Bank of Libya (Million L.D.)

Assets Deposits				Liabilities Deposits					End of
Deposits Time		Demand Deposits		Other Accounts	Banks Abroad	Commercial Banks *	Public Enterprises	Treasury Accounts	
With Banks	With CBL	With Banks	With CBL						
80.0	4368.8	45.7	1710.6	831.9	6.6	6878.8	1036.5	13627.5	2004
0.0	6400.1	35.1	2474.8	985.4	36.4	10351.3	1757.7	28866.1	2005
34.0	7735.7	144.3	3448.7	1390.7	8.1	11888.6	9815.1	42380.4	2006
24.0	13177.7	203.1	4970.7	1905.2	15.5	18918.5	39120.2	23155.7	2007
394.4	19538.6	116.4	12931.5	386.8	25.0	33010.3	39885.3	30020.3	2008
100.0	25619.3	191.8	12948.5	499.0	118.1	41106.0	41143.5	25212.6	2009
0.0	30686.0	167.2	13251.5	740.5	323.1	55094.6	21300.7	37559.1	2010
90.0	27339.7	241.7	18728.7	1299.9	202.7	63043.9	15081.6	32410.6	2011
50.0	33602.5	337.7	14645.3	2277.4	219.1	59896.4	21550.8	41757.8	2012

* Included the Specialised banks Deposits.

Source: Central Bank of Libya.

Fifth: control and regulate banking activity

The CBL will examine the analysis of the financial positions of commercial banks to make sure they retain the proportions required for the compulsory liquidity cash reserve, monitor the implementation of the commercial banks' credit and banking policies, and provide services to the commercial banks in the area of central credit risk.

The staff of the CBL inspects commercial banks and their branches, books, and records to ensure the safety of their financial situation, the accuracy of their data, the appropriateness of their banking services, and their solvency and capital adequacy (CBL 2012d).

Sixth: Economic Development

The CBL has a direct role in the economic development of the state by helping financial institutions to attract and direct investment to finance projects in the public and private sectors. The CBL also contributes to strengthening the financial position of the state through its maintenance of reserves of gold and foreign currencies. It plays a direct role in economic development, including the activity of commercial and private banks, and through the control and approval of monetary policy is able to sustain domestic confidence and foreign power and currency stability in the Libyan economy overall. Through the promotion of domestic savings by individuals and legal entities, the Bank directs investment in productive sectors and services (CBL 2012d).

2.8.2. Commercial banks:

In addition to the Libyan Foreign Bank and specialised banks, this section will focus on the largest commercial banks that have the biggest grassroots, which represent 10% or more of the total assets of the banking sector in Libya. Usually defined as public banks; these banks control 59.1% of the Libyan banking sector.

2.8.2.1. Ownership structure of commercial banks

The banking sector in Libya consists of sixteen banks, divided as follows:

There are five large commercial banks with public ownership (including two merged banks, Nation Bank and Jumhouria Bank and in the framework of the partnership strategy, which aims to develop banking practices; the participation of foreign banks increased the equity in Wahda bank and Sahara bank by 19%. These five banks dominate over 90% of deposits in the banking sector.

Table 2-5 Liabilities of commercial banks (Million L.D.)

Liabilities									End of
Borrowing From Banks			Deposits				Capital & Reserves		
Abroad	Inside	CBL	Total	Saving	Time**	Demand*	Reserves	Capital	
131.4	0.0	0.0	10860.4	685.9	2665.6	7508.9	584.4	222.4	2004
59.1	0.0	0.0	13782.6	671.3	3551.9	9559.4	473.9	573.2	2005
86.5	52.8	1.2	17359.2	627.7	3959.6	12771.9	495.0	680.8	2006
19.0	51.5	53.0	24805.5	649.3	6409.9	17746.3	707.0	972.8	2007
175.1	57.1	52.2	41530.7	689.2	11046.2	29795.3	1022.8	1121.6	2008
135.6	52.4	51.9	48672.3	715.0	12100.1	35857.2	1034.1	2623.0	2009
81.8	47.6	0.0	55313.0	743.1	12231.8	42338.1	1166.6	3351.2	2010
290.8	47.0	0.0	58480.0	683.9	11419.8	46376.4	1012.3	3352.9	2011
132.7	45.7	0.0	64522.8	695.5	12086.5	51770.8	1238.7	3495.2	2012

* Includes payment orders since 2001. ** Includes margins for L/C & L/ Guarantees

Source: Central Bank of Libya.

There are also eight private banks owned by Libyans with a foreign participation rate of 49% within the framework of the strategic partnership, Banks subscribers by 51% and 49% between the Libya and the United Arab Emirates (UAE) in one, and the second by the same percentage between Libya and Qatar (GPC 2012).

The CBL has begun a privatisation strategy in order to prepare the ground for fair competition between banks, and compliance with the appropriate supervisory role of the bank's goals. Despite its small size relative to private banks, the CBL is rapidly evolving, taking advantage of the great flexibility in its organisational structure.

2.8.2.2. The Bank of Commerce & Development

The Bank of Commerce & Development (BCD) was established (as Libyan Joint Stock Company) on 11/29/1994, and adheres to the bank provisions of Law No. 1 of 2005 with regard to the commercial code, as amended. The purpose of the bank is to do all the work and banking activities and in particular the following acts:

1. Accept deposits and for opening current accounts.
2. Loans for various maturities and other credit facilities.
3. Discount and re-discount commercial paper and circulation.
4. Services for Documentary Credits, and documents under collection and letters of guarantee.
5. Issuance and management of payment instruments, including cash withdrawals, money transfers, and credit and payment cards, tourist and instruments, and others.
6. Handling, buying, and selling money market instruments and capital market instruments, either for its own account or on behalf of its clients.
7. Leasing operations.
8. Dealing in foreign currencies in the immediate exchange markets and futures.
9. Management, distribution, and handling of releases and securities.

10. Provide advisory services and for investment portfolios and custodial services including management and investment of funds to the detriment of others.
11. Operations management and conservation of securities and valuables.
12. Secretary and financial advisor services.
13. Property ownership, sale, and lease.
14. Doing business with banking and financial commercial banks operating in Libya consistent with the purposes of banks in accordance with Law No. 1 of 2005.
15. Work on development goals of building agricultural and industrial projects and services in order to reduce dependence on foreign imports or increasing exports to provide foreign exchange for development.
16. Work on the development and provision of saving and investment vessels to meet the requirements of development in the use of the proceeds of these vessels to satisfy the aspirations of savings account holders in the considerations of safety and profitability for each of the depositors and the bank.
17. Training and development of national cadres in the field of banking in coordination with the relevant authorities.

The status of the bank and its location in the city of Benghazi allow the board of directors the discretion to open or close branches and agencies and representative offices abroad, subject to the adoption of the Board of Directors of CBL and the provisions of Law No. 1 of 2005. The bank is set to operate for fifty years, automatically renewable for a period as determined by the general assembly, which may also decide at any time to dissolve or merge it into another bank. And select bank capital amount 50 million LD, divided into five million shares nominal value of each share 10 LD (Ten Libyan Dinars) is indivisible. Natural and legal persons of public and private contribution in the bank's capital and according to the limits and rules prescribed under legislation.

The BCD is the first bank in Libya to offer banking services via the Internet and mobile phone. It launched this service for the first time in June of 2005 in order to provide customers the convenience of sending short messages (SMS). This service offers many banking operations that help the customer review bank branches to inquire or request other banking services, in addition to queries about exchange rates and the balance of customer accounts. The bank also offers e-service to provide customers access to their accounts across a network. The service provides information about a customer's accounts in Libyan dinars in addition to foreign currency, savings, and so on. The service also gives customers the ability to view and print any statement, even from previous years, and provides electronic customer cards such as Visa Gold, Visa Electron, Visa Internet, and Visa Tourist. The customer gets a currency converter that can convert up to 19 different currencies. The service is available in Arabic and English (BCD 2012).

2.8.2.3. National Commercial Bank

The National Commercial Bank (NCB) is a Libyan company with capital of 500 million DL, founded under the provisions of Law No. 153 of 1970. It is a financial institution Libyan founded to provide the best banking services to its customers, whether individuals, companies, or institutions, as a contribution to the renaissance of the nation, and in line with developments in the field of information technology and banking services. As of 2012, the NCB had 64 branches dedicated to the pursuit of success and excellence, and the NCB motto of confidence and safety (NCB 2013).

The NCB is one of the largest banks operating in Libya. This is due to the spirit of teamwork, the pursuit of excellence. The NCB's budget, including the contra accounts, is 11,669 billion LD, an increase of 117% since the end of 2012. The growth rate is up 57% compared to previous years, and this shows the improvement and quality of services provided. The bank financed various projects in order to contribute to the development of the national economy. It also offers all traditional commercial banking services as well as, starting in 2008, a series of new products including ATM services, rapid remittance services, mobile phone services, easy credit, and credit cards (NCB 2013).

In the future, NCB looks forward to building strong relationships with its customers, who will benefit from the quality of service and product offerings and increase the proportion of the bank's market share. NCB plans to improve the profitability of assets through a mixture of better assets balancing and enhanced network coverage, which will be accomplished through the opening of new branches and the transfer of some existing branches. The bank will also improve the organisational structure to lead the operations and business activities effectively and exploit business opportunities to benefit from competitive advantages. NCB plans to focus on six themes, namely: customer service, products, channels, operations credit, organisational structure, and IT infrastructure (NCB 2013).

2.8.2.4. Jumhouria Bank

Jumhouria Bank (JB) is one of the largest banks in the country, ranking second in terms of capital after the LFB. As part of the strategy adopted by the CBL to restructure and develop the Libyan banking sector and update banking services, CBL issued Council Administration CBL Resolution No. 74 in 2007 and Resolution No. 8 in 2008 to approve the JB and Nation bank merger under the name of Jumhouria Bank (JB). The new bank emerged as an effective entity in the beginning of the second quarter of 2008 with a budget of more than 11 billion LD. Jumhouria Bank thus became one of the ten largest commercial banks in the North Africa, with 146 branches and agencies in 2012. The bank's branches provide banking services to customers in all parts of Libya, directly provide funding for projects for the public and private sector. JB also finances international trade to encourage export and import operations. All activities offered by JB are subject to the banking provisions of the Commercial Code and the laws governing the work and activities of commercial banks supervised by the CBL of Libya (JB 2013).

JB shares are traded on the Libyan stock market. Shares were deducted in an initial public offering in order to expand the base of ownership and encourage individuals to participate in the funding of development projects. JB provides banking services to all parties. Customers have the opportunity to receive advanced, high quality products that accelerate procedures and banking transactions, and keep pace with the latest technology. JB works on developing and training of personnel for the betterment of its performance and ability to use modern technological developments. Through continuous training in Libya and abroad, JB provides banking services (CBL 2012b; JB 2013) including:

1. Opening of current accounts, savings accounts, and time deposits.
2. Accepting all kinds of funding, open letters of credit, and foreign documents for collection to contribute to the promotion of foreign trade operations.

3. Issuing local and foreign letters of guarantee, and holding foreign transfers to non-residents.
4. Issuing ATM cards, and buying and selling currencies.
5. Providing loans, commercial real estate, and credit facilities to all clients.
6. Contributing to the financing of investment projects and real estate.
7. Rental safes.
8. Counselling and financial and technical studies.

The bank seeks develop traditional services into electronic services, and has developed a number of electronic services such as ATMs, POS services, and short message service via mobile phone, in addition to the introduction of bank transfers via Western Union (JB 2013).

2.8.2.5. Wahda Bank

Wahda Bank (WB) was established under Law No. 153 in December of 1970 after integrating five banks (Arab Bank, the Bank of North Africa, Khafla Bank, Alnahda bank, and Commercial Bank) and paid capital of 108 million. The bank distributed 54.1% of the shares to fund economic and social development, 26.9% of shares to the private sector, and 19% of the shares of the bank's capital to strategic partner Arab Bank. The WB provides all kinds of banking products and services, and aims to provide a comprehensive package of products and services to meet customers' requirements through 76 branches all over the country (WB 2013).

WB is a pioneer in providing excellent banking products and services that use the latest technology. Qualified personnel assure banking operations up to the level of international standards. WB has a strategic vision and depends on its historical roots and financial reputation. It has improved efficiency in the service of the national economy and in accordance with global economic changes.

Executive management has taken several steps toward the application of the latest modern automated systems to improve banking service in all aspects of the banking industry. The bank is connected to a large network of correspondent banks to facilitate their foreign trade operations, and uses modern technology and devices (WB 2013).

The WB strives for continuous improvement and development through the development of highly qualified human resources at home and abroad, through training programs to achieve and enhance the image of the WB. The bank also seeks to use modern techniques to provide better services in all banking operations in terms of regulations and international standards and policies (WB 2013).

2.8.3. Libyan Foreign Bank

The Libyan Foreign Bank (LFB) was founded as a joint Libyan bank under Law No. 18 of 1972. Its capital sum of ten million LD was underwritten entirely by the Central Bank of Libya, and then to the bank business-financial different banking abroad and perform some workers banking inside Libya. The bank's capital was increased to 20 million LD in 1972, then to 300 million LD in 1988. At the beginning of 2006 the bank was paid the rest of the planned increase in capital paid-billion U.S. dollars. The capital continued to increase up to US \$8.7 billion after the Assembly issued an unusual decision No. 2 in 2010 and divided the bank into 87,000,000

shares, each with a value of one hundred US dollars. The paid-up capital of the bank to date is US \$3 billion, which is wholly owned by CBL (LFB 2013).

The LFB is to open foreign currency accounts and accept deposits from abroad and non-residents, collecting orders and bills of exchange and other securities-value, and issues instruments, bonds, notes, and other commercial paper. Its most important activities include offshore banking and international investment to create banks, institutions, companies, and contributions, as well as buy and sell bonds and notes issued by or guaranteed by foreign governments, bodies, and international financial institutions. The LFB deals with money market instruments of the capital market, buying and selling portfolio management, service delivery advisory and business agents with regard to the settlement of international transactions. It grants loans of all kinds, and other credit facilities, and manages international versions of loans and finances foreign trade operations and investment projects, as well as leasing operations (LFB 2012).

Since the establishment of the LFB in 1972, the bank has participated in foreign investment in all parts of the world (Africa, Asia, Europe, and America).LFB invests financial resources in building the financial institution to be able to handle joint or full ownership of other banks. This investment is one of the models of a long-term investment bank. The practitioner bank operates a short-term investment through transactions in the money market, and will deposit funds and complete various bank transactions in the field of currency trading in order to achieve the best value added to these investments (LFB 2013).

2.8.4. Specialised banks

There is a component of the banking sector in Libya that consists of four specialised banks, namely the Agricultural Bank, Development Bank, Savings Bank & Real Estate Investment, and the Rural Bank, all of which are owned by the State. As it displays in table (5), these banks have been created for the purpose of financing specific activities, such as housing activity, agriculture, industry, and microcenter prices. Savings Bank & Real Estate Investment has been entrusted with the task of financing real estate and private housing activity, while financing productive activities in the field of agriculture falls to the Agricultural Bank. The financing of some industrial activities or services falls to Development Bank, and the funding of some projects is the task of Rural Bank. It should be noted that these banks fund their lending through allocations from the general budget, in addition to their own funds. They give loans at interest rates lower than the interest rates prevailing in the market, which causes distortions in the banking market and affects competition.

Table 2-6 Loans of specialised banks (Million L.D)

Banks	2004	2005	2006	2007	2008	2009	2010	2011
Agricultural Bank	78.6	375.3	480.7	216.6	117.0	32.6	34.0	113.3
Development Bank	36.0	254.5	177.4	222.1	61.0	86.8	89.5	121.2
Rural Bank	27.3	104.4	145.0	132.0	35.1	66.6	56.8	46.7
Savings & Real Estate Investment	128.4	745.6	1499.8	1814	1031.7	1151.3	675.3	550.0
Total	270.3	1479.8	2302.9	2384.7	1244.8	1337.3	855.6	831.2

Source: Central Bank of Libya (2012).

In addition, lending activity in these institutions depends largely on what public funds are allocated to them. The allocation of funds is a major task for the state budget, and loans from these banks have low efficiency in terms of recycling rate, which limits their ability to grant credit. The total loan granted by these banks through the end of 2011 was about 10.8 billion LD. It may be necessary to reconsider the role of these banks and consider converting them to investment banks to improve their performance in the task of long-term financing (BJ 2012).

2.9. Chapter Summary

This Chapter was devoted to shedding light on the importance of the banking sector in Libya, as well as the most important developments in this sector in recent years. It then explained the regulation of the banking sector and the technology used, followed by the most important steps in reform and supervision of the banking sector. Finally, a presentation of the structure of the Libyan banking sector with more of a focus on the commercial banks under study and research was presented.

CHAPTER THREE

This Chapter reviews the previous studies on the adoption of Internet banking and focuses on the major issues influencing customers' decisions to adopt Internet banking. This investigation is focused on literature on Internet banking in developing countries, in particular Libya and other Arab countries.

3. CHAPTER THREE: LITERATURE REVIEW

3.1. Introduction

Internet penetration is rapidly and extensively helping in the development of new ways and methods of direct communication between clients and various institutions in the provision of services, including remote electronic banking services such as Internet banking, electronic banking, home banking, self-service banking, online banking, and web banking. Electronic technology has impacted economy and finance and it was inevitable it would impact banking (Twati 2008).

3.2. Background

Information technology is one of the most important strategic issues in the banking business. Banks operate under intense competition. A bank's ability to survive in the market depends on its ability to respond to economic, technological and social changes and interact with them in order to increase its market share. A bank's ability to survive depends on providing online banking services aligned with customers' changing needs.

Customer demand depends on certain factors. The bank must meet the requirements of customers and their needs with minimal cost, effort, and time. Banks are intent on meeting the desired goals of customers via the use of electronic banking services which offer some advantages for banking services that distinguish them from traditional banking services used by customers of commercial banks in most countries worldwide, and in Libya in particular. This study aims to identify the obstacles facing the spread of Internet bank services by clients of commercial banks in Libya. It also aims to support the belief that electronic banking is an effective and significant method of attracting customers in the development of electronic commerce in Libya, resulting in increasing contribution by these banks to economic development and high rates of growth and wellbeing. The main objective of this study is to identify the obstacles or reasons for non-adoption of electronic banking services by individuals in the Libyan banking sector, despite their availability. The impact of these constraints is limited to customers proficient in the use of computers and Internet. The mutual advantages that accrue to the commercial banks and customers in providing online services include: a reduction in costs (Echchabi 2011a), an increase in the size of the business dealings, easy access to local and global markets (Chong et al. 2010), improvements in customer service, the possibility of providing services around the clock (Dash et al. 2012), saving of time and effort, ease of information gathering and analysis through communication via the Internet (Al-Somali, Gholami & Clegg 2009), a reduction in costs of opening new branches in villages and Libyan cities' divergent parties (Shanab 2005), to increase the efficiency of the bank's performance, and to offer new banking services (Lee 2012).

According to the results of some previous studies (Echchabi 2011; ISMAIL & OSMAN 2012; Nasri & Charfeddine 2012; Riffai, Grant & Edgar 2012; Tingari & Abdelrahman 2012) the diffusion of technology can be applied in developing countries such as Arab nations. A report from PC Magazine (2008) stated that the use of online commerce in the Middle East was mostly ineffective, and this appears to be the case in the less developed world. The unwillingness to adopt online commerce and banking in Arab countries is an important issue for their banking industry, where banks in Arab countries encounter the need to introduce new technologies that are

generally used in developed countries to improve the quality of the banking services (PC-Magazine 2008). Jayawardhena and Foley (2000) confirmed that time; privacy management and economic issues are factors that customers view as important in online banking. The research shows that customers have become increasingly busy and are seeking to do their banking activities at a time convenient to them (Jayawardhena & Foley 2000). Daniel (1999) suggested that factors such as convenience, improved personal control and increased choice of delivery channels over the online banking services are important factors driving customers' adoption of Internet banking. The research pointed out that online banking could reduce banking costs for customers, as well as offering a competitive advantage to banks. Another finding of this research was that if the online banking does not offer services of money transmission, the online services could be unimportant for customers (Daniel 1999). Another study that provided insights about factors impacting on customers' attitudes to adopting Internet banking was conducted in Greece (Athanasopoulos & Labroukos 1999). The results of the study showed that services price (costs) was a very important factor in the decision to adopt Internet banking. The research purported that speed and reputation of bank are considered to be important aspects also.

Zhao et al (2010) studied the acceptance of online banking in China, focusing on the trust element. The factors used in the study include that trust and perceived risk as well as competence in terms of online banking services. The outcome identified that perceived risk has a significant negative influence on the adoption of online banking. The results also highlighted the important role of trust in the adoption of online banking services. The results showed that trust in the bank has a significant positive influence on the bank competence of service online banking (Zhao et al. 2010).

In theory, individuals' attitudes seem to play a role in their decision to adopt Internet banking. For example, Echchabi (2011) stated that 'the attitude towards online banking services was found to have a significant positive influence on the intention to adopt online banking services' (Echchabi 2011, p 11). Another empirical study conducted by Sathye (1999) highlighted a number of factors that have had an impact on the adoption of online banking services in Australia. He said that consumers seem to be unaware of the benefits of online banking services. Australians also tend to have security and safety concerns about online banking transactions and, the majority of Australian consumers consider online banking to be expensive. No computer or Internet access and resistance to change were the basic barriers to the adoption of online banking services. The conclusion of this study shows that security concerns and the lack of awareness among Australians to be the most significant factors in their decision on whether to adopt online banking services (Sathye 1999).

Kingsley and Anderson suggest that banks should pay attention to the perceptions of consumers, and attempt to educate their customers on the advantages of online banking as the development of online banking services depends strongly on the consumers' attitude to use online services (Kingsley & Anderson 1998). It was also found that an individuals' attitude toward technology itself significantly impacts their adoption of online banking (Fisher 2000).

3.3. Electronic banking

3.3.1. History

During the last three decades the banking sector has seen a significant expansion in banking technology, including electronic banking which is a recent trend and different from conventional banking and offers several advantages. There are many terms or names for advanced banking such as Internet banking, electronic banking, home banking, and online banking.

Despite different terms for electronic banking, all of them indicate that the clients manage his/her business and financial accounts via the web or complete his/her work related to the bank via the Internet at home, at the office, and/or at any place and time desired, which is expressed as 'remote financial service'. The client can directly connect to the bank via the Internet and conduct various banking transactions. This means that banking operations are conducted electronically online, and banks virtually establish websites on the Internet to provide the same services as traditional banking such as withdrawing money, paying bills, transferring money from anywhere and anytime without transmission or attending the clients to banks (Gikandi & Bloor 2010).

The emergence of e-banking dates back to the early eighties, coinciding with the advent of electronic cash. Electronic money is one of the most significant innovations brought about by technological advances in the banking sector. Electronic money identified as 'monetary value on the technical means commonly used to do payments to contractors, without the need to have a bank accountant when you make the deal, and used as a tool mounted prepaid' (ECB 2000). The use of electronic cards began last century in France in the form of cardboard cards used in public telephones and mineral cards used at the level of mail banking in the United States of America. The first plastic card was issued by American Express in 1958 and, subsequently, its use has spread widely. After that, eight banks have issued the 'America card' in 1968, and a global network of visa cards followed. A Blue Card was issued in the same year by six French banks. In 1986 Telecom France provided payphones ('France Telecom') that could read memory cards (Salem 2009). By 1992 all bank cards had personal data and during the mid-nineties the first E-banking emerged in the United States distinguishing between two types of banks using electronic banking technology, namely:

- **Virtual banks (Internet banks):** Banks provide banking services via the Internet to make a multiplier profit compared with conventional banks.
- **Land banks:** Banks practice traditional and electronic banking services such as ATM machines (Khasim 2011).

The emergence and spread of electronic banking is due to two main factors. First, the growing importance of the role of banking mediation, increased cash flow and movement resulting from the globalisation of financial markets in the field of trade or investment; and, second, to the development of informatics and communication technology or what is known as 'information technology'—and technology evolution is often considered to be in response to the role of banking mediation increased cash flow and movement (Fara 2010).

3.3.2. Features of electronic banks

Online banks are characterised by the provision of electronic services and are distinct from other conventional banks in meeting the banking needs of their clients. Online banks offer several advantages over their competitors (Shanab 2005). Banks provide electronic access to a wider customer base without being limited to a certain place or time. Electronic banks allow the possibility of requesting a particular service at any time, thereby offering convenience for the customer. Internet banking allows consumers to have direct access to their financial transactions with no need to having to go to the bank (Rotchanakitumnuai & Speece 2003). Add to that, customer privacy increases customer confidence. As well as providing full banking services new banks offer traditional electronic banking services alongside more sophisticated services via the Internet and also offer traditional services such as a simple electronic bulletin for advertising banking services. Customers can monitor their bank assets around the clock, make payments electronically, manage a portfolio of stocks and bonds, and transfer funds between different customer accounts. Altaib (2010) stated that 'features of the e-banks are reducing cost'. Providing service from electronic banking has low cost compared to traditional banks. Cost and improving quality attract clients to use e-banking. In the study, the estimated private cost of services provided through different channels shows that the cost of providing services through branches is up to 295 units, while if submitted through the Internet it will be at a cost of 4 units, and one unit through ATMs (Altaib 2010).

The other feature of electronic banking is increased efficiency of electronic banking based on the breadth and speed of the Internet. Banking became easy for the online customer as a result of being able to perform banking transactions efficiently compared to conducting business via physical visits to bank branches.

Generally, electronic banking allows wide-ranging options for clients and more freedom in the choice of services and quality, but the biggest challenge revolves around how effective this banking is in gaining customer confidence and identifying the extent of their readiness for adoption as a means to perform all their financial transactions and banking via the Internet. The adoption of online banking requires banks to provide suitable conditions, including an efficient ICT infrastructure.

3.4. Importance of information technology in banks

Scientific and technological revolutions are enabled by means of modern technological banking achievements in higher degrees of professionalism, precision, and skill (Lassar, Manolis & Lassar 2005; Moore & Benbasat 1991; Sukkar & Hasan 2005; Yang et al. 2009). Despite its short history, IT has become an essential tool in all areas. It is an essential element in the operation of control equipment in many devices and machines, and people are dealing with it on a daily basis. There is indispensable technology in the management of modern facilities such as aviation, energy, education, health, urban planning, and implementation of research and scientific studies.

Most of banks in recent times own the latest technologies to compete in providing a variety of services to customers and achieve flexibility, speed and accuracy in the performance of internal and external business for the bank in its financial and administrative sectors, which leads to the creation of a broad base of data to enable and assist the bank's management in making the right decision at the right time. One

of the major benefits of providing the means for advanced technology such as computers is quick and cheap access to information. The banks rely on this technology to facilitate their work, and reduce the burden on employees and facilitate the development of ideas and plans for innovation (Lama 1998).

The introduction of modern technology in the banking industry has become an absolute necessity, where the nature of the banking business requires fast delivery and sound decision-making. This, in turn, requires the rapid exchange of information between various departments and subsidiaries or between banks. The time factor is sensitive in the field of financial services and banking. The need for banks to think deeply in finding unconventional means to save, exchange, and process data and information leads to the use of modern technologies. The advantages of modern technology for banks can be summarised as follows:

1. Facilitate the procedures of service banking and financial operations accurately and quickly.
2. Provide comprehensive and accurate data management information to senior decision-makers in a timely manner to reach the predetermined goals.
3. Increase the number of customers making use of modern technology.
4. Required for more oversight and follow-up, compared with the actual results.
5. Exchange of information and data between departments within the bank and its subsidiaries and other banks in the country and globally.

From the preceding information, the most beneficial mechanisation for the banks is to use modern technology, especially in developing countries such as Libya. This modern technology will facilitate many banking operations being carried out in the shortest time period and under the best circumstances that meet customer expectation. In the scientific development of banking, technology has a significant impact on the internal organisation of the banks in linking the relationship between banks and customers, whether they are individuals or companies, and the quality and level of the distribution of banking services. Banks need to take advantage of the development in the field of information systems in the development and measurement of the growth of the banking sector and the proliferation and variety of services. Therefore, IT has a direct effect on the progress and development and increasing prosperity for all nations if they take advantage of the banking sector and all the scientific and technological progress and modern means, whether in developed or developing countries.

3.5. Arab electronic banking services:

The increase of e-commerce created a great need for a new type of non-traditional bank in Arab countries to go beyond the normal pattern of performance and not adhering to a particular place or a specific time. As a result of the rapid growth of information and communication technology, electronic banking came about and has contributed effectively to providing a variety of services in the Arab region. In general, it can be said that Arab banks are still in the early stages of offering their clients electronic transactions and some have established websites solely for advertising and marketing purposes. An extension of the technology acceptance model (TAM) is used as the conceptual framework to measure factors that are likely to influence the adoption and the usage of Internet Banking consumers in Arab countries (Khasim 2011; Rochdi 2009).

Al-Sukker (2005) said that 'Internet Banking is expected to become a regional norm in the Arab region within three to six years, and those banks that do not respond to the challenge will find themselves at a serious disadvantage' (Al-Sukker 2005, p 25).

Individuals and organisations in Arab countries are late in adopting the application of Internet banking, while the growth of Internet use in the Arab countries has rapidly increased between 2000 and 2012 (see Table 1). In the Arab banking sector online transactions are minimal, even though since 2005 some of the largest commercial banks in the country have offered free access to accounts by customers. These limits have now been relaxed and several banks such as the Arab Bank in Jordan, Emirates Bank in UAE, the Saudi-American Bank in Saudi Arabia and Bank of Commerce & Development and others banks in Libya now provide online services.

PC Magazine-Middle East edition conducted a survey for Internet users in Arab countries and established that most of respondents have an unfavourably perception of Internet banking. This due to the fact that the majority of Arabians worried that with any mistake and/or error they could lose their money. The survey pointed out that ATM cards, visa and telephone banking were not adopted by most of the population in Arab countries.

In any case, the Arab banking industry offers electronic banking services over the Internet through mediation between buyers and sellers to complete financial transactions, and the most common way is the completion of financial transactions through credit cards. In this area, some Arab countries have ceased the issuance of credit cards. In Algeria, for example, some institutions initiated the development of electronic payment networks but some have stopped because of the lack of compatibility with the characteristics of the Algerian market due to imported systems. The demand for these services means some institutions continue to provide services such as ATM cards and prepaid phone cards. The traded cards are not satisfactory, but they are a precursor to the start of e-commerce in Algeria. Some banks in Algeria have issued Caliph bank cards in cooperation with the international financial MasterCard, where a trader can be repaid by the value of local and international procurement which has not been adopted widely by the public in Algeria (Abdelkader 2009).

Some Arab countries issued electronic cards like the Visa card and Cash-U prepaid card issued by the MAKTOOB website. Syria has issued credit cards in cooperation with Visa called Visa Electron. In Saudi Arabia the energies of credit has continued increasing. The facilities that encourage ownership and credit card use are in constant evolution. Data from the Visa organisation shows that the average cardholder spending exported from Saudi Arabia is 3000 USD, almost twice the global average expenditure of 1600 USD in recent years (Abdelkader 2009). A Saudi Arabia account for a third of the cards issued by Visa Middle East Organisation and expects the same case for other types of credit cards.

In Morocco, the banks provide products and different alternatives to banking services. Electronic Banking Services offer various products for individual customers, as well as institutions. The imposition of certain regulatory policy has restricted banks with regard to foreign exchange products, cash management and capital markets, as well as the financing of investments. Commercial banks in Morocco have tried to offer online banking services to improve operations and reduce costs. Despite all efforts to develop better systems and easier online banking,

these services have remained largely unnoticed by customers. The study has examined the prospects of Internet banking services in Morocco. Echchabi (2011) conducted a study in Morocco attempted to investigate the factors that may drive customers to adopt online banking by using Theory of Technology Acceptance Model (TAM). Echchabi (2011) stated that banking customers in Morocco are agreeable to adopt online banking, and this will depend on their attitude and on the factors of perceived ease of use and usefulness of the online banking services. The findings of the research have important implications, for decision makers and policy makers in the Moroccan banking system (Echchabi 2011).

Electronic banking in Sudan goes back to 1999 when the Central Bank of Sudan initiated the use of modern information technologies in the banking sector as part of the development plan for 1999-2000. As a result, the Central Bank of Sudan established an electronic banking services company in 1999 to be responsible for the construction and development of the e-banking industry in Sudan. Electronic banks emerged through the Omdurman National Bank in 2003 which installed the first ATM in Sudan. According to Tingari & Abdelrahman (2012), "There are many factors needed to focus on them, especially in the field of e-banking services, including security and access issues such as the quality of the Internet and verification in an attempt to identify factors that affect the level of acceptance of individuals and the adoption of e-banking services in Sudan. The use of electronic banking services in Sudan is low." This fact indicates that cash dealing is still the dominant monetary means for individuals' (Tingari & Abdelrahman 2012). Tunisia is the most advanced country in communications infrastructure in North Africa. Their first use of the Internet was in 1996, and the number of Internet users continues to increase. In fact, the number of Internet users, as shown in Table (1), jumped from 100,000 users in 2000 to nearly 4,196,564 users in June 2012. The year 2012 represents 39.1% of Tunisia's population of 10,732,900 (IWS 2013b). Commercial banks such as United Bank and Amen Bank have attempted to introduce online banking services. Amen Bank was the first bank to offer online banking services in 2000. In fact, they are expanding their banking services provided via the Internet to more advanced services such as orders and pay bills, deposit accounts, prepaid debit cards, credit and commercial products, account management, funds transfer, and online shopping. The number of online banking users is still low compared with other electronic banking services such as phone banking and mobile phone banking (SMS) and ATM. Banking industries indicate that online banking is important for all banks in Tunisia. Therefore, there is a need to understand the factors that affect an individual's intention to use online banking services and identify the factors influencing the decision of Tunisian customers to adopt online banking (Nasri & Charfeddine 2012).

Table 3-1 Internet user in Arab world

No	Arabic Country	Population (2012)	Users, in Dec/2000	Internet Users, 30-June-2012	Population (Penetration)	net Users
1	Algeria	37,367,226	50,000	5,230,000	14.0 %	3.1 %
2	Bahrain	1,248,348	40,000	961,000	77.0 %	1.1 %
3	Egypt	83,688,164	450,000	29,809,724	35.6 %	17.8 %
4	Jordan	6,508,887	127,300	2,481,940	38.1 %	2.8 %
5	Kuwait	2,646,314	150,000	1,963,565	74.2 %	2.2 %
6	Lebanon	4,140,289	300,000	2,152,950	52.0 %	2.4 %
7	Libya	5,613,380	10,000	954,275	17.0 %	0.6 %
8	Morocco	32,309,239	n/a	16,477,712	51.0 %	9.8 %
9	Oman	3,090,150	90,000	2,101,302	68.8 %	2.3 %
10	Saudi Arabia	26,534,504	200,000	13,000,000	49.0 %	14.4 %
11	Sudan	34,206,710	30,000	6,499,275	19.0 %	3.9 %
12	Syria	22,530,746	30,000	5,069,418	22.5 %	5.6 %
13	Tunisia	10,732,900	100,000	4,196,564	39.1 %	2.5 %
14	United Arab Emirates	8,246,070	735,000	5,859,118	70.9 %	6.5 %
15	Yemen	47,771,809	15,000	3,691,000	14.9 %	4.1 %

Resource: Internet World Stats (2013)

In Jordan, the Internet was established in 1996. Since 2001 online banking evolved quickly, and most Jordanian banks adopted some form of bank-mail use over the Internet which launched service customers (Abu Shanab, Pearson & Setterstrom 2010). As of 2008, the number of Internet providers' services rose in the country, providing a total of 260,922 accounts (Abu Shanab, Pearson & Setterstrom 2010). The total number of Internet users increased from 127,300 in 2000 to 2,481,940 in 2012, or about 38.1% of Jordan's population (IWS 2013a).

Since 2000 some banks in Jordan have established Internet banking services. Customers' attitudes in terms of satisfaction of using online banking remain low; this issue needs to be addressed to improve banking services. It should be noted that other Jordanian banks are in the early stages of planning, developing and implementing the Internet banking service to their customers (Al-Sukkar 2005).

Interestingly, one of the main obstacles is that the entrance fee for Internet service providers is often high in Arab countries, despite the fact that the number of households owning a personal computer continues to increase exponentially. However, people rely heavily on public utilities such as Internet cafes to provide an opportunity to connect to the Internet.

The changes in banking activities began from globalisation and technological developments. Banking via the Internet began in the Arab countries in early 1995, and they ensured every customer who wants to deal with this technique and has a personal computer connected with the bank via the Internet are supported by customer banking services and special programs. Banks have found this method to be a better way to market banking services because of its global reach and lack of need for special and more expensive programs. Despite this, the use of electronic banking by the Arab public remains low. The first Arab bank to implement this online service is Emirate Bank (EAU Net Bank) in 1995 (Mansumitichai & Chiu 2012). Through this service, customers can access banking services from any location, and every customer has access to his/her own password.

No doubt an important role of Arab banks in the field of e-commerce is to keep abreast of developments in this global field because of potential success and competition. The Arab banking sector in general and Libya in particular, has the necessary human resources, technological means, economic, investment climate and legislation to start using E-banking. The capacity of the financial sector, especially in the Gulf state and other Arab oil-producing countries such as Libya and Algeria, enables the pursuit of developments in the field of technology. There is an opportunity for banks in the Arab world to construct a new banking field to gain more share in the online market. This becomes the best banking service to penetrate the market without going into a complex series of routine work. This method has enabled many banks to achieve a significant proportion of the penetration of the Arab and international markets and acquire a significant percentage of customers.

Bank products and services available through the Global Information Network (Internet) have been able to offers tremendous opportunities for Arab banks. They provide these banks with significant competitive opportunities in their markets by attracting deposits and granting more credit. It allows them to reduce the cost of operations for retail customers in Arab banks or globally. Online banking services would provide many benefits to financial institutions and cut expenses from customers. It provides them with the flexibility to attract more clients and beneficiaries at the global level, as well as taking advantage of e-commerce to attract a new segment of customers to shop via electronic shopping centres that will be created for this purpose.

3.6. Obstacles facing e-banking services in the Arab countries

The difficulties facing online banking services in Arab countries are not much different from the difficulties faced by commodity marketing in terms of the lack of the necessary infrastructure for e-business and the inadequate size of the e-business-oriented customer segment. The number of Internet users from the Arab world in 1999 was one million users. The population of the Arab world is more than 338 million people in the year 2011. According to the Internet World Stats, the estimated number of Internet users in most of the Arab world in 2012 is roughly meeting 106 million, which accounts for 31% of Internet users in the Arab world (IWS 2013c).

Important and controversial issues remain between acceptance by the banks in the Arab world when marketing its various financial services over the Internet (Khasim 2011) and the WTO Agreement on financial services. The financial services agreement calls for each of the member states of this organisation to open its financial markets to all countries signatory to the convention, and one of the main disadvantages of this is the strong competition Arab local banks face from strong foreign banks. The WTO agreement allows for some countries (especially developing countries) not to open some sectors to international competition for a limited period called the 'grace period' and banks could take advantage of this timeframe.

According to Al Sucker (2005), 'in the Arab region online banking is still comparatively limited when compared to Europe or the US for example. Yet a few pioneers have emerged, notably in Bahrain, Saudi Arabia, Kuwait, Jordan and the UAE. As most Arab states prepare to enter the WTO, they face deregulation of the financial services sector and the prospect of competition with international banks.

Concern about loss of market share has encouraged Arab banks to consider offering online banking’.

On the other hand, the possibility exists of adopting an Arab banking strategy merger between Arab banks in order to succeed in providing a superior competitive advantage over the Internet, especially in light of the WTO agreements. In order to succeed in the face of increasing globalisation and adapt and cope with the events of the banking and financial effects of the global environment, Arab banking should adopt the strategy of merger to ensure the achievement of the goals of the Arab banking industry efficiently and effectively (MSR 2010). The Arab banking industry can offer electronic banking services over the Internet within two main axes.

The first axis: The intermediary role played by financial services organisations is marketed on the one hand and buyers on the other hand, as mediated by financial institutions and banks between buyers and sellers to facilitate the completion of financial transactions. The most common way to accomplish financial transactions is through credit cards, such as being sent credit card details over the Internet when it fills the buyer purchase model. It should be noted that the buyer has completed the purchase by other payment means in delaying the procurement process for the desired product such as certified cheques and bank drafts.

There is an important issue in the need to link electronic stores with virtual banks or financial institutions so as to allow an opportunity to transfer funds from a customer's account to the account of the store (seller) in order to achieve balance in the trade among electronic Arabic country sellers and not just Arabic stores with electronic default only for display windows and advertising. On the other hand, it increases a tendency of electronic trade balance in favour of the Arab countries as Arab organisations are practising e-commerce in industrial organisations.

The second axis: The financial services as a product are being marketed via the Internet. There have been shifts and large changes accelerating the nature of the activity practised by commercial banks all over the world, as seen by traditional business (which is based on acceptance of deposits and lending) suffering a significant decline. Banks have traditionally relied heavily on their activities on the lending operations, but they also engage in other activities such as mediation in the sale and purchase of securities and provide different services and the sale of certain products, corporate finance, and currency swaps.

Non-Proliferation Arab electronic banking is generally due to the limited spread of electronic commerce in most Arab countries. There are a variety of reasons that lie behind the lack of widespread e-business (e-commerce) in the Arab countries (Fara 2010), and these reasons are as follows:

First: The lack of adequate infrastructure for electronic business.

There is not a suitable environment for the practice of e-business and Arab and developing countries need huge investments in the field of telecommunications and the Internet to acquire an infrastructure capable of carrying the burden and risks of e business (Al-Sukkar 2005; Altaib 2010).

Second: The inadequate size of the e-business consumer-orientation.

The small size of the consumer-oriented business in developing countries in general and private businesses in Arabic countries is one of the main obstacles that limit the spread of e-business across the network. The Industrial and Commercial market still have the best opportunities on the Internet in developing countries (Fara 2010).

Third: The lack of adequate infrastructure for financial services.

Successful E-business online requires the establishment of appropriate infrastructure for financial services. One important issue in this area is credit cards (Akash 1991).

Fourth: The costs and relatively high prices due to limited use of the Internet.

The construction costs and hosting prices are relatively high compared to developed countries where Internet usage is widespread (Al-Sukkar 2005).

Fifth: The lack of adequate infrastructure for communications.

The Internet is a union between a computer and phone. Without adequate telephone services, one cannot in any way expand the use of the Internet and its use as a tool for marketing and e-business.

Sixth: The lack of attractive incentives paid to individuals to shop via the Internet.

There are no substantial differences in prices when shopping traditionally or online. Most Arab marketing sites on the Internet do not provide adequate financial guarantees and in-kind contributions when completing transactions with them (Lama 1998).

Seventh: The lack of sufficient awareness.

Arab countries are still suffering from the lack of sufficient awareness of the importance of e-business. They need to fully appreciate the new opportunities and broad prospects for business organisations and non-profit organisations (Meligi 1996).

Eighth: The failure to enact laws, regulations and legislation that facilitate the spread of e-business.

As they are still law, regulations and legislation in developing countries are in line with the requirements of the electronic business (trade).

Ninth: The social and psychological obstacles hindering the spread of e-business (Fara 2010).

This aspect includes many obstacles: language and lack of confidence in the payment through electronic means and the fear of losing power and control in organisations.

To succeed, Arab banks need to meet the demands of the market through production and marketing of financial services and other services in light of developments in various environments. They must prepare and develop strategies that enable them to adapt to constant changes and influence the environmental variables as soon as possible in order to achieve goals. This would allow Arab banks to cope with the global banking variables and take advantage of them in order to achieve their interests (Al-Mabrouk & Soar 2009). The most important strategy is to maintain

technological progress and development, where technological progress and development of the most important factors help the growth of the banking sector (MSR 2010). Banks have been able to provide various services at lower prices; this is what leads the global banking sector to spend heavily in the field of information technology.

The advanced technology gives banks the opportunity to establish single operations and serve all branches. This process means converting branches of independent operations centres to marketing and selling channels to direct banking services. It requires cultural changes in the philosophy of providing banking services. As the bank employees switch from being engaged in routine completion of transactions to officials of the marketing and sale of advanced banking services, it provides information technology data banks and relevant information that supports its activity in multiple areas, including:

1. Identifying the behaviour of customers and their needs and providing the necessary services that meet their needs.
2. Identifying ways to raise the return on capital.
3. Credit risk assessment.
4. Determining the appropriate price for various banking services (MSR 2010).

3.7. Mechanisation difficulties in Libyan banks

With the importance of technological development and the achievement of countless positives, is it possible for Libyan banks to shift from the traditional system to the technological system without a hitch? Even after the transition, problems of modern technology and its negative effects may arise. Many people may think that because of the negative effects of modern technology it cannot contribute to the transfer of communities from backwardness to progress. This enables the study to identify the difficulties and obstacles facing the use of technology in the various activities in Libya, especially in the banking sector and the negative effects resulting from the use of modern technology. Some of these obstacles faced by the Libyan banking sector are similar to many found in the Arab countries and developing countries (Hamed 2009).

Fawzia Akash (1991) pointed out that ‘despite the benefits that may arise as a result of the use of technology in various fields, the negative effects led to the emergence of many views, which calls for the results of a study using technology to increase the supply and use. This consensus calls for the evaluation of technology in recent years as a result of the emergence of increasingly negative effects’ (Akash 1991, p 68).

‘The use of technology has positive effects and negative effects, although the negative effects of a slight and positive face of technology resulting from the expansion of the use and benefit the big ones, and one negative and reflected on the problems that result from lack of use and lead to adverse effects must be taken into account’ (Lama 1998).

Melige (1996) said that ‘The increase link business and society in general modern technology mean increased risks when computers are disabled. In many cases, when a computer stops working for some reason or another, it inevitably means it has stopped working in a company or organisation’ (Melige 1996, p 40).

Like other sectors, the Libyan banking sector faces unknown phenomenon of obstacles and difficulties when thinking about the use of technology in the banking system and the use of modern technologies to perform banking operations and improve services. The sector cannot ignore the fact that the technology applied in the banks has had some negative effects on the banking sector. There are obstacles and organisational plans for commercial banks facing impacts one way or the other on the efficiency of computer technology. Conducting an in-depth study about the methods that will work for the introduction of modern technology in the banking system and its quality is a sincere desire of banking management in the development and modernisation of technology. By overcoming all the difficulties and obstacles to the use of technology in the Libyan commercial banks, negative effects can be avoided (Emzio 2010).

There are restrictions that affect the use and benefit of technology in the banking sector. These obstacles to the use of technology in banks can be divided into three main factors: financial sections or economic obstacles, technical limitations, administrative and social obstacles.

3.7.1. Economic constraints (financial):

The most important obstacles related to the economic and financial cost is that of the huge finance resources required by commercial banks to invest in technology. The desire of banks to bear the costs of modern equipment and technology is seen as a significant problem, and one can determine the economic restrictions as follows:

1. The high cost of access to modern technology.
2. A high cost of developing infrastructure of modern technology.
3. Cost of training and development.
4. The inability to determine the exact technology needs.

3.7.2. Technical limitations:

The constraints associated with the technical aspects of the means of the technology used in banking technology devices and electronic systems, and the need for specialised staff and well-trained employees are in the subsequent process, such as maintenance and development. The rapid progress and stunning means and technical regulations in all areas make it difficult to follow. During a very short period of time systems will become out-dated and non-sophisticated, and technical considerations of commercial banks can be limited by:

1. The lack of sufficient information.
2. The rapid progress of technology.
3. The difficulty and complexity of the technology.
4. The lack of an effective system for maintenance.
5. The growing phenomenon of piracy on the global information network.

3.7.3. Administrative and social obstacles

There are a range of obstacles that do not fall within the economic constraints or technical limitations. They can be considered as supreme administrative obstacles such as the bank's vision for technology management and the provision of banking services electronically or problems and obstacles faced by the introduction of modern technology and their application to control severe technological inclusion to having

another set of obstacles that can be classified as social restrictions. There are degrees of customer awareness of the importance of computer use and the extent of acceptance and confidence in the use of modern technology in the completion of their banking transactions. Maturity and awareness among customers for the use of technology in the banking sector requires time and it is considered that the medium and long term will be limited to e-banking institutions, major banks, and wealthy clients or learners.

The most important social barriers can be summarised as follows:

1. The complexity and difficulty of the procedures for the introduction of technology.
2. The desire of legislators and senior banks to embrace the field of banking technology.
3. Customer awareness of the importance of the use of technology.
4. Unavailability of the required disciplines.

Although there are obstacles for technology in the banks, there are problems and negative effects resulting from the use of modern technology in the banks of Arab countries and developing countries, including Libya, compared with technical means; and banks offering modern development in services and raising the level of performance and the significant progress that has occurred in the sector banking in general. All these facts require banks to overcome all obstacles and impediments to the use of technological means to avoid such problems and the adverse effects of the use of modern technology.

3.8. The need for online banking services in Libya

Libyan institutions and various public and private sectors have recognised the importance and benefits of e-commerce activities via the Internet (Twati 2008). Most companies in Libya (and the Arab world) have shown great interest and enthusiasm in embracing this new technology field. E-commerce will bring significant benefits to the markets in Libya and help improve the country's economy. Libya is one of the developing countries seeking to re-establish its economy. And it confirms that there is an increasing move towards e-commerce to strengthen the international position of companies in Libya. This, in turn, increases business opportunities.

Hamed (2010) indicates that 'usually is combined with the adoption of technology and economic growth'. One of the benefits of e-commerce is to facilitate access to international bidding and procurement processes to and from Libya at low costs compared with traditional methods. Libya faces challenges such as Internet technologies that could pose a risk of economic marginalisation of countries that cannot access these technologies effectively. There are many barriers to e-commerce in Libya. One example is the misunderstanding of e-commerce and e-banking by some residents. Other examples include poor communication and the high cost of connecting to the Internet, viruses, and security issues (Hamed 2009). The Libyan government started with the adoption of e-commerce as an important tool to keep up with the Internet revolution (CBL 2012e). The Libyan government has recognised the importance and benefits of e-commerce through the Internet because of its impact on the development of the economy if the availability of appropriate infrastructure is adopted.

Barriers to the adoption of e-commerce in Libya include security and taxes, but one of the traditional barriers to the growth of e-commerce is access to the Internet and custom duties as a result of the technology transfer and international network connection costs (Ullah, Kamal & Ghani 2013). Other costs include computer hardware and accessories and web design. Among the issues that may be considered positively are contributing factors or barriers to e-commerce. Economic development includes the cost, payment systems, legislation and regulations, infrastructure, culture, religion, government, skilled labour, competition, traditional business, and knowledge of e-commerce. As a result, the barriers to the adoption of e-commerce in Libya can be summarised as follows:

1. Lack of customer engagement in the use of the Internet and e-commerce.
2. E-commerce in Libya is still in its early stages.
3. Infrastructure for the traditional trade is better than infrastructure for e-commerce.
4. Threats to e-commerce merchants who do not provide good service to their customers (Hamed 2009).

On the other hand, the quality of electronic banking services is one of the most effective factors in improving the financial position, performance, and increase profitability and competition among the banks so they can develop and improve the level of quality service to maintain customers and meet their needs (Ullah, Kamal & Ghani 2013). Libyan commercial banks are driven by consumers who demand quality services. This may lead consumers to recommend electronic banking services to their friends and family. If banks are to provide good quality service, they must retain customers and maximise profitability (Freeman & Elgahwash 2011). The Libyan banking sector is under increasing pressure to improve banking services as well as adhering to the growing demands from the international banking community which puts great pressure on Libyan banks to be accessible electronically (Libyan Investment 2007). As a result, electronic banking services made its way into the Libyan banking sector from the year 2005. The Commerce and Development Bank have provided banking facilities and basic electronic banking via the Internet since 2005 (BCD 2012) and also services the bank mail such as ATMs and telephone banking. They are used in many of the Libyan banks such as Wahda Bank, National Commercial Bank and the Jumhouria Bank. The national payments system was launched by the Central Bank of Libya in 2008 (CBL 2012e). Interestingly, despite the availability of banking services technology, Libyan banks still rely on traditional banking methods to do their daily banking activities as a result of their failure to adopt electronic services as expected (Abukhzam & Lee 2010; Libya Watanona 2008).

Libyan banks are interested in their customer relationships and are aware that it is an important factor for success. These banks understand that the cost of acquiring a new customer is always higher than maintaining customer loyalty (Freeman & Elgahwash 2011). The transition to the use of information and communication technology creates challenges for banks to maintain the strength of their current bond with customers and ensure their ongoing loyalty, but it requires customer acceptance and an adaptation to new technologies, contributing to the increase of customer and service interaction. Banks must consider how to retain customers through good service. Attracting new customers in this environment is likely to be difficult and expensive. Libyan banks require a realistic strategy to include programs and

applications of information and communication technology in their work. This, in turn, will lead to more supportive relationships with customers.

After the recently approved benefits in technology to improve productivity and efficiency, some banks in Libya are struggling to adopt and integrate electronic banking in the context of its existing banking system (Abukhzam & Lee 2010). This struggle is due to customer resistance and bank staff experiencing new technologies, where perceptions of customers' intention and employees and their expectations towards banking technologies are considered a crucial element in the implementation and development of e-banking (Abukhzam & Lee 2010). If bank staff look to the electronic banking self-service channel it comfortably reduces costs without affecting their positions. However, they may perceive electronic banking as a threat to their work position, and subsequently they will be subject to adoption resistance to keep their jobs. Staff resistance to the adoption of technology is a common problem in the banking sector. Davis et al. (1989) argue that the introduction of new technology caused disorder within organisations and individuals within these organisations when replacing old technologies with new ones. He states that if the adoption of any new technology is determined by regulatory stances; then users, customers, employees and managers build attitudes and feelings about the new technology (Davis, Bagozzi & Warshaw 1989). These feelings can be directed to the adoption or rejection of the proposed technology. Ajzen (1991) said that the word 'position' is a complex dilemma of feelings, desires, and fears that create a state of readiness to move within a person (Ajzen 1991).

This position has proven to users that the understanding and adoption of new technologies is one of the most challenging issues in technology adoption literature, that is, the early adoption and diffusion of technology. Many researchers (Black et al. 2001; Dash et al. 2012; Echchabi 2011; Hoehle, Scornavacca & Huff 2012; Moga et al. 2012; Shanab 2005; Veisi 2012) believe that the position of the user is the main determinant of technology adoption. Liao et al. (1999) argue that 'users have targeted the rejection of new technologies for several reasons, including the lack of user participation and lack of understanding, technical difficulties, lack of training, inadequate support from senior management, and the complexities of technology' (Liao et al. 1999). Many researchers from Arab countries (Abukhzam & Lee 2010; Mansumittrchai & Chiu 2012; Nasri & Charfeddine 2012; Tingari & Abdelrahman 2012) argue that the theories of technology adoption in western countries strongly reflect attitudes, values, and beliefs of those environments. It is necessary for any country to take into account the factors that drive them or impede the user's attitude towards the adoption of modern technology because each country has its own factors for the adoption of the use of modern technologies. The focus of this research will be on the initiatives of individuals and their intention to adopt and accept the use of online banking services offered by commercial banks in Libya.

In conclusion, this chapter has illustrated and proved the importance of the chosen focus for this research, specifically factors influencing the acceptance and use of the online method for banking transactions by individuals in developing countries and Libya in particular. This is of importance as a case study, where the acceptance of Internet banking services is significant due to its benefits for the Libyan national economy. In advanced nations, several research studies focused on the acceptance of Internet banking services and products. The theory of TAM (Technology Acceptance Model) (Davis, Bagozzi & Warshaw 1989) has been the basis of many studies into

technology acceptance. However, nearly all the research has been conducted in the USA and other developed countries. Because of this limitation in the use of TAM, it may be necessary to question its sufficiency for research into the adoption of new technologies, such as Internet banking, in the circumstances of the economic, political and social environment that exists in less- developed countries such as Arab countries. There are indications that the Technology Acceptance Model (TAM) can be implemented equally well in developing countries. This research studies the suitability of the TAM model for the study of Internet banking in a developing country. The remainder of the thesis will examine the influence of security, trust, bank support, Internet network quality, as well as ease of use and usefulness on acceptance of Internet banking technology in Libya. These external variables could appear critical to technology acceptance and usage, which can be a crucial factor to derive information technology (IT) benefits in Libya. This study evaluates the existing technology acceptance literature and extends the technology acceptance model to be applicable for Internet banking in less-developed countries. TAM theory has been used for a number of previous studies in the Arab region (Al-Sukkar & Hasan 2004; Echchabi 2011; Lowry 2004; Riffai, Grant & Edgar 2012; Wu et al. 2010). These studies show that TAM has slightly better predictive capability than others. Since it is a widely accepted model, TAM has been chosen as the basis of the model for this study. It is a practical model to measure the common phenomenon of individuals' attitude toward technology adoption and the issues of technology acceptance.

3.9. Chapter summary

This Chapter provided a comprehensive overview of the literature reviewed in this research study. The chapter focused on the issues and conceptual frameworks and constraints relevant to assessing the adoption of electronic banking services. This Chapter focused on the importance of electronic banking services in Arab countries, especially Libya. The Chapter also focused on the most significant obstacles in the adoption of electronic banking services and the most major difficulties faced. Finally, this Chapter explained the need for electronic banking services in the Libyan banking sector; and a review of the literature shows that there are a wide range of studies that address this issue.

CHAPTER FOUR

The research methodology for this Chapter is divided into four main sections: the first section (incorporating 4.2, 4.3, and 4.4) includes definitions of research methodology, quantitative approach, and the research problem and questions. The second section (incorporating 4.5 and 4.6) includes an explanation of the framework of this research, the research model and hypotheses. The third section (incorporating 4.7 and 4.8) focuses on the definition of the research community and the identification of the study sample, including aspects such as the questionnaire and the ethics of research. The final section covers the research style and steps that were adopted to analyse the statistical data.

4. CHAPTER FOUR: RESEARCH METHODOLOGY

4.1. Introduction

The main goal of research is to describe, understand and explain the phenomenon or the problem under investigation and the adoption of the method design is utilised to formulate generalisations that explain these phenomena. The degree of inclusiveness raises the ranks of scientific laws and theories. This Chapter aims to clarify the research style and the steps of the research method used in this study.

4.2. Research Methodology

Interpretations of phenomena have increasing scientific value if it helps in prediction. The prediction is not intended to guess unseen experiences or know the future, but it refers to the ability to predict what might happen if things go in a certain direction. Expectation includes the meaning of strong probability. The maximum extent of the research method in this study is the possibility of 'Adjust' (Neuman 2007). This is not possible in all cases. The study of the acceptance or rejection of the use of technology entails the description of the phenomenon and knowledge of the factors leading to it, and then reaching an interpretation. This can predict the possibility of occurrence via accurate scientific methods, but cannot be set or controlled because the adjustment process in such an area requires controlling the behaviour of individuals and their attitudes when making their decision whether to adopt modern technology. This is beyond the scope of the ability of the researcher, regardless of his/her science discipline, knowledge or precision. On the other hand, there are some phenomena that can be tuned and controlled to a reasonable extent if the researcher can identify the variables affecting the phenomena. For example, the ability to fight some of the social phenomena of individuals such as fears, theft or overcoming is social unrest that weakens social construction (Schafersman 1994).

This study is based on a scientific method of achieving the three objectives of the research problem: explanation, prediction and adjust 'control' (WFE 2013c). The search must be characterised by accuracy, objectivity and facts that test the theories and removes all doubt (WFE 2013c). It knows that scientific facts are not fixed, but are facts based on a high degree of honesty (Trochim & Donnelly 2008). In this area, it is necessary to refer to the issue of the research methodology, which embraces theoretical aspects or applied research (experimental). The first method (theoretical approach) is not satisfied with its results until it removes all doubt, and reaches a degree of honesty. The second method (practical approach) is satisfied with the utmost probability and, if balanced or compared with results, it offers the maximum degree of honesty (Trochim & Donnelly 2008).

The style of the scientific method depends primarily on extrapolation, which differs from elicitation and syllogism. This does not mean that the scientific method neglects the importance of syllogism. But when it arrives at the general laws, it will use elicitation and measurement applied to the particles to prove their validity (Neuman 2007). Research using the theoretical approach begins with particles to create the laws. The practical 'applied' approach starts with general issues to reach partial truths. Methods using applied explanation explain the phenomenon of a particular theory or a law or a general phenomenon (WFE 2013c). Deductive method is also used to draw a law, a theory or a general phenomenon from a particular phenomenon (Zikmund, Carr & Griffin 2012). Whatever the case may be, the

scientific method of search includes two interrelated processes: observation and description (Trochim & Donnelly 2008). This study intends to express the relationships between different phenomena; this expression is essentially descriptive. If this expression represents the facts related to the phenomenon, it must be based on observation (Zikmund, Carr & Griffin 2012). Scientific description differs from the normal description because it is essentially a quantitative description (Neuman 2005), in research when measuring different aspects of the phenomenon, this measurement is basically quantitative and based on statistical methods to reduce a wide range of data to a simple set of numbers and statistical terms.

4.2.1. Quantitative Approach

Methodology is the systematic, theoretical analysis of the methods applied to a field of study, or the theoretical analysis of the body of methods and principles associated with a branch of knowledge (WFE 2013d). Methodology typically encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques (Neuman 2005). Methodology does not set out to provide solutions, but offers the theoretical underpinning for understanding which method, set of methods or so called ‘best practices’ can be applied to a specific case (WFE 2013d).

Quantitative research refers to the systematic research of social phenomena through statistical methods—mathematical or computational. Quantitative research aims to develop and employ mathematical models, theories and/or assumptions relating to the phenomenon (Given 2008). The measurement process is the focus of quantitative research because it is an effective link between empirical observation and mathematical expression of quantitative relationships. The quantitative data is data that takes a digital format such as statistics or percentages (WFE 2013d). By simplified interpretation, quantitative research asks specific and focused questions; subsequently combines data or information from participants in a calculation to find an answer; and then analyses the data with the help of statistics to obtain results that are non-biased and can be generalised further (Zikmund, Carr & Griffin 2012).

Quantitative research is used widely in the social sciences such as psychology, economics, sociology, marketing, political science and information technology. It is used less in anthropology and history (Neuman 2007). In the mathematical sciences such as physics, the methodology is also the ‘quantity’ in terms of the definition, although the use of this term is different in terms of context (Neuman 2005). In the social sciences the term refers to the use of the experimental methods originating from the fields of philosophy positivism and the history of statistics—which is in contrast to qualitative research (Neuman 2005). Qualitative research provides information about specific cases which have been studied, and any general conclusions are only hypotheses. Quantitative methods can be used to verify the authenticity of any of these hypotheses (Creswell 2013). In analysis of the methodologies used in 1274 articles published between 1935 and 2005 it was found that nearly two-thirds of these studies used quantitative methods in their research (Hunter, Laura & Leahy 2008).

In this study, three main steps are involved as in the scientific method (WFE 2013c). The first is when the researcher starts to feel or sense that there is a problem or question about a particular behavioural ‘phenomenon’ of the reluctance of Libyan banking customers to use electronic services and products in general and, Internet

banking in particular, in the banking sector was identified as area of research that needed investigation. Note the proliferation and spread of this phenomenon in several fields of a person's life which can be seen clearly in the positions and behaviour of individuals associated with dealing with electronic banking services and e-commerce. People accomplish their banking transactions 'daily and semi-daily' in commercial banks in the cities of Libya (Abukhzam & Lee 2010; Emzio 2010; Hamed 2009; Twati 2008). This has contributed to bringing more attention to the researcher to study this phenomenon in Libyan society. The next step is to develop solutions that have potential or possible answers to the research hypotheses. Then comes the final step which is to test the validity of the 'assumptions' of the research hypotheses and to reach a certain result that can be relied upon when making the decision to combat the phenomenon (causes and methods of this behaviour) (WFE 2013c).

The three main steps lead the researcher in various stages of study, as long as he has chosen the scientific method as a way of presenting results which are accurate and objective. Several operational steps are involved, such as determining the nature of the problem to be studied; collecting data that will help in the selection of appropriate hypotheses and appropriate data collection that can be used in hypothesis testing to generalise the findings of the study. The scientific approach of this research is in the form of steps/stages in order to increase its operations and make them clear. These steps do not always go in the same sequence, as it is not in separate stages of thought but, rather, there is a lot of overlap between them. As well, some stages require a little effort, while others take longer. The use of these steps in this study is the basis of functional flexibility.

Keep in mind that research methods differ in terms of their way of testing hypotheses. It depends on the nature of the field of the problem and the questions posed (WFE 2013c). Note that the different approaches are due not only to the nature of the field of the problem, but also to the search capabilities available. It should fit more of the curriculum in addressing specific research study. Additionally, specify conditions such as available resources and objectives and the research approach chosen to address the problem of research and testing hypotheses need to be carefully considered (Trochim & Donnelly 2008).

4.3. The research problem

After elucidating a clearer overall picture of the research, the researcher moves to another level of research, namely, the research problem which has crystallised in his mind along with all he has observed or read in the form of problematic, treatable research. The researcher then identifies the core issues of the research, selects the questions that needed to be answered accurately; and clarify the aims and objectives of the study. Duidrhy (2006) defines the research problem as 'inter question, ask about the relationship between the converts (variables) or more and the answer to this question is the purpose of the research (Duidrhy 2006).

The research problem is the main question in this research that the researcher seeks to answer. One must not be confused between the subject of research and the research problem. The research topic is the general area of study, which in this study relates to the dimensions of the social phenomenon affecting individual's behaviour toward new technology. The acceptance of modern technology in information

systems has been well-accepted in many countries worldwide; in some countries such as Libya, there is individual reluctance to acceptance the new technology (Abukhzam & Lee 2010; Emzio 2010; Hamed 2009; Twati 2008; Twati & Gammack 2006). Technology has become important in the daily life of many individuals and is the focus of this research study and the research problem. Through this study the researcher will investigate the phenomenon of failure to adopt and/or frequency in the use of modern technology in Libya's e-commerce sector and focuses on the research problem by asking questions about perceptions of commercial bank customers regarding factors or barriers affecting the adoption of banking services via the Internet in Libya. It will also examine to what level these barriers impact on successful online banking adoption in Libya.

This is the first step in this scientific study, where the research problem was identified. The next step is to identify its accurate dimensions and ascertain all manifestations which reflect the problem. Scientifically, the researcher justified the problem of this study and its contribution to the current body of research. The motivation to study this problem is due to the fact that technological development has become one of the most important key factors for growth in the Libyan banking sector (Hamed 2009; Twati & Gammack 2006; Ullah, Kamal & Ghani 2013). Banks need to focus on advanced technology and how its subsequent adoption in the evolution of the banking systems will benefit the whole banking sector in Libya (CBL 2013b; Guides 2006; Hamed 2009).

The Central Bank of Libya (CBL) and commercial banks have invested heavily in customer service in order to provide rapid service delivery channels online, which saves time and effort with a personalised service (CBL 2013b; Lassar, Manolis & Lassar 2005). The emergence of technology transfer is relatively new in Libya (Twati & Gammack 2006). The Development and Commerce Bank was the first bank to provide banking services via the Internet in Libya in 2005 (BCD 2012); thereby creating very competitive market conditions that are affected by the impact of direct behaviour, attitudes and desires of consumers of this service in the Libyan banking sector (Emzio 2010; Guides 2006; Ullah, Kamal & Ghani 2013). This study should aid decision makers in the Libyan banking sector in general, especially in the field of online banking services, to better understand customer behaviour and attitudes towards the technology used in Libyan commercial banks. The researcher expects that Libyan commercial banks will be able to influence and even determine consumer behaviours and desires as a result of the outcome of the study. It should also assist in achieving the goals of all parties (customers, banks and financial institutions), and develop and improve services for individuals dealing with the Libyan banking sector. It is anticipated that, additionally, it will reflect on development generally and increase the quality of company and personnel services at a faster and lowest cost.

The researcher determines the substance of the problem in terms of scientific research and the subject occupies his mind through the formulation of the research problem, the definition of the problem, determining the research approach, adjusting its parameters and then setting the intellectual course. The formulation of the problem is in the form of a question about the reality or phenomenon under investigation. Concepts and terms used are then determined that can be achieved and translated scientifically.

4.3.1. Research Questions

The terms and objectives of the problem in the study are to make sure it is a worthy problem for research. The researcher investigated whether it is a new research topic not previously researched in Libya, and no existing solutions are on the table. Also, the study problem is linked to the life of society and the individuals who are impacted by it. The research also needs to be searchable and measurable and add to the enrichment of scientific knowledge with new ideas and theories which can be accessed and tested through available data. In addition, this particular research problem has a close relationship with the researcher's discipline of scientific interest.

This research studies the perceptions of customers of commercial banks concerning the obstacles that prevent them from using electronic banking services via the Internet in Libya. This study examines to answer the following questions:

- 1. What are the barriers to adopting Internet banking in Libya based on consumers' perceptions?**
- 2. How important are the barriers to the successful adoption of Internet banking in Libya?**

4.4. The research framework

Theories and research have taken different models to explain and interpret the reactions of individual's acceptance of modern technology (Ajzen 1991; Davis, Bagozzi & Warshaw 1989; Rogers 1995). All those theories were used as a framework for research recognised in the literature on information systems. The aims of activity theory is to explain the relationship between humans and computers to design an environment of social work (Hasan & Gould 2001), which helps to address people information, meaning that it establishes the interactive relationship between humans and computers taking into consideration the context of the work environment. The aim of the technology fit model is to match the ability of technology and requirements of technology in business environments.

These theories followed many approaches to studying and analysing the interactions of individuals and their attitudes towards the use of technology. These theories or theoretical perspectives agree in the study of the phenomenon of human relationship and acceptance of the use of technology as a general phenomenon—all of which are aimed at reaching or identifying specific molecules to the social phenomenon and then measuring and testing a number of molecules' 'factors' on the phenomenon over recent decades.

Many studies have taken different approaches to predict the behaviour of individuals and their willingness to adopt modern technology molecules (Ajzen 1991; Davis 1989; Rogers 1995, 2003). The Technology Acceptance Model (TAM) is one of the most prevalent theories used and applied to many types of technology. TAM tests for Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) as two key reasons for individuals to adopt and use new technology (Davis, Bagozzi & Warshaw 1989). Other theory of technological diffusion (Rogers 2003) showed that the characteristics of the technology, such as comparative advantage, complexity and other variables, are the most important aspects in the use of technology. On the other hand, Ajzen and Fishbein (1980) introduced the theory of planned behaviour and indicated that social trends and the behaviour of individuals as guided by their motivations were

the two most important reasons for the use of Technology (Ajzen 1991; Ajzen & Fishbein 1980). Some recent critical studies showed deficiencies in the theory of TAM (Phang et al. 2006). These studies demonstrated the need to add additional elements for further interpretation and understanding of the causes of the phenomenon. Other variables have been introduced, including 'Security factor' (Khan 2005; Lee 2009; Reavley 2005) and 'Trust' (Amin 2007; Chong et al. 2010; Jahangir & Begum 2008, p 36; Sathye 1999) on the individual side, 'Support and/or assistance from the banks' and 'Quality of Internet Network' (Khan 2005; Twati 2008; Wu et al. 2010).

4.4.1. Technology Acceptance Model (TAM)

This study has established its framework based on TAM (Technology Acceptance Model) that adapts the Theory of Reasoned Action (TRA) (Fishbein 1979) and will be used to investigate the research questions about different aspects of the phenomenon of individual perceptions towards electronic banking services in Libya. To date, previous studies have compared the theory of technology acceptance model (TAM) using external variables 'Security, Trust, Quality Internet Network and Support' (Al-Somali, Gholami & Clegg 2008; Gikandi & Bloor 2010; Goles et al. 2009; Moga et al. 2012; Suh & Han 2003; Zhao et al. 2010). In addition, both the basic variables of the TAM (Ease of use and Usefulness) have guided many of the existing theories and researchers. Examples of these theories are the Innovation Diffusion Theory (IDT) (Rogers 1995), the Theory of Planned Behaviour (TPB) (Ajzen 1991; Taylor & Todd 1995) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003).

These theories (IDT, TPB and UTAUT) have applied constructs similar to perceived ease of use and perceived usefulness in TAM to investigate Information System (IS) acceptance (Phang et al. 2006). TAM suggests Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) perceptions for the technology usage, as well as determining individual's behavioural intention to adopt technology and subsequent usage (Davis 1989). IDT is one widely applied theory (Karahanna, Straub & Chervany 1999; Moore & Benbasat 1991; Plouffe, Hulland & Vandebosch 2001) established to describe the acceptance of IS. The IDT outlines the characteristics (including relative advantage, complexity, compatibility, visibility, image, results demonstrability, voluntariness and new innovation) of IS that can effect IS acceptance and use (Rogers 1995). Fundamental constructs such as complexity (perceived ease of use) and relative advantage (perceived usefulness) of IDT is analogous in TAM (Phang et al. 2006). The other theories are TPB (Ajzen 1991) and decomposed TPB (Taylor & Todd 1995), both of which have been engaged to study individual adoption of IS. Determinants such as attitude, subjective norms, and perceived behavioural controls are considered predictors of behavioural intention. Attitude towards the technology considered PU and PEOU in the decomposed version model of the TPB (Moore & Benbasat 1996). TPB considers perceived behavioural controls and norms and captures social influences on individual's approval behaviour which may assist or inhibit individuals' in their attitude towards IS adoption (external or internal factors). The UTAUT is a unified model introduced by Venkatesh et al (2003) and has been applied to explain individuals' acceptance and usage of new technology (Venkatesh et al. 2003). The UTAUT indicated that intention behavioural is influenced directly or indirectly by performance expectancy (perceived usefulness) and effort expectancy (reverse of perceived ease of use) and

makes possible situations such as compatibility, existing values, needs or experience of potential adopters of the new technology. PU and PEOU were identified as being the most significant antecedents in explaining individual's intention in existing theories and past studies in IS acceptance.

4.4.2. The extension of TAM

Despite PU and PEOU having been acknowledged as significant factors in IS acceptance, they are not directly observable and controllable and have limited ability to enhance acceptance of IS (Taylor & Todd 1995). Venkatesh & Davis (2000) established the TAM2 has extended antecedents of TAM to include the PU and PEOU. They have been considered as situational constraints impinging on behaviour and individuals' perceptions as possible external variables (motivations, emotions and controls) in technology adoption (Venkatesh & Davis 2000).

This research has revised TAM which was adopted and extended through its creators and by others. They have explored various beliefs of TAM to adoption attitudes, and other issues such as the temporal dimension of the behaviour adoption information technology, the degree of voluntary control in the use of information technology, the use of self-measurement bias, as well as its antecedent's issues of social influence. In other words, TAM has expanded to include a number of specific issues such as Trust and Security factors that come from an individual's side and Support or assistance on the part of the banks, in addition to the Quality of the Internet Network as an external variable that may contribute to the adoption of information systems. TAM has been used as a research framework to provide a broader interpretation of the attitudes and behaviour of individuals (Libyan banks customers) in the acceptance of the use of e-banking services via the Internet in developing economies, particularly in Libya.

4.4.3. TAM framework for use in developing countries

Studies in developing nations have explored the adoption of online banking using different approaches (Al-Somali, Gholami & Clegg 2008; Chong et al. 2010; Echchabi 2011; Lin, Fofanah & Liang 2011; Wang et al. 2003). In 2008, a study was undertaken that aimed to classify the factors impacting the adoption of Internet banking by customers using the Technology Acceptance Model (TAM) in Saudi Arabia (Al-Somali, Gholami & Clegg 2008). The study found that the security, the Internet connection quality and awareness of Internet banking use and its benefits have significant effects on perceived usefulness (PU) and perceived ease of use (PEOU) of Internet banking acceptance. Attitudes towards the acceptance of Internet banking have indicated that the education and trust have a significant impact. The results demonstrate TAM's validity in technology acceptance research in developing countries.

TAM was selected as the research framework for a study in Morocco on the awareness of Internet banking adoption and behaviour (Echchabi 2011). The research used the variables perceived ease of use (PEOU) and perceived usefulness (PU) on attitudes towards Internet banking use in Morocco. The influence of attitude on intention to adopt Internet banking products and services was also explored.

E-government initiatives have been researched using TAM in the Gambian government (Lin, Fofanah & Liang 2011). A successful model of the e-Government system in Gambia was developed to assist Gambians with efficient and cost-effective

operations. The results of this study indicate that TAM has value in exploring customers' intention towards e-government products and services. TAM is considered to have value in further research on the implementation of E-Systems applications in Gambia.

The adoption of online banking in Vietnam has been explored using the TAM approach (Chong et al. 2010). The researchers used the variables of PEOU, PU and two additional variables: government support and trust. The research found that PU, trust and government support have a positive significant influence on intention to use Internet banking in Vietnam.

A similar study has been conducted in Taiwan using TAM and adding another variable, namely, perceived credibility. The outcome confirmed that PEOU has a significant positive influence on PU and perceived credibility. The independent variables were found to have a significant positive influence on intention to use Internet banking products and services in Taiwan (Wang et al. 2003).

4.5. Research model and hypotheses

4.5.1. Research Model

The model for this research has been designed based on the relationships between the research constructs. The model is an extension of the TAM model to measure the individual intention to use IT (PU and PEOU); in addition, four external variables have been added to the model (Trust, Security, Support and Quality of the Internet Infrastructure). There are seven relationships to be examined. The relationships are formulated as hypotheses.

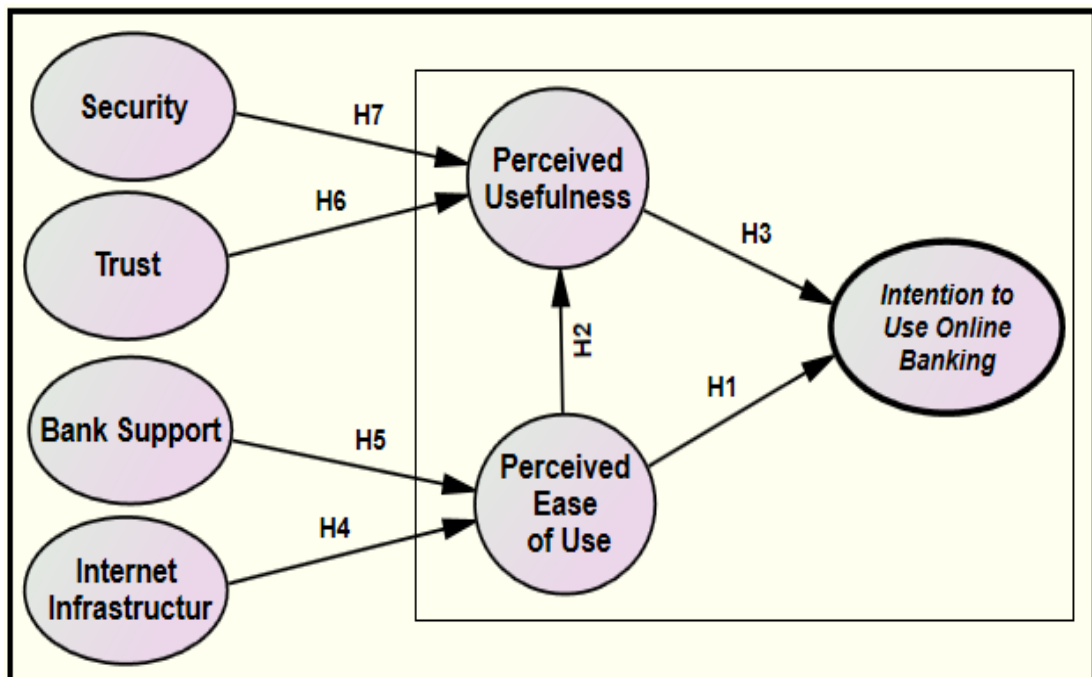


Figure 2 the Research Model

4.5.2. Research Hypothesis

The hypothesis in this study is a temporary speculative solution to answer the research questions posed to provide an interpretation of the realities of the problem scientifically. In addition to following the rules when drafting this methodology and hypotheses, 'assumptions' were selected and verified so that eventually solutions to the problem can be reached. Hypotheses are defined as the primary principles that deliver truth and cannot prove a direct way to the severity of generality (WFE 2013c). Hypotheses are the first source of knowledge we gain and the starting point and a general principle that the researcher uses to measure the research problem (Creswell 2013).

Accordingly, the hypothesis is a temporary answer provided by the researcher to the research questions posed by the problem under study. It is the formulation of hypotheses in the form of the future relationship between the variable and the dependent variable to improve the clarity of the relationship between them and the usability of testing it an experimental manner and in accordance with the quantitative approach used in this study. It aims to draw this research hypotheses or theories through direct observation, with the assurance that intellectual production is the most important source for the formulation of scientific hypotheses (WFE 2013c).

It is characterised by the properties surrounding the hypotheses of this study and defines the variables that will revolve around the study (PU, PEOU, Trust, Security, Support, and Internet Infrastructure). It also refers to the imposition of the results expected to be reached in this study. Finally, the hypothesis in this study is an attempt to explain the phenomenon of non-adoption of electronic banking services via the Internet in commercial banks in Libya, which requires the researcher to study these hypotheses and test the theories to prove their authenticity. Formulation of hypotheses in this research serves the following purpose:

1. The researcher expects that these hypotheses will provide an effective solution to the problem.
2. The hypotheses derived from the foundations of the theory emphasize the feasibility of scientific evidence tested.
3. The hypotheses testable, which were not of the public that it is impossible to verify.
4. The hypotheses have been formulated concisely and clearly.

This overview illustrates the importance of hypotheses in scientific research and their impact on the trend of research direction. Some existing studies consist of the imposition of a major hypothesis and other studies impose over-charging and different procedures and design user tools or statistical processing. Lewis et al (2004) stated that "hypotheses are the explanation a temporary thing, and what is the only attempt to answer the questions of "How" and "Why" (Lewis-Beck, Bryman & Liao 2004). These questions can be answered only through this hypothesis which determines the path of research. On the other hand, the hypothesis test can be meaningless if one of the aspects of the study is missing, is defective or is not appropriate. These aspects are: design of the study, the method of sample selection, data collection method, methods and statistical procedures used and the final results reached by the researcher. All these aspects can lead to errors when validating the

hypothesis. In other words, the hypothesis is affected by aspects and dimensions of the study (Mertens 2009).

Based on previous studies, and to generate a new insight into Internet banking adoption among customers of Libyan trade-banks, this research proposes the framework with the following hypotheses:

4.5.3. Hypotheses and definition of key factors

4.5.3.1. Perceived ease of use

Perceived ease of use (PEOU) is one of the two theoretical constructs of TAM theory. Although clients might consider the given applications useful, they might also believe that the system is difficult to use (Davis, Bagozzi & Warshaw 1989). PEOU has been validated as a significant determinant in acceptance of IT such as the Internet (Chang 2004) and online banking (Wang et al. 2003). The complexity of a particular system will become an obstruction toward approval and use of a modern technology (Rogers 1995).

For customers who have limited experience on the Internet, ease of use of the bank's website will reduce the risk of using Internet banking. A system that is perceived to be easier to learn than another is highly expected to be adopted by users (Pikkarainen et al. 2004). The Perceived Characteristics of the Innovation model (PCI) applied in the study of online banking has concluded that PEOU is capable of improving the forecast of consumers' agreement to e-banking (Gounaris & Koritos 2008). In Libya people have little knowledge about use of the Internet; ease of use of an e-banking website would likely influence their adoption judgment. This research proposes the following hypotheses:

H1: Perceived ease of use is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.

H2: Perceived ease of use is positively related to perceived usefulness.

4.5.3.2. Perceived usefulness

Perceived Usefulness (PU) is a measure of the degree to which people believe that Internet banking is more beneficial compared to established ways of conducting banking business. These benefits include allowing customers to conduct banking activities anywhere, anytime. Several studies on technology acceptance have shown that PU has a strong impact on bank customers' intention to adopt IT (Al-Somali, Gholami & Clegg 2009; Chong et al. 2010; Grabner-Kräuter & Faillant 2008; Lee 2009; Reid & Levy 2008; Wu et al. 2010). PU is a familiar factor in existing Internet banking literature, and studies of e-banking have established that PU is a significant control on the intention to use Internet banking among bank clients (Çelik 2008; Gounaris & Koritos 2008; Lassar, Manolis & Lassar 2005; Pikkarainen et al. 2004). In addition, Amin (2007) found it to be a key element in determining whether users would be expected to approve electronic transactions (Amin 2007). Based on the literature, this research proposed the following additional hypothesis:

H3: Perceived usefulness is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.

4.5.3.3. Internet infrastructure

One of the essential factors for the successful adoption of technology in Libyan banking services is the infrastructure of modern telecommunications systems. The advance of IS/IT would be difficult to achieve without an appropriate telecommunications system that ensures quality Internet networks (connection and speed) and phones.

To create the basics for Internet banking, the Central Bank of Libya (CBL)—in cooperation with the Libya Government’s Ministry of Economy and Trade—recently launched an ambitious program, the National Payment System (NPS), targeted at promoting Internet banking technology in Libya’s most prominent commercial bank with the biggest network of branches in Libya. The NPS was established to take over business operations of the Central Bank of Libya (CBL). The NPS aims to combine advanced ICT tools—including foundation banking servers, local area networks, and Internet access in Libyan banks—in a way that allows for delivery of efficient banking services. This plan is being implemented in two stages: in headquarters and branches (CBL 2013b).

IT is fundamental to competitiveness in new banking trade. It will lower functional costs and enable effective improvements (Technology Awards 2004). Many global banks have been extremely successful in using IT to present efficient banking services to their clients. In contrast, a manual system of banking is still being used by Libyan banking systems: technology has not yet become established. Basic transactions such as account balances and payroll systems are handled through an inefficient, manual system. Further, there is no networking of services between the bank’s headquarters and its branches. Customers have to wait in line to cash a cheque (which is the only time a cheque book is used) (Twati 2008).

Recently, Libya has sought to introduce the SWIFT system of transferring funds through use of universal technology. This can be accomplished only by using up-to-date technology, and high-quality communication systems to keep pace with the rest of the world. In addition, the banking system can be developed through private banking ownership, which will encourage the use of efficient services for customers. Further, such services will permit the banks to be as competitive as possible and encourage overseas investors. The increase of rights transfer plan of privatisation will include the banking sector and aims to build up economic performance to increase profits and individual living standards (Libyan Investment 2007). In line with previous studies in the literature (Al-Somali, Gholami & Clegg 2008; Amin 2007; Chong et al. 2010; Jahangir & Begum 2008, p 36), this study will include the hypothesis that:

H4: The availability of adequate, reliable Internet infrastructure is positively related to perceived ease of use.

4.5.3.4. Support

It is generally accepted that support is essential for organisations to give confidence to and support for IS innovations and to accept Internet technologies (Twati 2008). Consumers might lack sufficient knowledge about e-financial services; as a result, customers cannot make informed decisions based on their presumptions. Lack of financial knowledge might affect both an individual’s and a group’s ability to take a

long-term position; in turn, this results in a position sensitive to a decline in their financial status (Wu et al. 2010). Consumers who use financial services in a technologically intensive context might be positively affected by technological and financial literacy. Access to important knowledge and sources of support in developing nations has been inadequate. Such inadequate access is apparent in the service providers of Internet banking (Khan 2005).

The majority of customers understand that this type of access should have been available through personal contact with bank workers, either online or by phone. In addition, customers have complained that most bank staff knows little about online banking and how it works (Wu et al. 2010). Clients feel that support is required even for primary registration and set up, prior to teaching more advanced online skills. With such instruction, a user would learn how Internet banking works and receive ongoing training at bank branches. The major consequence is the need for extensive and more advanced user support from the bank, particularly in terms of support-oriented information provided by bank staff via interactive channels (Khan 2005). This research will adopt the hypothesis that:

H5: The level of support available to consumers is positively related to perceived ease of use.

4.5.3.5. Trust

Trust is a vital issue that affects buyer behaviour and determines technology acceptance in areas such as e-trade (Chen & Barnes 2007; Goles et al. 2009; Holsapple & Sasidharan 2005; Yang et al. 2009). In this research study, trust is defined as the extent to which human beings trust that Internet banking is protected. This research focuses on the factors of security and privacy from the purchasers' perceptions and whether they believe Internet banking activities are secure and private. This definition is the same in which individuals define trust from the customers' perception on reliability of the Internet banking system (Eriksson, Kerem & Nilsson 2005). In addition, security and privacy concerns are recognised as major obstacles to adopting Internet banking worldwide (Amin 2007; Jahangir & Begum 2008, p 36; Sathye 1999).

Customers must trust Internet banking and e-transactions to procure an e-transaction. Without trust, the e-banking user will avoid making any business deal via Internet banking (Chong et al. 2010). This is particularly relevant in the Libyan culture whereby business is conducted in branches, and the majority of the population have little knowledge on the workings of the Internet. Compared to traditional banking services, e banking is liable to experience a greater lack of confidence and requires a higher value of trust than traditional banking. Since the impact of trust on intention to accept the technology cannot be ignored, the following hypothesis is formulated:

H6: The perceived level of trust is positively related to perceived usefulness.

4.5.3.6. Security

Security has become a vital issue in the development of Internet banking websites (Khan 2005). Security is necessary to avoid potential losses due to fraud or a hacker compromising the information of an online bank user. Phishing is a new crime skill by which attempts are made to fraudulently acquire sensitive information such as

user names, passwords or credit card details by masquerading as a trustworthy entity in an electronic communication (Reavley 2005). A phishing attack takes place when a user receives a fraudulent e-mail (often referred to as a ‘spoof e-mail’) representing a trusted source and leading them to an equally fraudulent website that collects personal information. Fraud and hacker intrusion not only leads to monetary loss, but also violates users’ privacy—a major concern of Internet users.

Many consumers believe they are vulnerable to identity theft while using online banking services (Lee 2009). Lack of security while conducting business online is reported to be the major barrier to customers shopping online. It is vital that websites have security procedures available on all pages or offer a safe online payment method (Khan 2005). This research will examine the following hypothesis:

H7: The perceived level of security is positively related to perceived usefulness.

4.6. The research community and the study sample

The choice of the research sample is an important step and the researcher considered a sample research from the initial stages of defining the research problem. The researcher deliberated on many issues, including the type of sample and whether to use a wide representative sample or a specific sample. The study will be applied to all individuals but will choose a number of them only. The sample can be defined for this study one that represents the original community of the study to achieve the purposes of research. This sample is the customers of commercial banks (Wahda Bank, Development and Commerce Bank, National Commercial Bank and Jumhouria Bank) in major cities in Libya. The sample is representative of the original research community who are customers of banks and financial institutions in the Libyan banking sector.

The aim of the sampling is to obtain information on the original community of research. It is essential that the sample is representative of the original community, and for the researcher to collect sufficient volume of data in the sample. The researcher ensured the most reliable results via the following processes:

1. The original community is very large in this study and prevalent in all parts of Libya, to the degree that it is difficult to study the phenomenon with all customers of commercial banks in Libya.
2. The study of all members of the original community requires considerable financial resources, as well as time and effort. This contributed to the difficulty of access to all sections of the banks’ customer community.
3. It can be said that the researcher is racing against time in making a decision regarding this phenomenon. People are not using electronic banking services via the Internet in Libya, and the aim is to identify the reasons as soon as possible, which makes it difficult to study all elements of the banks’ customer community.

The selection of individuals for this study was conducted in a way that makes them representatives of the largest group of chosen ones; customers are from the major commercial banks in the major cities (Tripoli and Benghazi). These individuals are the sample representing the population of the study. The researcher avoided possible sources of error, bias, or falling prey to common mistakes regarding the selection of samples such as, choosing an item that does not belong to the community of study,

or falling under the influence of certain beliefs that may make him biased in favour of the idea and select the sample to achieve this effect. The sample selection involved taking careful and proper specific steps to ensure the data obtained can ratify or represent the original community as a whole. These steps are outlined as follows.

The first step in the selection of the sample is to determine an individual of the sample, customers of major commercial banks in Libya (Wahda Bank, Development and Commerce Bank, National Commercial Bank and Jumhouria Bank) and the branches in the city of Tripoli and Benghazi. The original community are customers of commercial banks and the research aims to ensure the results are generalisable. The next step is to determine the required sample size and selection of a sufficient number of individuals for the sample. The greater the sample size, the more accurate the study; and dissemination, descriptive studies or surveys require a larger sample size of the pilot to ensure they link between the size of the sample and cost of the study.

The researcher used a random sample method or probabilistic approach, where the researcher chose individuals representative of the community being studied in order to elicit an accurate representation. All are members of the research community, and will have equal opportunity to be part of the sample. Everyone in the community has the same probability of choice, and the choice of any individual does not affect the choice of other individuals. The random sample selection is the most effective way of obtaining a representative sample (Given 2008; Neuman 2007), which is necessary in the use of statistical methods, and because census inferential allows the researcher to reach communities based on the research into the behaviour and characteristics of the sample.

4.7. Data collection

The questionnaire is the basic means of communication between the researcher and the respondent. The questionnaire or the questions form is the only performance to collect information and the data is used to test the hypotheses of this research. The administration costs of questionnaire method are low; it is easy to use and effective in processing the data. The process of designing and building the questionnaire involves several steps (as explained more fully later). The questionnaire contained a specific set of questions delivered to the participants (banks customers) to record their answers to gain their perceptions about impediments to acceptance or adoption of electronic banking services via the Internet. Survey participants were interviewed by prior arrangement between the researcher and the managers in principal banks or branches. This involved the researcher meeting with these managers, and then inviting them to complete the questionnaire. The researcher used this technique as a way to collect and analyse data in order to take action, judgments or decisions contributing to the development and improvement of banking services via the Internet provided to customers of commercial banks in the banking sector in Libya.

Simply put, the questions (the questionnaire) were directed to customers of commercial banks and their branches operating in major cities in Libya (Tripoli and Benghazi) based on the availability of users and non-users of electronic banking services at their branches compared with branches in small towns and villages scattered across Libya. The clients of the bank participated in the questionnaire

during their visit to the bank to complete their ‘daily and semi-daily’ transactions and other banking services during official working hours. This was done through prior arrangement between the researcher and managing principal bank or branch managers. It involved obtaining the approval of the bank management to sign a written request from the researcher for the purpose of distributing the questionnaire to customers inside the bank. This enabled the researcher, in cooperation particularly with the relevant departments, to collect data for this study and included departments such as current accounts department and the public relations department. After obtaining verbal consent of the participants regarding his/her willingness to answer the questionnaire, the researcher provided a brief overview of the study and its objectives, and then the client received the questionnaire to complete. The questionnaire was answered at this time without help from anyone in recording their answers. Also, participants were able to take away the form for answering and then deliver it to the bank at a later stage. This ensured participants had sufficient time to think about the question before providing their response.

4.7.1. The questionnaire

The process of design and construction of the questionnaire for this research is a very important process. The preparation of a questionnaire directed to respondents, indirectly or through the mail, is different from a questionnaire formulated for a face-to-face response (Fowler 2009). For this research, the researcher adopted the style of interview with the respondent directly and stirring their interest to fill the data as a key method. The indirect method involved the questionnaire being distributed via personal correspondence (Emails) to friends and colleagues of faculty members, intellectuals and other suitable recipients in Libya. It included a list of instructions including an explanation of the subject matter, the objectives of the data collection, the purpose of the research and the information gathering process, and ethical aspects of the research. The latter included the place and the period of information gathering, an assurance that the data will be used for scientific purposes of the research only and within the limits mentioned, as well as a consent form.

There are general rules for the design of the questionnaire, which were strictly followed. The questionnaire was prepared in accordance with conditions relating to honesty, stability and the possibility of the application of the research. Generally, questionnaires may be divided into three types: unrestricted questionnaire, which contain closed questions requiring Yes or No answers to provide answers to specific questions. This approach helps eliminate errors in the interpretation of information. The other type of questionnaire is an open-ended questionnaire. In this case, open-ended questions allow the participant the freedom to answer in line with his/her opinion, beliefs and trends. That allows participants the freedom to express his/her opinion and in his/her own words. The third type is an open or restricted questionnaire which has specific questions and elicits closed responses—identifying alternatives and choosing only one rating to signify their choice (Fowler 2009).

For the purpose of diversification in multiple sources of data collection, this study uses the double-ended or unrestricted open questionnaire. This allows asking closed questions and giving participants the opportunity to express their opinions or add the information they deem important. It was also taken into account in the construction and design of the questionnaire that individuals may not immediately understand some questions quickly or not necessarily in the mood to be helpful. The

questionnaire has been formulated to ask questions clearly and briefly with inference questions that have been used and tested in similar research in different positions. It could be argued that the questionnaire was an individual application. The participants fill out it by themselves under specifications of objectivity, honesty, persistence, and inclusiveness; and with sufficient time for responses.

Based on the efficiency of the researcher's knowledge of designing the questionnaire, and the extent of knowledge of the characteristics and composition of the sample, the following is a set of conditions followed in the methodology by the researcher in the design of the questionnaire:

1. Impartiality when asking questions which should lack of ambiguity or verbal complexity to avoid confusion and misunderstanding.

It should be noted that the questionnaire was drafted in English in the design stage, and then tested with the help of the researcher's supervisor and a number of academics to gain their initial observations and impressions. The initial test was conducted before distribution of the questionnaire to participants. Because the study was conducted in Libya where members of the sample speak Arabic, the questionnaire was translated into Arabic via two legal translators, and then compared to make sure the authenticity of the translation and the meaning of words were consistent and each question was clearly understood.

2. Wording of questions in a manner that in no way suggests a certain answer; and offering sufficient alternatives to provide an answer.
3. Asking questions that do not require mental or physical effort by participants and specifying the average time required to answer the questions (anywhere from 8 to 10 minutes).
4. Avoiding asking sensitive questions that affect the private life of the individual or asking questions that may in any way provoke ridicule and derision as a result of the answer/s provided.
5. Avoidance of questions of the banking or financial situations that may breach the privacy of organisations or individuals.
6. Providing confirmation that there was no need to collect personal data of participants such as the name of the participant or residential address.
7. Emphasising that the answers represent the viewpoint of the participant as perceived by him/her without outside intervention.
8. Providing assurance that the client's relationship with the bank or researcher will not be affected by opinions offered when answering questions.
9. Taking into account the gradient in the order of the questions; as well as the sequence and linkage between the content of the questions.
10. Asking questions within the context of the study.

Based on the above, the questionnaire in this study has three main sections:

The first section contains questions on general information about the participants (8 questions) such as sex, age, educational level, whether they own a personal computer, the possibility of linking or access to the Internet in Libya, the period of time or experience participating in the use of the Internet, the name of the commercial bank which handles the completion of the banking transaction, and, finally, the means used by the participant (client) when doing business banking, such

as dealing direct (face-to-face), via Internet, e-mail messaging, contact via land phone or mobile.

The second section of the questionnaire is the main focus of collecting data to answer the research hypotheses. It contains questions on the key research problem, and is divided into three parts. Each part focuses on or raises questions about the variables of the study. Five questions were developed for each variable in a separate table, and the second section contains 30 closed questions, divided evenly on variables of the study.

Part I is designed for collection of information on the perceptions of customers of commercial banks concerning Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) (the first and second variables) of banking services via the Internet. It includes questions about whether, in the opinion of the customer, Internet banking is easy to use and useful.

Part II includes questions that accurately reflect the perceptions of clients (participants) on the quality of the communications network of the Internet in Libya (the third variable). In addition, it seeks views on the support and assistance provided by the bank (the fourth variable) to users of banking services via the Internet, and to what extent that these factors (Internet network & support) assesses ease-of-use of retail banking services via the Internet in Libya.

Part III represents questions about perceptions of customers in relation to trust and security factors (the fifth and sixth variables) when using online banking. This third part also seeks to determine the extent of their contribution to the usefulness of banking services via the Internet for individuals and the level of their approval around phrases or questions related to these variables.

The third section of the questionnaire represents data about the views and perceptions of customers on their level of intention or desire to use electronic banking services with the bank via the Internet in the future. Furthermore, there is scope for participants who wishing to add additional comments, data or any other information which is not mentioned in the questionnaire, and which they believe is important to this research.

The researcher distributed more than 1,200 questionnaires evenly between the cities of Tripoli and Benghazi. The researcher was able to collect 567 questionnaires (47.2%). Of these, 328 (57%) were collected from the city of Benghazi and 239 (43%) were collected from the city of Tripoli. Through direct interview method (face to face) the researcher collected 93.6% of the combined number of questionnaires with a total of 531 questionnaires. The number of questionnaires obtained through electronic means does not exceed 35, representing 6.4% of the final number of questionnaires collected—after the exclusion of a number of questionnaires that carried errors or non-integrated data (31). The number of questionnaires used in the collection and analysis data for this study is 536 integrated questionnaires, which represents 44.6% of the number of questionnaires distributed in Libya (i.e. 1200).

4.7.2. Research Ethics

This study contributes to the cultural renaissance and development of truth in Libya, in the economic sector in general and the financial and banking sector in particular. Libyan society seeks to achieve sustainable development to catch up with other communities and even progress beyond them. This study is not a purpose in itself, but a means for development and selection of the most appropriate way forward for the advancement of society in Libya in the use of information technology in the field of electronic commerce and banking transactions in particular. The importance of this study is similar to the importance of research ethics, because the absence or weakness of the ethics of research leads to dire consequences for the individual and the community. On the one hand, the researcher has focused on the development of the research methodology, design tools and applied research. On the other hand, the researcher focuses strongly on the moral side (ethics), which is an important consideration in this study.

Scientific research in the sciences, social and economic development, information technology and other areas requires the availability of a set of values and ethical principles for the researcher. The research process is not just a total understanding of the principles, procedures relating to the identification problem, the preparation of the research design, data collection, and research results, but a consideration also of a set of ethics standards in every stage of this study. This research is based on values and ethical standards generally accepted and applied at the University of Southern Queensland (USQ 2012), in addition to relevant laws dealing with human beings that ensure their rights and dignity, and preservation and maintenance of all durable results. This study sought to apply ethical standards within the specification of the methodology and includes honesty, truthfulness and objectivity. The most important principles and moral values considered when conducting this study, especially the data collection phase, include the following points:

1. When planning for this study the researcher undertook to take personal responsibility for ethical standards related to the study, and to take all preventive measures to protect and safeguard the rights of participants in the research by following all the conditions required by the University of Southern Queensland, Australia.
2. The researcher committed to informing the participants of all the attributes and conditions of the search which could have an impact on their decision to participate in the research.
3. Respect for an individual's freedom to refuse to participate in the research, or to refuse to continue their participation at any time, and that by assigning a serial number (1.2.3 ... etc.), and co-number it makes it easier to locate the questionnaire should a participant withdraw. Fortunately, the researcher did not receive any request from participants to withdraw from the study.
4. An assurance that participants be protected from any physical or mental pressures when agreeing to participate and, regarding consent, took all measures to reduce those risks to the greatest extent possible.
5. Before and after the completion of the data collection participants were fully informed of the nature of the study and provided with a summary of the study aimed at removing any misconceptions, with a particular responsibility to ensure no devastating consequences for participants.

6. If there is a possibility that research procedures lead to undesirable consequences for the participant, the researcher is responsible for these effects and their removal, including long-term effects.
7. Data obtained from participants in the research will remain confidential.

Most ethical problems arise in data collection phase from participants. This is a difficult phase where the researcher needs to balance the many decisions that seem incompatible with each other, especially those that relate to consequences that may occur to individuals participating in the study. Accordingly, the ethics of research are the principles and values, as well as the duties and obligations, committed by the researcher. Hence, they represent a set of behavioural standards carried out by the researcher during the various stages of research. This study followed all the steps and procedures required, including obtaining ethical approval for the research (data collection). After taking all the appropriate measures and providing all the guarantees and detailed explanations, as mentioned earlier, all research steps have been followed accordingly—especially the stages of data collection in Libya. This study obtained a license from USQ (H12REA095) for data collection in Libya within a specified period (which expired on 31/11/2012).

4.8. Data analysis

Researcher cannot use the questionnaire to understand something of the information or data collected through data collection births only after unloading (dump the questionnaire). Because without it will not allow him to be studied, analysed, categorised, put it on the agenda and distributions iterative to draw conclusions from them and processed statistically, where follow researcher several steps including, review of questionnaires collected and sorted, the exclusion of questionnaires is sincere, excluding questionnaires anonymous, and the exclusion of questionnaires is full, then unloaded in the tables using the SPSS program.

There are several statistical approaches used to describe the constructs of study and to test study hypotheses. Structural Equation Modelling (SEM) is important technique employed to test the study models and hypotheses when the causal effect is of interest. Additionally, content analysis is employed to analyse the qualitative data which is adequate to this the dataset of this study (open-ended question). As a result, SEM was used in this study for examining and testing the model of interest. SEM is considered to be a multivariate method used in the social sciences fields. The beginning of the use of SEM is in the twenties of the last century, which is the basis for the establishment of SEM when Sewell Wright tried to disentangle the impact of genetics through generations using the method of simultaneous equations (Maruyama 1997).

According to Hair et al (2012) identify SEM as ‘Multivariate technique combining aspects of factor analysis and multiple regression that enables the examiner to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs in addition to between a number of latent constructs’ (Hair, Ringle & Sarstedt 2010, p. 634). SEM has been used to test theories and models study the relationships between structures (Lomax & Schumacker 2012). The SEM is widely use due to its ability to develop and test theories. The SEM is particularly useful to the process of developing and testing

theories, and has become a quasi-standard in research (Hair, Ringle & Sarstedt 2012).

The propose of using SEM in this study is due to a number of justifications: firstly, that SEM are able to test full model fit and provides a comprehensive statistical indicators to evaluate and modify models (Anderson & Gerbing 1988). Secondly, SEM helps in obtain answers to research questions at the levels of single, systematic, and comprehensive analysis (Gefen, Straub & Boudreau 2000). The third reason for the use of SEM to analysis the data of this study, it is not only limited to testing the relations between the models and its constructions but it is able to test the observed relationships among variables and constructs. Finally, the advantages of SEM over multiple regression are that multiple regression can be used to study the effects of a one factor or several independent factor on one dependent factor (Hankins, French & Horne 2000). SEM can be used to study complex models which may include number of independent factors and a number of dependent factors. SEM allows for an assessment of the designed model and the extent to which fits this model with a specific set of data.

Since the interest is to investigate the cause and effects among the constructs in the proposed model, SEM is used in this study to test and modify the proposed model via the indicators of model fit and examine the ability of the selected observed variables in this study to significantly represent the construct. The suggested model in this study included a number of constructs and the number of relationships among them: 6 constructs and 7 relationships. Moreover, SEM is employed to measure the validity and reliability of the study constructs.

4.8.1. The Components of SEM technique

SEM technique includes (two main sub-models) the measurement model and the structural model (Byrne 2009). Hair et al (1998). State that the measurement model as a ‘Sub-model in SEM that specifies the indicators for each constructs, and assesses the reliability of each construct for estimating the causal relationships’ (Hair et al 1998, p. 581). The latent variables represented by constructors cannot be measured directly because that the latent variables are a theoretical construct, as a result, the observed or indicator variables should be identified (Zulu 2007). Then, latent variables can be measured and the significance of each indicator in measuring this construct can be tested. The measurement model can be represented by using Confirmatory Factor Analysis (CFA) (Byrne 2009).

CFA is used to describe the relationships between judgmentally developed content categories and the empirically derived constructs’ (Turnbull 1998). CFA is commonly used in establishing and testing the measurement models that are employed to study specific phenomena. As said by Marsh (1985), there are three reasons why CFA is considered superior to exploratory factor analysis (Marsh 1985):

1. CFA enables researchers to design models that are to be examined, whereas in exploratory factor analysis the control of researchers over the model is limited.
2. CFA parameter estimates are unique so long as the hypothesised model is identified (Marsh, 1985, p. 432).
3. Goodness-of-fit indicators such as Chi-Square X^2/df (CMIN/DF), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA) are provided by CFA.

Investigator can use these indicators to evaluate different models using the same data and testing the fitness of the same model with data from different groups.

Confirmatory factor analysis involves the specification and estimation of one or more putative models of factor structure, each of which proposes a number of latent factors to account for covariance among a number of observed variables (Doll, Xia & Torkzadeh 1994). One of the most important motivations for using CFA is to examine convergent and discriminant validity (Kline 2011).

The structural model is always used to represent the hypotheses formulated in studies adopting SEM (Kline 2011). The structural model is a set of one or more dependence relationships linking the hypothesised model's constructs (Hair et al. 1998). The direct and indirect relationships between the constructs can be demonstrated via a structural model, and the amount of explained and unexplained variance can also be described in the model (Wang C.L. 2003).

In this study, the measurement and structural of models are employed to examine the proposed model. The validity and reliability of items, constructs, and the whole model are tested based on the results of examining the measurement model. Depends on the results of the structural model, the relationships among the model's constructs and testing the whole model fit to make decisions to accept or reject the research hypotheses.

Assessing Goodness of model fit is used to identify to what extent a model fits or is consistent with the data. Model fit is adjudged according to how well a model predicts or explains that which is designed to predict or explain (Barrett 2007).

4.8.2. Absolute Fit Indices

Here, a number of fitting indicators are to be demonstrated and used for the underlying data. The reason behind using this number is that each indicator has advantage limitation which can lead to different results, so we the judgment will be based on the agreement between the indicators. Relative Chi-square χ^2/df (CMIN/DF) test to assess the fit of a model in confirmatory factor analysis and modelling in which the minimum discrepancy is divided by its degrees of freedom. Chi-square χ^2 can be considered the main indicator to assess the fit model (Barrett 2007).

Root Mean Square Error of Approximation (RMSEA) is proposed by Steiger (1990) as a measure to assess model fit (Steiger 1990). According to Byrne (2010), there are three reasons behind some authors' recommendation to adopt RMSEA: 'It would appear adequately sensitive to model misspecification; commonly used interpretative guidelines would appear to yield appropriate conclusions regarding model quality; and it is possible to build confidence intervals around RMSEA values' (Byrne 2010, p. 81).

Browne et al (1993) developed a measure called P value to test the hypothesis that $RMSEA \leq 0.05$ (Browne et al. 1993). According to Holmes-Smith (2011) if the P value is less than 0.05—that is, the mean value of RMSEA, even it is less than 0.05 is due to chance alone; however, if the P value is more than 0.05 it is a close fit to the hypothesis (Holmes-Smith 2011).

Two measures can be used to assess the model fit based on the residual: Root Mean-square Residual (RMR); and the Standardised RMR (SRMR) (Holmes-Smith 2011). RMR is used to calculate the average difference between the variance-covariance matrix for the hypothesised model and the variance-covariance of the sample (Byrne 2009). RMR can be significantly impacted by the scale used to measure the observed variables. Scales of 1-5 with questions was used in interpreting the value of RMR. RMR can be influenced by the sample size, the number of indicators per latent variable, the number of latent variables, and indicator loadings (Hu & Bentler 1998). Therefore, recommendations have been provided to use Standardised RMR (SRMR) instead of RMR. Kline defines SRMR as ‘A measure of the mean absolute correlation of residuals, the overall difference between the observed and predicted correlations’ (Kline 2011, p. 209).

Goodness-of-Fit Index (GFI) was offered as an alternative to the Chi-Square statistic (Hooper, Coughlan & Mullen 2008). This indicator is influenced by the sample (Byrne 2009). Shevlin and Miles (1998) conducted an empirical study to investigate the effect of sample size on GFI value. The results concluded that there are no significant differences among the value of GFI when the sample is greater than 100. Shevlin and Miles agreed that more than 0.90 is an acceptable level of GFI. In the same study, Shevlin and Miles (1998) recommended that the value for GFI should be ≥ 0.95 in the case of low to medium factor loadings, regardless of sample size (Shevlin & Miles 1998).

The adjusted Goodness-of-Fit Index (AGFI) is a similar indicator to GFI but AGFI considers the degree of freedom in the specified model (Holmes-Smith 2011). The value of GFI and AGFI range from 0.0 to 1.0 and, theoretically, their value can be negative (Byrne 2009). The value of AGFI is usually lower than the value of GFI (Tu, Wang & Chang 2012). There is no agreement about the AGFI. Some researchers recommend adopting a cut of 0.90 (Hooper, Coughlan & Mullen 2008). Chau (1997) suggested using 0.80 as a AGFI in the information systems field (Chau 1997). Hair et al. claim that ‘No statistical test is associated with either GFI or AGFI, only guidelines to fit’ (Hair et al 2006, p. 747). Bagozzi and Yi (2012) agree with Hair et al. (2006) that there are no commonly-accepted for GFI and AGFI (Bagozzi & Yi 2012).

4.8.3. Validity and Reliability

The validity and reliability of the instrument should be tested to verify the ability of the instrument (items) to measure the constructs. The importance of validity and reliability comes from the effects of those two characteristics on the quality of data collected by researchers (Pallant 2011). The effect of validity and reliability is not limited to data quality, but can include the research results and recommendations. The main difference in using validity and reliability is that reliability is related to consistency, whereas validity focuses on what the researcher intended to measure (Myrtveit & Stensrud 2012). Traditional research designs depend on multiple regressions to estimate the validity and reliability, and the measurement error was not considered. Thus, in the SEM approach more attention is given to validity and reliability of observed variables through incorporating measurement error adjustments in the analysis (Schumacker & Lomax 2004). The indicators used in this study to assess the reliability and validity are presented as following.

4.8.3.1. Validity

Validity is used to refer to two meanings: true or correct (Neuman 2006). Validity is the accuracy of a measure or the extent to which a score truthfully represents a concept (Zikmund, Babin & Griffin 2009). Measurement validity is considered to be a critical concern in social research. Measurement validity is defined by Neuman as 'how well the conceptual and operational definitions mesh with each other' (Neuman 2006, p. 192). In the context of SEM the measurement model is considered to be the first step in establishing and testing structural models. Thus, testing validity should be conducted before testing the structural model to assure that the indicators used to measure the constructs are valid. Validity evaluates relationships between the observed variables and the constructs (Schumacker & Lomax 2004). In other words, validity means 'multiple measures of the same construct hang together or operate in similar way' (Neuman 2006, p. 194). The loading is the measure to assess the validity. Each item loads in the construct and should exceed 0.50 to achieve validity (Gefen & Straub 2005; Hair et al. 2006; Holmes-Smith 2011).

4.8.3.2. Reliability

Reliability is deemed to be a key feature in measurements. Reliability refers to consistency of measurement (Neuman 2006). The consistency with a measuring instrument yields a certain result when the entity being measured hasn't changed' (Leedy & Ormrod 2010).

4.8.4. Squared Multiple Correlation (SMC)

The Squared Multiple Correlation (SMC) coefficient points to the amount of variance explained by the independent observed variables (Schumacker & Lomax 2004). SMC can be used to measure the reliability of each item (Bagozzi & Yi 2012). SMC exceeding 0.50 indicates that the observed variable has a good reliability, and 0.30 highlights an acceptable level of item reliability.

4.8.5. Cronbach's alpha

Cronbach's alpha is the most common measure to test internal consistency (van Zyl, Neudecker & Nel 2000). The important issue facing Cronbach's alpha is that the relationship between this measure and the number of items in the scale is positive (Hair et al. 2006). To solve this issue, the recommended level of Cronbach's alpha is 0.70, and 0.60 is acceptable for exploratory research (Hair et al. 2006). George and Mallery (2012) suggested a rule of thumb for Cronbach's alpha: $\alpha > 0.9$ – excellent; $\alpha > 0.8$ – good; $\alpha > 0.7$ – acceptable; $\alpha > 0.6$ – questionable; $\alpha > 0.5$ – poor; and $\alpha < 0.5$ – unacceptable (George & Mallery 2012).

4.8.6. T-test

Finally, it is crucial to test the effect of each construct on the bases of the study model. To accepted any hypothesis, t-test is used to test the model coefficients and as a result the resulting effect (estimated coefficient) should be significant ($p\text{-value} < .05$).

4.9. Chapter summary

The chapter outlined the research method used in this study. The survey technique was selected for this study because it fits with the causality approach used in the study. TAM was adopted in this study to be the research framework. Survey method enables the gathering of a wide range of data to test the proposed model. Customers of four commercial banks were selected for the study sample. To increase the validity and reliability of the selected items the researcher modified and re-worded them to be appropriate to measure the study constructs. SEM was selected and justified to analyse the data. Additionally, research ethical considerations were taken into account in the administration of the questionnaire.

CHAPTER FIVE

This Chapter presents the results of the data analysis for the main phase of this research. As described in Chapter 4, the data was collected and analysed using a quantitative methods approach. The first part of this Chapter presents the results of the descriptive statistics which were used for the quantitative analysis of the responses to the survey. In the second part, the results of Structural Equation Modelling are used to test the study model and hypotheses. The third part presents the results of a content analysis of the open-ended questions related to factors affecting the adoption of Internet banking services.

5. CHAPTER FIVE: RESULTS

5.1 Introduction

Banking customers are considered to be the key participants in adopting Internet banking services. Thus, customers' perceived about online banking system can provide an effective evaluation of factors involving the adoption of Internet banking services. Seven constructs were selected in the study model to assess the success of Internet banking services: Trust (T), Security (S), Support (Sp), Internet Quality (IQ), Perceived Ease of Use (PEOU), Perceived Usefulness (PU) and Intention (Int) to use online banking.

5.1.1. Overview

The collected data through questionnaires were entered into the SPSS software program. The sample included only commercial banking customers (*Bank of Commerce & Development, Wahda Bank, National Commercial Bank and Jumhouria Bank*) were randomly chosen from the two largest cities (*Tripoli & Benghazi*). The accepted age(s) of adult participants was 18 years or older. More than 1,200 surveys were distributed evenly between the cities of Tripoli and Benghazi. Of these, 567 participants (47.2 %) returned their questionnaires. The number of questionnaire that was rejected from the analysis because of errors or non-integrated data (missing data) was 0.05 % (31). The final number of questionnaires used in the collection and data analysis data for this study was 536 questionnaires, which represents 44.6% of the number of questionnaires distributed (i.e. 1200).

5.2. Descriptive statistics

The descriptive statistics is a necessary stage in the statistical analysis process because it summarises and describes the data in a simple and understandable manner (Zikmund, Babin & Griffin 2009).

5.2.1. Sample Characteristics

Table 5.1 illustrates the results arising from analysing the demographic data in the form of the frequency and percentage for each variable.

Table 5-1 Demographic variables results

Variables	Valid	frequency	Percentage
Gender	Male	397	74%
	Female	139	26%
Age	18 – 24	21	3.9%
	25 – 34	182	34%
	35 – 44	203	38%
	45 – 54	91	17%
	55 – 64	22	4 %
	65 or older	17	3.1%
Education level	Primary/secondary school	62	11.5 %
	High school	133	24.8%
	High Diploma	232	43.3%
	Undergraduate university	80	15%
	Post-graduate university	29	5.4 %

The sample demographic characteristics are represented by percentages using pie-chart and bar-chart in order to explore features of the participants. The collected data is represented by 74% male and 26% of female (Figure 1).

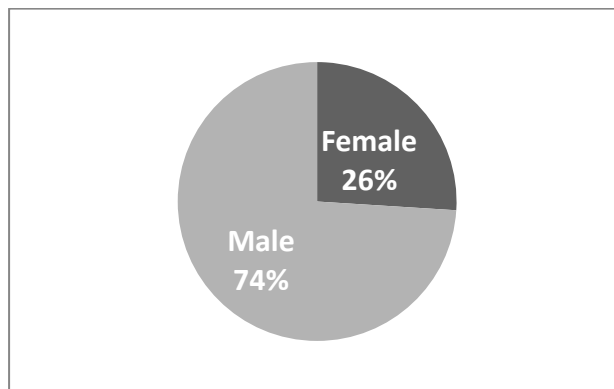


Figure 3 - Gender

As shown in 5.1 most of the 385 participants were aged between 25 years to 44 years. Thirty-eight percent of were between 35 - 44 years which were the largest number of participants (203). The next largest was 34% for those aged between 25 years to 34 years. In third place were 17% of participants aged between 45 - 54 years old numbered 91 participants; Young people (18 - 24) and older (55 years and more) are approximately equal.

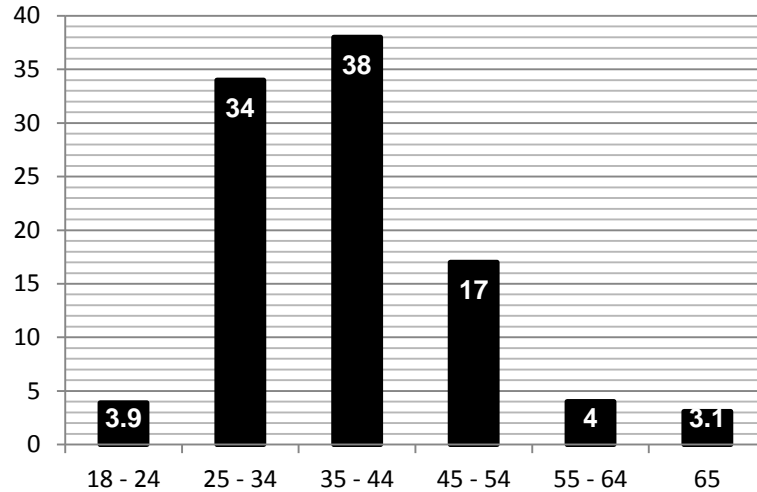


Figure 4 - Ages

Regarding the level of education for survey members, the greater involvement was Higher Diploma (232) and the participation rate is about 43.3%. High school comes second participation rate 24.8%; Then the participants who had less educational level was 62 (11.5%). The higher educational level rate was 15% for university graduates and 5.4 % among holders of a master's degree and doctorate.

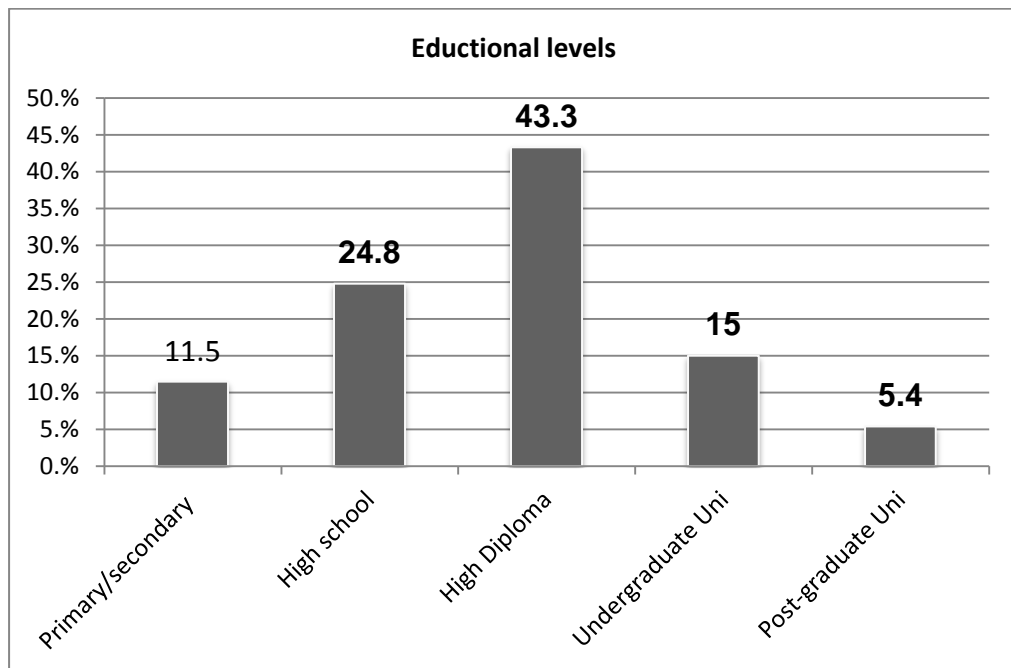


Figure 5 - Educational levels

The result of the data analysis in terms of in which bank the respondents have account, owning computer, accessing to the Internet and how long time they have been using the Internet. As well as which method the customers used to accomplish their banking business.

Table 5.2 illustrated the percentage of participants who own personal computers are 86%, while those who do not own computers are only represented by 14%. The result shows that about 88% of participants have access to the Internet (472). Regarding the period of time that they have been using the Internet, most of the participants are relatively new to the Internet, namely, 63% of the participants use

the Internet for one year or less. On the other hand, 20.9 % of them use it between 2-5 years and 15.6% of them use the Internet for more than 5 years.

Table 5-2 Population's sample results answer

Variables	answer	frequency	Percentage
Owning computer	Yes	461	86 %
	No	75	14 %
Accessing to the Internet	Yes	472	88 %
	No	64	12 %
Period of using Internet	Do not use	3	0.05 %
	1 year (or less)	337	63 %
	2 – 5 years	112	20.9 %
	Over 5 year	84	15.6 %
Bank	National Commercial	111	20.7 %
	Bank of Commerce & development	138	25.7 %
	Jumhouria	161	30 %
	Wahda Bank	126	23.6 %

The following table (Table 5.3) shows the numbers and percentages of available means used by commercial banks when customers conduct their banking. Namely, dealing with the staff of the bank directly, using the Internet to complete business transactions, correspondence via e-mail, and the use of contact landline or mobile. The results presented in Table (5.3) shows that the vast majority of customers 425 (79.3%) are accustomed to dealing directly with the bank, either daily (36.4 %) or weekly (42.9 %). And the rest of the numbers 111 are customer dealings with the bank, either on a monthly or quarterly basis.

Table 5-3 Customers methods of using banking services

Items	Not available		Do not use		Daily		Weekly		Monthly		Quarterly	
	No	%	No	%	No	%	No	%	No	%	No	%
Face to face banking	00	0.0	00	0.0	195	36.4	230	42.9	97	18.0	14	0.02
Internet banking	236	44.0	245	45.7	7	1.3	16	2.98	7	1.3	20	3.73
Email banking	345	64.3	150	27.9	00	0.0	00	0.0	00	0.0	41	7.64
Phone banking	225	41.9	97	18.0	26	4.85	45	8.39	68	12.6	56	10.4
Mobile banking	92	17.1	205	38.2	46	8.58	65	12.1	83	15.4	45	8.39

The second means by which banking transactions are conducted involve the use of electronic means (Internet). The very large majority of customers (481) said they did not know the existence of this type of service (44%) or did not use it (45%). A few (50 clients, 9.3%) said they frequently use the Internet when dealing with the bank, and most of those transactions are on a weekly basis (2.98%) or quarterly (3.73%). The use of emails by customers for sending requests was limited (41, 7.64%). The rest of the participants (345) said that this service was either not available (64.3%), or they did not use email when dealing with the bank (27.9%).

The responses showed that communication with the banks using landline or mobile phones was more popular than Internet banking. The results indicated that the majority of the 322 clients said that the landline phone service was not available (41.9%); this is largely due to the fact that clients (41.9%) were not aware that the landline phone services were available at their banks. Those who were aware chose not to use these services (18%). The rest of customers (195) vary in their use of the landline services: daily (4.85%), weekly (8.39%), monthly (12.6%), and quarterly (10.4%). The banking services via the mobile phone does not differ much from the landline, as noted number (297) client that the mobile service is not available (17.1%) or that they do not use it (38.2%), and the rest of the participants (239, 44.5%) vary in the usage as can be seen in Table 5.3.

5.3. Measurement model and testing study model and hypotheses

Banking customers are considered the key participants in the adoption of Internet banking services. Structural Equation Modelling (SEM) is employed in this study as an essential statistical technique to analysis the data. Five steps, as described in the following sections, were undertaken to analyse the data.

5.3.1. One-factor congeneric measurement model for constructs

Confirmatory Factor Analysis (CFA) using structural equation modelling is usually considered as one measurement model using observed variables to measure latent factors (constructs). In statistical literature, there are a number of other measurement models, namely, 'parallel', 'congeneric' and 'tau-equivalent'. Notice that a measurement model used to measure the true reliability of data needs to be adequate and comply with the model assumption. The consequence of violation of model assumptions results in inaccurate reliability. One-factor congeneric model showed excellent results compared with the other models, hence, this model is adopted in this study (Dragovic 2004). One-factor congeneric measurement was conducted with each construct independently.

Since the congeneric model assumes that each individual item measures on the same latent variable, it will be used for reliability estimation. As the congeneric model is used in estimating reliability, the fit of the data should be tested to this model for each construct in a step-by-step approach. Using CFA, the researcher is able assess the validity of the items for measuring the constructs using the number of indices detailed in chapter four which described the data analysis methodology. For each two items, the covariance between their corresponding errors is examined to drop any items with high variance. Also, low multiple correlation needs monitoring to assess the items' contribution. CFA is used for determining the order of the underlying model, namely, First iteration or Final iteration (first or higher order models). The key justification in using this statistical technique is that CFA formulates specific models that are to be tested, and CFA provides a chi-square test and other goodness-of-fit indicators of the ability of the different models to fit the same data, and model to fit the data from different sets (Marsh 1985). Codes are used for each item, for instance, PEOU.1 signifies the first item of Perceived Ease of Use construct and PU.2 signifies the second item of Perceived Usefulness. The assessment of the constructs is demonstrated as follows.

5.3.1.1. Perceived Ease of Use (PEOU)

Five items were proposed by the researcher to measure the Perceived Ease of Use (PEOU) of Internet banking services offered by the bank. These items are: the ease of learning to operate online banking (PEOU.1), the ease of reaching online banking (PEOU.2), clear and understandable interaction with online banking (PEOU.3), flexibility and interaction of Internet banking (PEOU.4), and the ease of using online banking (PEOU.5). Using CFA, the fit indicators are presented in Table 5.4. By looking at standardised covariance structure among the errors, it is noted the PEOU.1 shows somewhat high covariance with PEOU.2 which is $p < 1.52$. After dropping PEOU.1 from the model and subsequent refit of the data, CMIN/df and other observed indices showed improvement.

Table 5-4 CFA goodness of fit for Perceived Ease of Use

Variables		No of items	Deleted item	CFA goodness-of-fit indicators					
				CMIN/df	P	GFI	AGFI	RMR	RMSEA
PEOU	First iteration	5	Null	6.345	.000	.977	.931	.034	.100
	Final iteration	4	PEOU.1	1.883	.152	.997	.983	.012	.041

Latent construct of PEOU will consist of four items without PEOU.1. Figures 6 and 7 show SEM path diagrams for initial and final models with the loading coefficient and multiple correlations, where all the items show very good values.

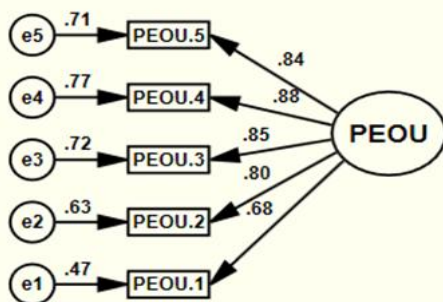


Figure 6 One-factor congenetic measurement model of Perceived Ease of Use (First iteration)

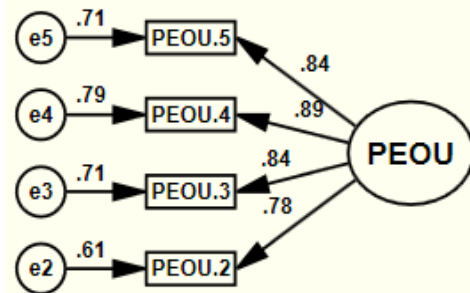


Figure 7 One-factor congenetic measurement model of Perceived Ease of Use (Final iteration)

5.3.1.2. Perceived Usefulness (PU)

The latent construct for Perceived Usefulness (PU) of online banking is measured by five items: the speed in accomplishing banking services (PU.1), improvement in banking performance (PU.2), increased productivity (PU.3), online banking making banking services simpler (PU.4), and recognition of online banking usefulness (PU.5). By utilising one-factor model, the fit indices for the initial results are demonstrated in Table 5.5. By looking at the values of indices, the value CMIN/df is 7.063 and highly significant; this significance may be due to the large size of the sample. As a further step in increasing the model quality, the residual covariance was checked. The covariance matrix shows that, generally, the values are not very high; however, PU.5 shows the highest covariance with the items. Thus, by eliminating

PU.5, the value of CMIN/df becomes lower and less significant (see Table 5.5). Subsequently, the rest of the indicators become satisfactory and the decision is made to exclude PU.5 from measuring PU.

Table 5-5 CFA goodness of fit for Perceived Usefulness

Variables		No of items	Deleted item	CFA goodness-of-fit indicators					
				CMIN/df	P	GFI	AGFI	RMR	RMSEA
PU	First iteration	5	Null	7.063	.000	.974	.923	.020	.106
	Final iteration	4	PU.5	3.889	.020	.993	.965	.012	.073

Figure 8 and Figure 9 show the model for PU construct at the first and final iteration. The SEM path diagram for first and final models with the loading coefficient and multiple correlation display very good values for all items.

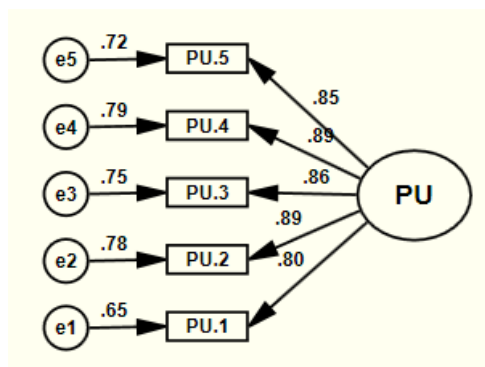


Figure 8 One-factor congeneric measurement model of Perceived usefulness (First iteration)

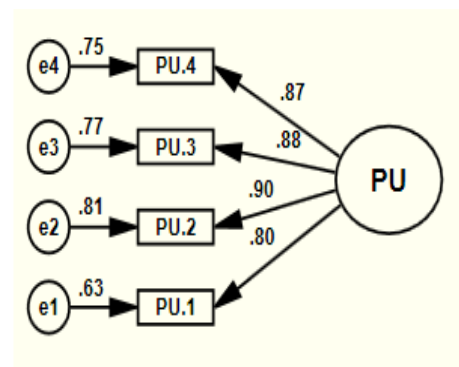


Figure 9 One-factor congeneric measurement model of Perceived usefulness (Final iteration)

5.3.1.3. Internet Quality (IQ)

For Internet quality construct, five items are established to measure the latent construct which are: ease of accessing the bank's website (IQ.1), access to the bank's website anywhere and anytime (IQ.2), the ability to use handy mobile equipment to access the network of online facilities (IQ.3), the compatibility of infrastructure of the online banking network with mobile phones (IQ.4), and, finally, the cost of Internet services in Libya (IQ.5). According to the results of model fitting displayed in Table 5.6, the values of indices are somewhat reasonable—although the value of CMIN/df is statistically significant ($p < .001$). By checking the residual covariance, IQ.5 is found have 2.501 and 1.204 covariance with IQ.4 and IQ.1, respectively. Also, IQ.5 shows a low multiple correlation (.26) and loading coefficient (.51). As shown in Figure 5.8, by removing IQ.5 there is an improvement in the values of the indices, specially the CMIN/df, where it becomes less significant ($p < .016$). Note that although IQ.4 shows a somewhat moderate squared multiple correlation, the loading coefficient is high and the residual covariance with other items is low (see Figure 11). As a result, no further reduction is applied to the model.

Table 5-6 CFA goodness of fit for Internet quality

Variables		No of items	Deleted item	CFA goodness-of-fit indicators					
				CMIN/df	P	GFI	AGFI	RMR	RMSEA
IQ	First iteration	5	Null	7.252	.000	.973	.919	.053	.108
	Final iteration	4	IQ.5	4.156	.016	.992	.962	.023	.077

Figure 10 and Figure 11 illustrate the model for IQ construct at the first and final iteration. The SEM path diagram for the first and final models with the loading coefficient and multiple correlations indicates very good values for all items.

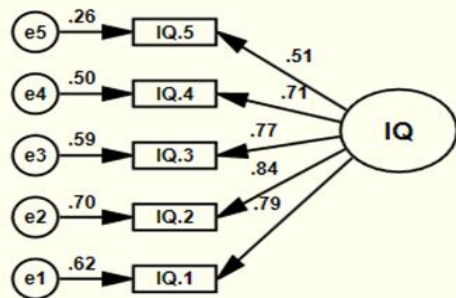


Figure 10 One-factor congeneric measurement model of Internet quality (First iteration)

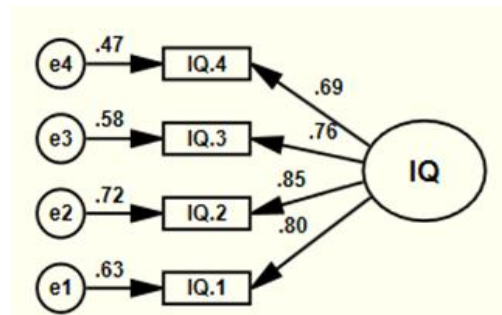


Figure 11 One-factor congeneric measurement model of Internet quality (Final iteration)

5.3.1.4. Support (Sp)

Similar to the previous constructs, the support is based on five items: (1) the commitment of bank personnel to supporting customers using online banking services (Sp.1); (2) the availability of an online help facility on the bank's website (Sp.2); (3) training of bank management and personnel to enable them to provide assistance and support in the use of online banking (Sp.3); (4) providing 24-hour customer support via the bank's website (Sp.4); and (5) the ability of online banking to enable customers to provide feedback or lodge complaints and receive a response in a reasonable timeframe (Sp.5). By conducting the model assessment analysis, it is noted from Table 5.7 that the values of the indices are generally not satisfied and, as a result, the researcher examined the items in order to fit the latent construct with a high degree of accuracy. The resulting residual variance is found to be high between Sp.1 and the remaining items (-1.698 for Sp.5, -1.165 for Sp.4, 2.056 for Sp.3 and 1.399 for Sp.2). Also, the squared multiple correlations are somewhat moderate at .47. After deleting Sp.1, very little improvement in the indices is observed (see Table 5.7). The reason can be attributed to the existence of high residual covariance between Sp.2 and Sp.3 (1.780). The decision was made to drop Sp.3 due to the lower correlation and loading coefficient of Sp.2. The GFI and RMR for final models show perfect values, as detailed in Table 5.7. The loading coefficients for the three items are very good, while only Sp.2 shows a moderate squared multiple correlations.

Table 5-7CFA goodness of fit for support

Variables	No of items	Deleted item	CFA goodness-of-fit indicators						
			CMIN/df	P	GFI	AGFI	RMR	RMSEA	
Sp	First iteration	5	Null	24.495	.000	.907	.720	.070	.210
	Second iteration	4	Sp.1	23.950	.000	.957	.785	.051	.201
	Final iteration	3	Sp.1 & Sp.3	-	-	1.00	-	.000	-

The SEM path diagram for first and final models with the loading coefficient and multiple correlations presents very good values for all items. Figure 12 and Figure 13 show the model for the support construct at the first and final iteration.

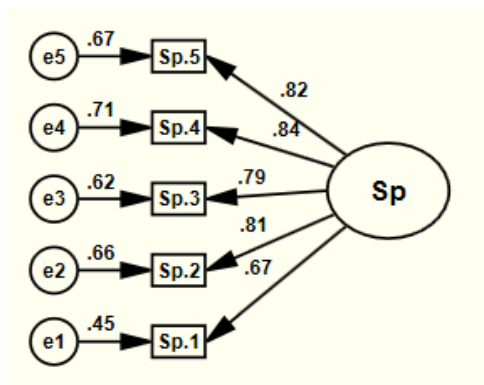


Figure 12 One-factor congeneric measurement model of Support (First iteration)

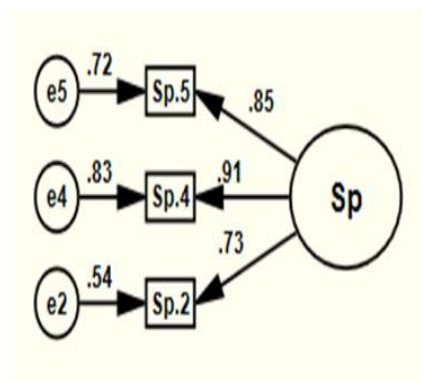


Figure 13 One-factor congeneric measurement model of Support (Final iteration)

5.3.1.5. Security (S)

The security construct is measured by five items: using online banking that is financially secure (S.1), concerns about the security of online banking (S.2), security concerns about disclosing personal information on the bank website (S.3), the safety of online banking versus visiting the actual bank branch (S.4), and security concerns about online banking despite lack of knowledge in this area (S.5). The initial results are detailed in Table 5.8 and suggest that the fit indices values still need to be improved in order to achieve a very good fit. Hence, by examining the residual covariance between the items, it seems that S.4 has the highest residual covariance with S.5 (.778), S.2 (-.701) and S.1 (-.705). Also, the residual covariance between S.1 and S.2 is .824. Among those items, S.1 shows the lowest squared correlation (.55) (see Figure 14) and, hence, it is dropped and then the model checked again. However, no considerable improvement in fit indices resulted. Another attempt was applied by dropping S.4. As a result, CMIN/df becomes insignificant, and the other indices show considerable improvement as well. Hence, the final model excludes S.4 only.

Table 5-8 CFA goodness-of-fit for security

Variables		No of items	Deleted item	CFA goodness-of-fit indicators					
				CMIN/df	P	GFI	AGFI	RMR	RMSEA
S	First iteration	5	Null	8.636	.000	.968	.904	.029	.119
	Second iteration	4	S.1	14.69	.000	.973	.867	.027	.160
	Final iteration	4	S.4	1.012	.363	.998	.991	.008	.005

Figure 14 and Figure 15 depict one-factor congeneric models for security initial model and final model.

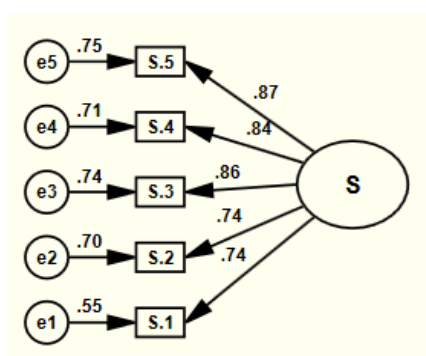


Figure 14 One-factor congeneric measurement model of Security (First iteration)

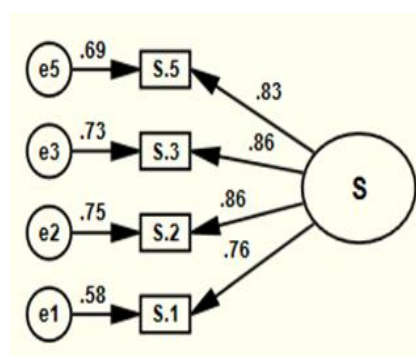


Figure 15 One-factor congeneric measurement model of Security (Final iteration)

5.3.1.6 Trust (T)

The items measuring the trust construct are: trust in using online banking services (T.1), ability of online banking to protect privacy (T.2), trust in the benefits of online banking rather than face-to-face banking services (T.3), tendency to trust online banking is high (T.4), and online banking will keep the promises made to the customer (T.5). Based on Figure 16, the model fit for trust seems low. As a result, the residual covariance between the items is observed to be high at between T.2 and T.1, and since T.2 shows higher residual covariance with the items than T.1 the decision is made to drop T.2. Due to high improvement in the fit indices after deleting T.2, the resulting fit is considered to be the final model (see Table 5.9).

Table 5-9 CFA goodness-of-fit for Trust

Variables		No of items	Deleted item	CFA goodness-of-fit indicators					
				CMIN/df	P	GFI	AGFI	RMR	RMSEA
T	First iteration	5	Null	7.780	.000	.973	.918	.026	.113
	Final iteration	4	T.2	.202	.817	1.00	.998	.004	.000

Figure 16 and Figure 17 shows one-factor congeneric models for trust initial model and final model.

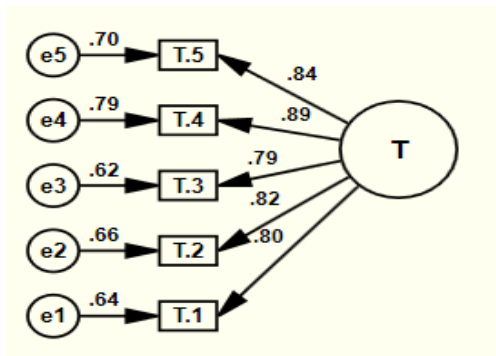


Figure 16 One-factor congeneric measurement model of Trust
(First iteration)

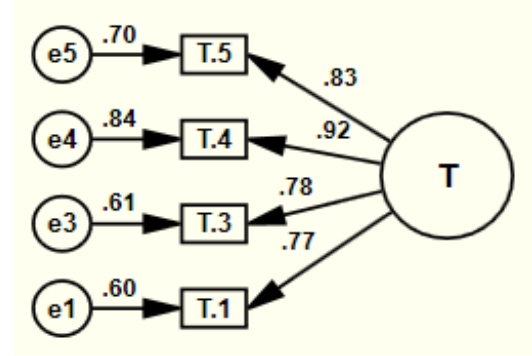


Figure 17 One-factor congeneric measurement model of Trust
(Final iteration)

5.3.1.7 Intention to use Internet banking (Int)

Unlike the previous constructs, this variable is based on three items only: customer predication to use Internet banking to conduct banking services in the future (Int.1), intention to use Internet banking services frequently (Int.2), and the potential of adopting the benefits of Internet services and products (Int.3). According to the fit indices (table 5.10), the GFI and RMR are noted to be perfect. Also, as shown in Figure 18, the values of squared multiple correlation and factor loading for the three items are a very good fit, indicating that the underlying construct can be represented by these items.

Table 5-10 CFA goodness of fit for intention to use online banking

Variables	No of items	Deleted item	CFA goodness-of-fit indicators						
			CMIN/df	P	GFI	AGFI	RMR	RMSEA	
Int	First iteration	3	Null	000	-	1.00	-	.000	-

Figure 18 shows one-factor congeneric models for intention to use online banking.

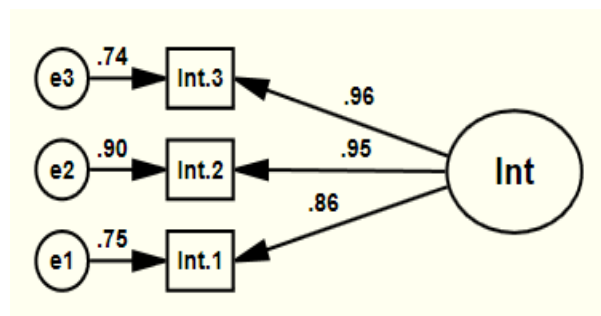


Figure 18 One-factor congeneric measurement model of Intention
(First iteration)

5.3.2 Exogenous and endogenous factors first-order CFA

In order to avoid any cross loading among the constructs, Ahmed (2013) and Holmes-Smith and Rowe (1994) recommend running CFA for exogenous and

endogenous constructs separately (Ahmed 2013; Holmes-Smith & Rowe 1994). By fitting first-order CFA for each group of constructs and measuring the residual covariance between all the items, it is possible to improve the model fit. For exogenous constructs, the fit indices for the initial model are shown in Table 5.11.

Table 5-11 CFA goodness of fit for exogenous constructs

Variables	Deleted item	CFA goodness-of-fit indicators					
		CMIN/df	P	GFI	AGFI	RMR	RMSEA
First iteration	Null	2.550	.000	.950	.928	.051	.052
Second iteration	T.1 (Trust construct)	2.101	.000	.976	.959	.042	.046

To improve these indices, the residual covariance was checked and, subsequently, the residual for item T.1 from the trust construct shows high covariance with the items of support and security constructs. After eliminating T.1 from the model, the values indices do not show a significant improvement from the initial model, meaning there is no improvement in the model fitting. Thus, the final model for exogenous constructs (Figure 19) and trust construct will include T.1.

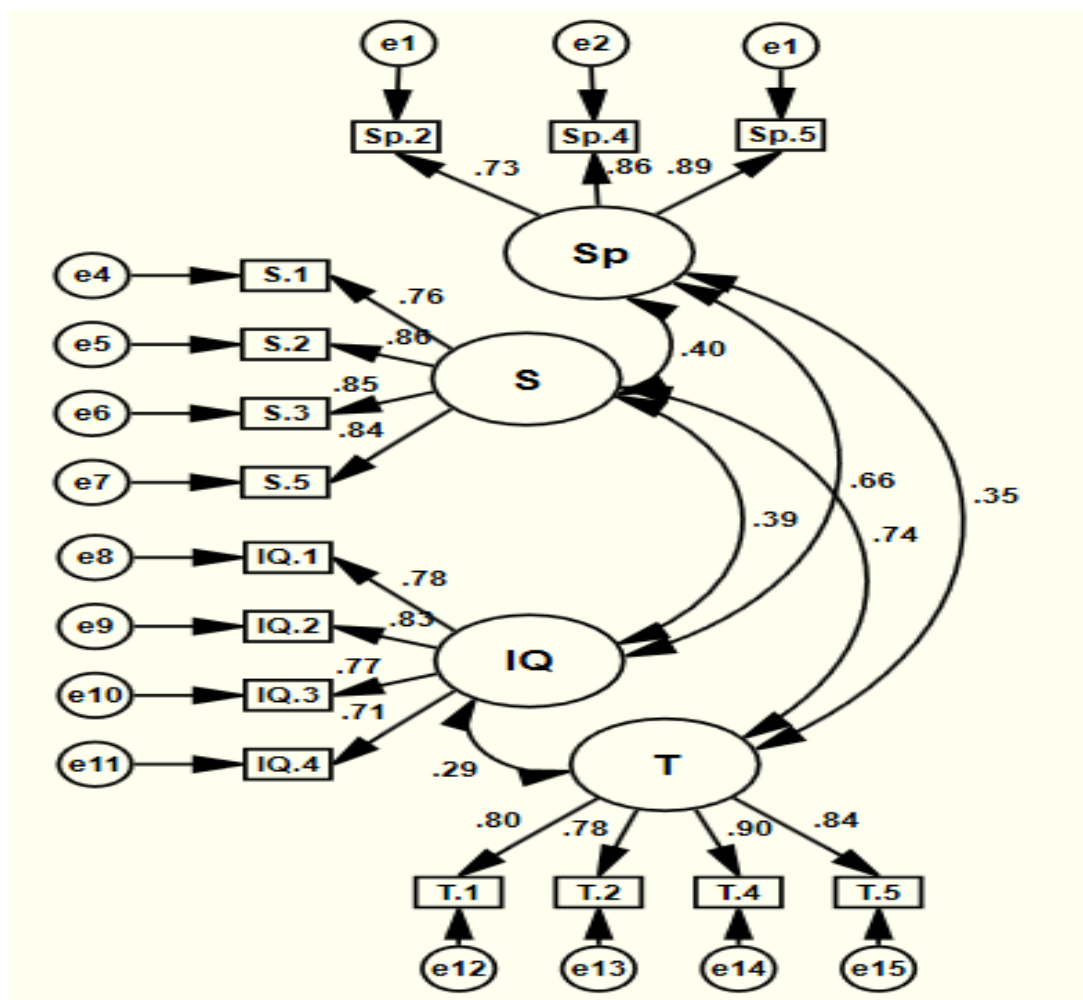


Figure 19 One-factor congreneric model exogenous constructs

Regarding endogenous constructs, there are three constructs, namely, Perceived Ease of Use (PEOU) (four items), Perceived Usefulness (PU) (four items) and Intention to

Use (Int) (three items). The results shown in Table 5.12 indicate that the values of all indicators are generally good. Thus, no cross loading between the constructs or further deletion of items is applied.

Table 5-12 CFA goodness of fit for endogenous constructs

Variables	Deleted item	CFA goodness-of-fit indicators					
		CMIN/df	P	GFI	AGFI	RMR	RMSEA
Final iteration	Null	1.980	.000	.973	.956	.029	.043

Figure 20 depicts the confirmatory factor analysis of endogenous constructs at the final model.

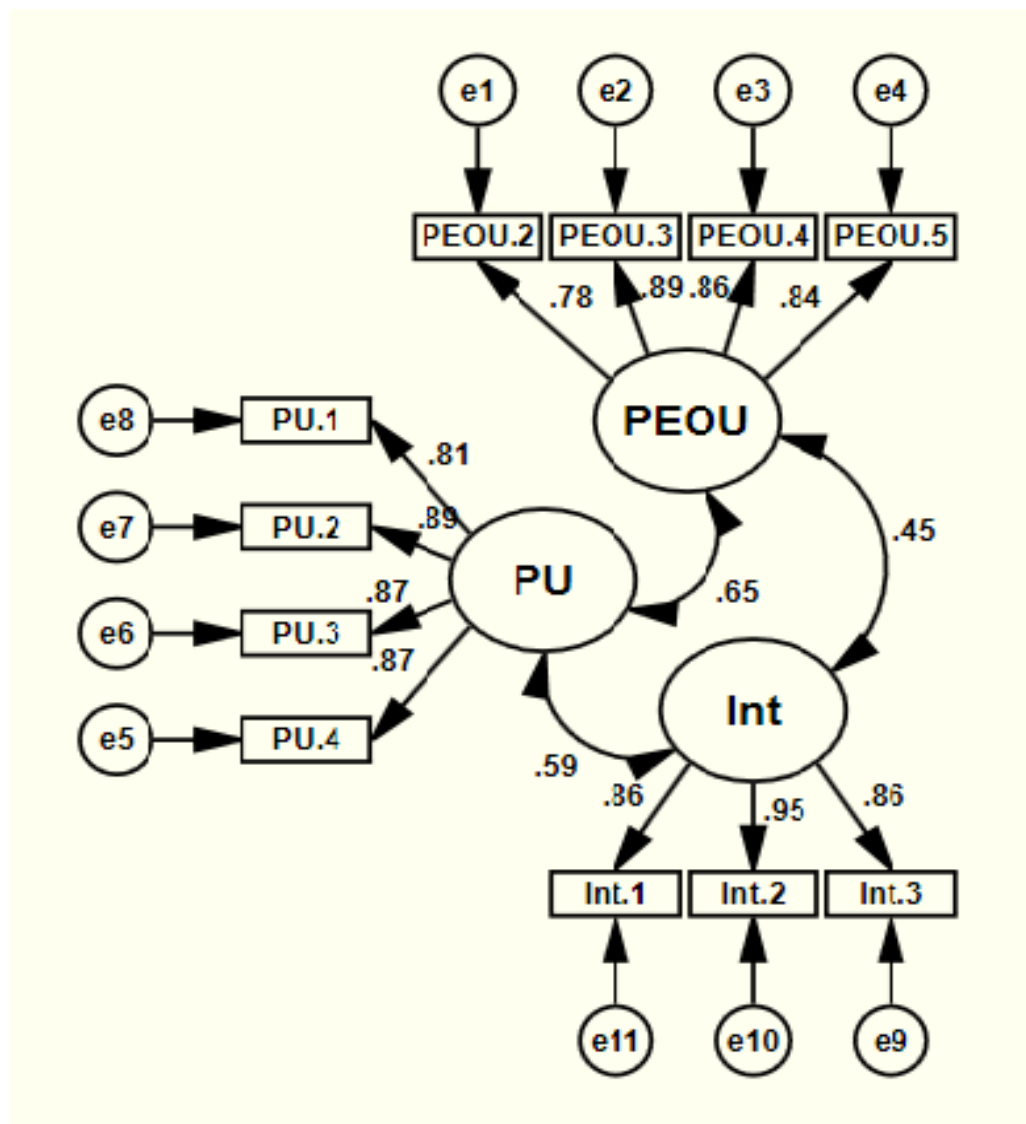


Figure 20- One-factor congeneric model endogenous constructs

The measurement model can be represented using Confirmatory Factor Analysis (CFA) by combining the exogenous and endogenous constructs into one model.

5.3.3 Measurement Model

After examining the measured model for exogenous and endogenous constructs separately, it is essential to estimate the full model (Ahmed 2013; Koufteros, Babbar & Kaighobadi 2009). The measurement model is a sub-model in SEM that specifies the indicators for every construct, and evaluates the reliability of each construct in assessing the causal relationships (Hair et al. 1998). The measurement model can be represented using CFA by combining the models of exogenous constructs and endogenous constructs in one model (Zulu 2007). Using five one-order factors, the full model is based on exogenous and endogenous constructs in the same model (see Figure 21). The results of the measurement model—detailed in Table 5.13—confirm the five first-order correlated factors’ measurement model as all indicators exceed the acceptance threshold, meaning that the results of performing CFA to test the measurement model confirm that the model has a good fit.

Generally, since the results show that the fit of measured model is good, no re-speciation is needed to the measurement. One-factor congeneric measurement led to identifying the problems of each construct and items. Also, using exogenous and endogenous factors first-order helped in reducing the cross loading between the observed variables.

Table 5-13 CFA goodness of fit for full model

Variables	Deleted item	CFA goodness-of-fit indicators					
		CMIN/df	P	GFI	AGFI	RMR	RMSEA
Final iteration	Null	1.959	.000	.928	.909	.042	.042

The results of CFA to test the measurement model confirm that the model has a good fit and every indicator exceeded the acceptable level.

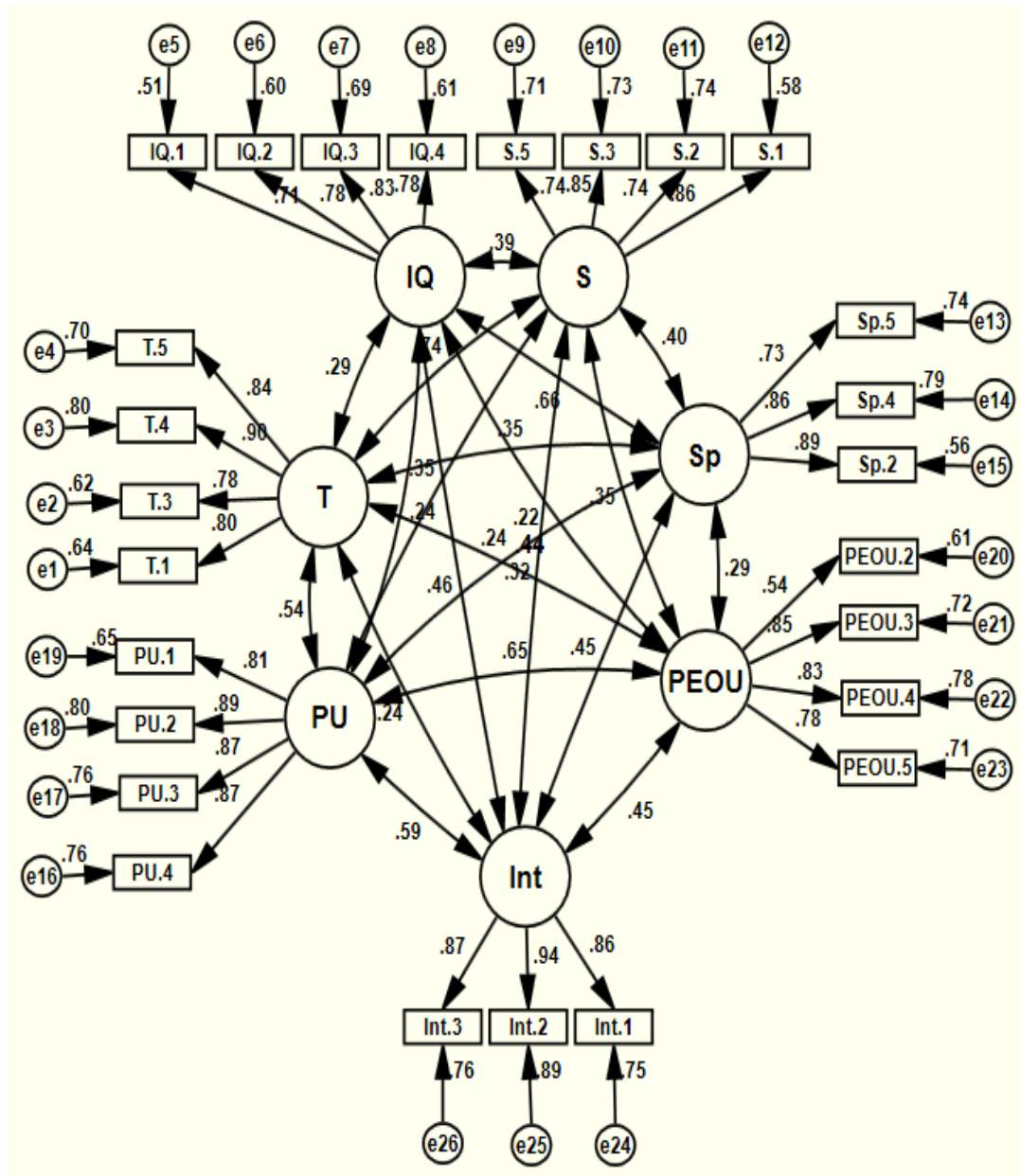


Figure 21- Seven first-order correlated factors for measured model

Based on the results of one-factor congeneric measurement, as well as exogenous and endogenous factors, first-order CFA tests identified the problems of every construct and item and reduced the cross loading among the observed variables. The measurement model does not need to be re-specified since the model achieved a good fit. The results positively influenced the quality of the measurement model and effectively improved the model.

5.3.4 Validity and reliability

The validity and reliability measurement tests are an important phase in testing the model. According to Ahmed (2013, p. 215), ‘the shortfalls in validity and reliability of the measurement instrument may lead to negative effects on the quality of data’. Squared Multiple Correlation (SMC) (item reliability), Cronbach's alpha, Construct Reliability (composite reliability) (CR), and Average Variance Extracted (AVE) are four tests used to evaluate the reliability of the model.

To measure reliability for each construct of the model, Cronbach's alpha is used for internal consistency, while Squared Multiple Correlation (SMC) is measured to assess the item reliability. SMC is considered to be a main indicator to measure the reliability of all observed variable (items). According to Holmes-Smith (2011), the value of SMC is considered to be acceptable with $SMC > .30$, while for Cronbach's alpha it is good when it is more than $.70$. Based on Table 5.14, the whole values of SMC are higher than $.30$ and, moreover, the majority of items show SMC exceeded $.60$, which represents 86% (19 items out of 22). Three items were between $.470$ and $.578$ (IQ.1, S.5 and IQ.2). The value of SMC indicates that the majority of items in the model are highly reliable. Regarding Cronbach's alpha, the acceptable level of this indicator is 0.70 . The constructs in the model exceeded the acceptable level with values between $.868$ and $.921$, which shown a very good indicator for model reliability. Average Variance Extracted (AVE) was employed to test the reliability of constructs, and the constructs exceeded the acceptable level of 0.50 .

The measurement of validity was also tested using different statistical indicators. The convergent validity focuses on testing relationships among the construct and the observed variables. The factor loading of each item should be statistically significant and the value of the factor loading should exceed 0.50 . The values of factor loading indicators, shown in Table 5.14, were between $.686$ and $.949$. The factor loading results confirmed the validity of the model constructs. Construct validity is used to test the validity of indicators to measure their constructs. The indices of goodness-of-fit measures point to construct validity.

Table 5-14 Reliability and validity indicators

Variable	Item	SMC	Factor loading	Cronbach's Alpha	AVE*	CR**
Trust	T.1	.696	.775	.894	.675	.915
	T.3	.838	.783			
	T.4	.613	.916			
	T.5	.600	.834			
Support	Sp.2	.718	.912	.868	.524	.832
	Sp.4	.831	.847			
	Sp.5	.536	.732			
Security	S.1	.693	.758	.898	.822	.877
	S.2	.733	.864			
	S.3	.747	.856			
	S.5	.575	.833			
Perceived Ease of Use	PEOU.2	.707	.779	.904	.657	.906
	PEOU.3	.791	.845			
	PEOU.4	.713	.889			
	PEOU.5	.607	.841			
Perceived Usefulness	PU.1	.754	.797	.877	.706	.928
	PU.2	.770	.899			
	PU.3	.808	.877			
	PU.4	.635	.868			
Internet Quality	IQ.1	.470	.797	.920	.591	.851
	IQ.2	.578	.847			
	IQ.3	.717	.760			
	IQ.4	.635	.686			
Intention to use Online banking	Int.1	.745	.864	.921	.793	.924
	Int.2	.902	.949			
	Int.3	.746	.863			

*Average Variance Extracted. **Construct Reliability

The Square Root of Average Variance Extracted (SRAVE) is a key method to measure discriminant validity of every construct and should exceed its correlation with other constructs (Ahmed 2013; Chin 1998; Guo et al. 2011). Table 5.15 illustrates the results of discriminant validity which achieved an acceptable level of discriminant validity.

Table 5-15 Discriminant validity analyses

Constructs	PU	PEOU	IQ	Sp	T	S	Int
PU	0.702						
PEOU	0.639	0.651					
IQ	0.183	0.256	0.594				
Sp	0.642	0.563	0.236	0.783			
T	0.492	0.393	0.224	0.352	0.678		
S	0.523	0.136	0.125	0.456	0.368	0.736	
Int	0.562	0.447	0.179	0.256	0.548	0.563	0.797

The analysis of the data focused on testing the reliability and validity of measurement used in this study. Four tests were used to evaluate the reliability and confirm the reliability of the instrument used in this study. The findings of validity tests indicate that the measurement is valid to measure the constructs of online banking adoption.

5.3.5 Testing the study model and the hypotheses

The proposed model is intended to achieve the study objective of measuring factors that may affect customers' intention to adopt Internet banking services. Seven constructs were selected to test the adoption of Internet banking services from the perspective of bank customers.

The model of this study is designed to investigate the relationships among the seven constructs. The model is an extension of the TAM model to measure individual intention to use Internet banking (*Perceived Usefulness and Perceived Ease of Use*); and four external variables have been added to the model (*Trust, Security, Internet Quality and Support*). There are seven relationships to be examined where the relationships are formulated as the study hypotheses.

The values of regression coefficient (β) are classified into three degrees of strength: 0.2 = Low; between 0.2 and 0.5 = Moderate; and more than 0.5 = Strong (Cohen 1988; Sridharan et al. 2010). In terms of the study model, the majority of paths show moderate contribution, as shown in Figure 22.

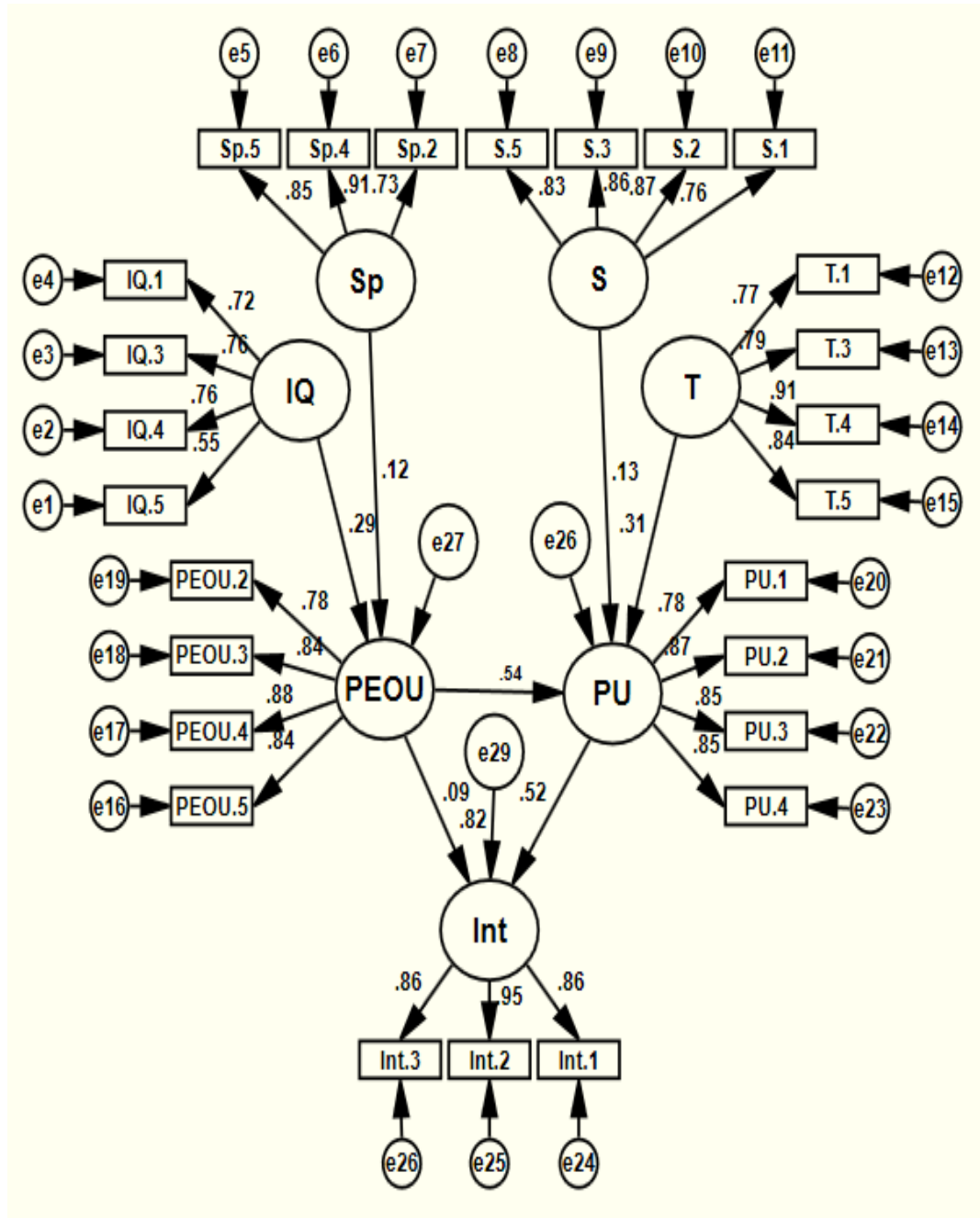


Figure 22 Results of SEM of the study model

The total variation in endogenous constructs explained by the exogenous constructs is measured by R^2 . According to Cohen (1988) and Sridharan et al (2010), the values of R^2 are classified into: 0.670 = Substantial; 0.333 = Moderate; and 0.190 = Low (Cohen 1988; Sridharan et al. 2010). The results detailed in Table 5.16 indicate that Internet quality and support of online banking can explain 20% of the variance in PEOU. Trust and security of Internet banking explains 41% variation in PU of using online banking. PEOU and PU can explain 32% of variance in customer preparation in adopting online banking. It is clear that all the constructs can satisfactorily explain the relationships of interest.

5.3.5.6 Testing the exogenous factors

Four exogenous factors are employed in this study (*Internet quality, Support, security and Trust*). According to the results shown in Table 5.16, the results of regression (β) tests confirm the important role of Internet quality and support in achieving the ease of use of Internet banking. The quality of infrastructure of the Internet is observed to significantly encourage the use of online banking (β .125, p-value=.008), and, based on this result, H4 ‘The availability of adequate, reliable Internet network quality is positively related to perceived ease of use’ is accepted. Significantly, the PEOU is also found to be positively affected by the level of support (β .414, p-value=.000), thus, H5 ‘The level of support available to consumers is positively related to perceived ease of use’ is accepted. The results also confirm the essential role of security and trust in Internet banking. In terms of the sixth hypothesis, the security factor shows a significant positive effect on the PU of online banking (β .105, p-value=.001), and hence, H6 ‘The perceived level of security is positively related to perceived usefulness’ is accepted. Finally, in terms of the seventh hypothesis, trust can significantly lead to an increase in PU (β .288, p-value=.000) and, thus, H7 ‘The perceived level of trust is positively related to perceived usefulness’ is statistically accepted.

5.3.5.7 Testing the endogenous factor

The effect of PEOU on customers’ intention to use Internet banking is found to be positive but not significant (β .068, p-value=.072) and, hence, H1 ‘Perceived ease of use is positively related to the preparedness of Libyan banking consumers to adopt Internet banking’ is rejected. Significantly, PEOU leads to an increase in PU of online banking services (β .423, p-value=.000) and the hypothesis H2 ‘Perceived Ease of Use’ is positively related to perceived usefulness’ is strongly accepted.

Table 5-16 Regression weights of the model

Variable	Effect direction	variable	Estimate (β)	R ²	C.R	P-value	Hyp	Decision
PEOU	←	IQ	.125	.20	2.664	.008	H4	Accepted
PEOU	←	Sp	.414		5.418	.000	H5	Accepted
PU	←	S	.105	.41	3.235	.001	H6	Accepted
PU	←	T	.288		7.418	.000	H7	Accepted
PU	←	PEOU	.423		11.976	.000	H2	Accepted
Int	←	PEOU	.068	.32	1.800	.072	H1	Rejected
Int	←	PU	.506		9.531	.000	H3	Accepted

Regarding H3, PU shows a positive significant effect on the Intention (Int) of using online banking (β .506, p-value=.000) and, as a result, H3 ‘Perceived usefulness is positively related to the preparedness of Libyan banking consumers to adopt Internet banking’ is accepted. Overall, the study model seems to perform well in supporting this research hypothesis.

5.4 Content Analysis of Bank Customers' Comments

For the purpose of gathering more data about customer reactions toward electronic banking services in the commercial banks in Libya a questionnaire containing 33 closed-ended questions were administered. An optional open-ended question was added to the survey, namely: '*We appreciate any comments or if you want to add any other information that is not mentioned in this questionnaire, and you think is important for this study*'. The purpose of the optional question is to allow customers of commercial banks to add any comments or suggestions or proposals they deem important when making decision relating to e-banking services. Comments received from the customer answers were analysed using content analysis method. The main purpose of using this method is to sort the text into categories (Weber 1990) and is used in this study to identify and classify the most frequently occurring keywords in the comments by customers from the banks surveyed.

The optional open-ended question at the end of the questionnaire enables the identification and classification of any additional significant issues relating to Internet banking; and also enables customers to comment about factors not mentioned in the questionnaire that may impact on their willingness to use such a service. Only 124 of the 536 participants (23.1%) answered the optional open-ended question in the questionnaire. They stressed the importance of 373 comments, recommendations and proposals. Table (5.17) shows the most significant of those comments, which were classified into themes and sub-themes in order of importance.

Most of the comments support the importance and benefits of e-banking services. Many customers' answers support the view that the world is witnessing large-scale changes as a result of massive development in the field of information technology that impacts on all walks of life, including banking. Most respondents confirm that Libyan banks are slow to adopt banking technology, or are only in the early stages of adoption. The objective of this study is to demonstrate what is required to move speedily towards the adoption of banking services via the Internet in Libya. Electronic banking applications in Libya are required to link effectively to global banking experiences and take advantage of developments in this field. It will also link Libyan banks to the global financial community to expand their services. These electronic banking groups are (1) commercial bank customers who deal with electronic banking tools;(2) commercial banks which are responsible for the provision of electronic banking tools; and (3) the Central Bank as a monetary authority with oversight on banks and a source of legislation and banking laws, as well as being responsible for the application and control measures with regard to electronic banking.

The most important comments mentioned by clients of commercial banks when answering the optional question include, as preliminary words and then more repetitiously, words such as the communication infrastructure and the Internet network in particular, banking services and products provided, safety factor, trust factor, the culture of the customers and the role of the media in the dissemination of electronic culture, electronic technology used in commercial banks, privacy, and other issues. The following is a detailed presentation of the themes and the most important comments mentioned repeatedly by respondents.

5.4.1 Communications infrastructure

This factor collects 85 or 22.6% of comments or recommendation of the clients of commercial banks participating in the survey. Customers commented that the quality of communications in general and the Internet in particular are the most important factors impacting their decision whether or not to adopt electronic banking—as displayed on the websites of commercial banks in Libya. Issues include communications network and Internet quality, efficiency, constant interruptions, speed, cost, and poor communication. Participants mentioned different aspects concerning the importance of communication and the Internet. They included demanding ‘*more attention to the network by the government*’ and some respondents commented that ‘*the network does not cover all parts of Libya, and there is no good network*’. There is general consensus among the participants that more attention needs to be paid to the communication network and the Internet. The quality and effectiveness of the network in terms of speed and communication controls are views put forward by most of the participants. Many of them see that ‘*the biggest obstacle to use banking services via the Internet is a continuous drop in the network or its weakness in terms of communication and speed, and high subscription costs and lack of interest in the Internet network*’—as well as the need for the communication network to be improved or maintained on a regular basis.

5.4.2 Online banking products and services

The type of services and electronic banking products provided is ranked second place in terms of importance (after the communication infrastructure) regarding the acceptance of the use of banking services via the Internet in Libya. A total of 68 common views emerged including 18.2% on a number of themes such as the resoluteness of legislators in the provision of banking services, electronic subscription costs, the desires and needs of customers of those services, conditions of access to banking products and electronic services and pricing, a variety of services still to be activated, and the speed of response to requests by the bank customers. Respondents also believe that government banks are not serious about providing electronic banking services products: ‘*The departments of these banks still prefer to offer banking services by traditional ways*’. Others also mentioned other points they deem important to support them in the use of technology in banking services—for example, ‘*the management of the bank put a high cost to participate in the electronic bank services*’. Here, one of the participants mentioned that the Bank of Commerce and Development (BCD), for example, ‘*deduct the value of the costs of electronic banking from the client in advance and without the consent of the customer or disagreement in the use of service the bank address such as text messages via phone banking operations*’ that occur in the client's account to withdraw and deposit. Another said ‘*the bank's management considers that these expenses from compulsory fees regardless of the willingness and/or unwillingness of the client to participate in this service*’. As well, a number of participants stated that ‘*the services provided do not require quality*’. ‘*The bank's administration does not take into account the wishes of the participants in most cases*’ in terms of the products offered. One customer said that ‘*the management of the bank sometimes impose certain conditions to get the type of service provided*’, and ‘*most of the services and products provide exposure without consulting the client about their desires or needs*’. Additionally, there is a number of ‘*electronic banking services [that] are not fully activated*’, such as number of services listed on the websites of

Libyan commercial banks. Furthermore, respondents indicated that *'there are slow or sometimes non-response to customer requests and correspondence through electronic means'* by the management of the banks to emails; or decisions regarding acceptance or rejection after filling out electronic forms to obtain services.

Table 5-17 Themes and sub-themes of customers' comments

Themes (Constructs)	Sub-themes	Frequency & Percentage	
		No	%
Communications infrastructure	Communications network and the Internet quality, efficiency, constant interruptions, speed, cost, poor communication.	85	22.6 %
Banking products and services	The seriousness of providing online banking services, electronic subscription costs, The desires and needs of customers, conditions of using banking products and services, pricing, services and products are not activated, response to requests.	68	12.2 %
Safety and Security	Bank website protection, spy, personal and financial information protection, virus risks, frequent breakdowns experienced.	63	16.8 %
Trust factor	Trust services provided via the Internet, Visa card, and transfer of funds.	55	14.7 %
Culture and Media	Unawareness of computer and Internet, electronic culture, knowledge of technology benefits, the media news, guidance bulletins, awareness of banking services and products.	45	12 %
Technology used in commercial banks	Modern banking systems, unified system, mobile service.	35	9.3 %
Privacy	Respecting privacy, protect personal and financial information, standards of information security.	22	5.8 %
Other issues	Language, elderly, training, customer support, development of bank staff.	7	0.06 %

5.4.3 Safety and Security

From the survey respondents, 63 (16.8 %) highlighted the issue of safety and security. These aspects included protecting the site from acts of Internet/computer piracy or spying on customers' accounts, the protection of personal and financial information, the general risks associated with the site and running programs to guard against viruses, as well as frequent breakdowns experienced by electronic devices. Most customers believe that there is inadequate website protection. One commented on *'the existence of sites similar to the bank site on the Internet'* which, according to their viewpoint, represents the biggest threat to the customers. A number of respondents said that *'the bank may have inadequate security which may allow spying on customers' accounts from inside the country and abroad'*. Another was concerned about *the high number of computer hackers and the danger of bank transfers when using these services via electronic means'*. Some participants required the provision of protection for customer accounts and their personal and financial information. Another stressed *'the absence of laws or sufficient guarantees of bank management to protect the personal and financial information'* of individuals as a factor hindering the use of electronic services. Most respondents believe *'the fear factors of theft or piracy are the most important factors that hinder customers' participation in the electronic services'* of commercial banks in Libya.

They also highlight the need for adequate protection of their assets from any theft or loss, piracy, mistakes by banking staff, virus attacks on banks' software, or electronic faults that occur while using banking services via the Internet.

5.4.4 Trust factor

A total of 55 (14.7 %) of participants' comments confirmed that the trust factor is linked closely to the safety and security factor and directly affects the acceptance of the use of electronic banking services. One of the participants said that *'he could not trust the electronic banking services as long as he did not feel safe when using those services'*. A number of respondents indicated they do not have trust in services provided via the Internet. Moreover, other noted that *'they do not [have] trust in the use of Visa card, or transfer of funds from [one] account to [another] account'* compared with the direct dealing of money via hand-in-hand delivery. Some also pointed to a *'lack of confidence in electronic means when you send money out of the country'*. One of the participants said that *'he would prefer handing money directly or through honesty certified [means] because it is less risky than the use of electronic means of payment or transfer of money'*.

5.4.5 Culture and Media

A total of 45 participants (12%) stated that many customers are unfamiliar with the use of computers and Internet as a result of their culture and level of education and, therefore, lack understanding or knowledge of recent developments in information technology and developments in services provided via the Internet. Participants stressed *'the role of media and their failure to improve the Libyan population's awareness and dissemination of electronic culture'* through various media outlets via various means—especially in light of the world witnessing a technological revolution in the field of information and communication and worldwide attempts to keep up with developments in various electronic services, particularly in electronic banking services. The participants specifically pointed out the *'lack of knowledge of the benefits of electronic channels'*; and a number of participants indicated that they *'hear in the media news of piracy and theft in banks that provide services on the Internet more than the importance and benefits in the use of banking services via the Internet'*. These benefits include saving time, effort and money. Moreover, deficiencies exist in the provision of guidance bulletins by banks for users of electronic banking services detailing the advantages and benefits of electronic banking to customers. Finally, the participants point out that *'management must bear responsibility in contributing in earnest to customer awareness of banking services through electronic means'* via publications or various media to ensure the electronic dissemination of information to encourage customers to use services and electronic banking products.

5.4.6 The technology used in commercial banks

Participants provided 35 comments (9.3%) relating to this factor and said the *'banks administration should provide advanced technology and modern banking systems to compete with the big banks and foreign banks'*. Participants also called for the provision of modern, unified systems to connect bank branches, as well as connecting all banks operating in Libya with each other and with banks in other countries. A number of participants pointed to *'the importance of developing technology used banks via mobile phone. The mobile service should not be used just*

to send text messages to all banking operations. It should allow them to use 'mobile phone banking to complete their transactions via the telephone network in the event of a malfunction or if disconnected from the Internet network', or during a power outage, or when 'they are on somewhere that they do not connect with the network of Internet services'.

5.4.7 Privacy

A total of 22 (5.8%) respondents were concerned about their privacy when using the websites of the commercial bank. These concerns include the quality of the information collected, how to use it and the parties involved, as well as the extent to which banks are committed to respecting the privacy of customers' personal and financial information. Some pointed to 'the lack of clarity in cases in which the bank is forced to disclose such information by law'. They want bank management to assure them that their information is being treated as confidential and has the highest level of security; and that 'the use is limited to the minimum, which allows the bank to continue to monitor and improve the services provided to its customers'. One of the participants asks about 'to what extent the bank applies standards and strict security measures in order to prevent access to your information without authorisation'; and the extent of 'the bank's determination to follow the international standards recognised in the field of protecting the privacy of personal information completely'. Another requirement from management in the bank's commitment to its employees is to ensure the highest standards of security and confidentiality. Other comment was that 'bank management must assume responsibility for maintaining the confidentiality of the user's identity and log on details'.

5.4.8 Other issues

Customers emerged as a factor in 7 (0.06%) comments and issues relating to this factor include language, the elderly, training and development of bank staff, and customer support. One of the participants pointed to 'the use of English-language systems in many aspects', in addition to 'a lack of understanding of a number of banking terminologies on the bank's website in Arabic', "without mention of those terms". One of the participants pointed out that the elderly (aged 50 years or over) 'do not use the Internet'. The participants again stressed 'the importance of training bank staff on electronic banking services', and the undertaking of courses and training programs to provide competent staff. Another pointed to 'the importance of selecting capable directors of banks and increasing awareness among the staff of the bank'. Finally, one of the participants stressed 'the importance of customer support when needed'.

5.5 Chapter summary

This Chapter analysed the data collected from the customers of four major Libyan commercial banks. The first part offered descriptive statistic of the study questionnaire. The second part focused on establishing the measurement model and testing the study model and hypotheses. This included five stages, one-factor congeneric measurement model, exogenous and endogenous factor first-order, measurement model, testing the validity and reliability, and testing the study model and hypotheses. The third part analysed the comments received from participants.

CHAPTER SIX

This Chapter discusses the results of testing the study model on barriers to adopting online banking services. In addition to the introduction section, this chapter is divided into four sections. The first section of the chapter discusses the results obtained from analysing demographic variables. The second section discusses the results of the measurement model (the validity and reliability) in measuring each construct. The third section discusses the results of testing the hypotheses of endogenous and exogenous factors of the study model based on the perceptions of Libyan bank customers. The fourth and final section discusses the content analysis results.

6. CHAPTER SIX: DISCUSSION

6.3 Introduction

The results of the data analysis of the quantitative data obtained from the survey questionnaire presented in the results Chapter will be discussed herein. The interpretation of the findings will be derived from a synthesis of prior studies with the data gathered in this study. This will make it possible to understand customers' perceptions about factors affecting their acceptance in using modern technology in the form of Internet banking services in the banking sector in Libya.

This study proposed an extended of TAM model to measure customers' behaviours and attitude toward the adoption of Internet banking within the Libyan banking sector. The model tested the perceptions of bank customers with the results obtained from examining the model outlined in Chapter 5. Additional details about testing the models and the hypotheses, together with the contribution of the study, will be provided in this Chapter.

The research problem is that this study deals with individuals' delay or hesitation in using the Internet and its applications in online banking. The main question of the research included in this thesis is to identify important factors that could affect customers' adoption and usage of online banking services in Libya and, subsequently, determine their significance. This study is based on the interpretation of the impact of a number of factors, including individual points of view of customers in the adoption of online banking services.

This study aims to identify factors that could affect the acceptance of the use of online banking services in developing countries such as Libya. It has attempted to identify some of these factors in the literature on the adoption of information technology—where most of the previous research has been conducted mainly in developed countries. A review of the literature has been provided in the second chapter of this study, which indicates that TAM is the basis for much of the research conducted on individuals' behaviour towards the usage and dissemination of information technology. In addition to the main variables of TEM (PEOU and PU), the TAM model may need to be extended to include the specific issues of security and trust on the customer side, support provided to bank management and staff for assisting customers to use the technology and services on the side of the banks, and the development and improvement of the Internet infrastructure on the side of the government.

In interpreting the findings, this study suggests the effect of a number of factors that can lead to solutions to encourage customers of commercial banks to use banking services via the Internet. The result of this study will contribute to make banking services more efficient and active in developing countries in general, and in Libya in particular. Acceptance by the fast growing group of individuals in the use of electronic banking services will encourage banks to invest heavily in infrastructure and online banking, thus reducing transaction costs and saving time. Consequently, many of the commercial banks will be able to accept applications for consumer transactions over the Internet and provide an opportunity for customers to perform banking activities (*anywhere, anytime*) via the Internet—during both official working hours or after hours, including public holidays. It is well understood that productivity gains can be achieved only if banks' customers adopted online banking.

Unfortunately, the adoption of online banking has been very slow in Libya despite the fact that Libyan commercial banks offer the service.

The objective of the study is to utilise the study results to assist decision-makers in the Libyan government and the banking sector in particular to address those constraints and encourage individuals to use online banking services in Libya. As seen in Libya today as a result of reconstruction in most economic sectors, infrastructure and other, local banks need to understand customer trends and needs and should adopt appropriate plans and strategies to build a strong future. Therefore, banks should use the results of this study to promote the benefits of online banking and establish a wider customer base through the Internet. Such action will contribute to economic development in general, and increase profits and eliminate the need to open new branches.

This Chapter is divided into four main sections. The results obtained from analysing demographic variables are detailed in the first section. The second section discusses the results of measurement models. The third section discusses structural models and testing the hypotheses. The fourth section is allocated to discussing the results of content analysis of comments from bank customers who participated in the study survey.

6.4 The findings of demographic data

The participants of this study represent the original community of the study to achieve the purposes of research. This sample is the customers of commercial banks (*Wahda Bank, Development and Commerce Bank, National Commercial Bank and Jumhouria Bank*) in major cities in Libya (*Tripoli and Benghazi*). The sample is representative of the original research community who are customers of commercial banks in the Libyan banking sector.

As mentioned in the methodology chapter (section 4.7), a random method or probabilistic approach has been used to choose individuals representative of the community being studied in order to elicit an accurate representation. Everyone in the community had an equal opportunity to participate in the survey; and the choice of any individual does not affect the choice of others. The random selection method is the most effective way of obtaining a representative sample (Neuman 2007) necessary in the use of statistical methods.

The following paragraphs describe the results achieved from analysing (frequency and percentage) demographic information for each variable, and are discussed as per the survey categories. The sample characteristics of this study are described by gender, age and educational level.

- Regarding the gender of the survey participants, the majority were males (74%), who participated in the survey. Overall, there were 397 male participants and 139 female participants (26%), meaning that more than a quarter of the sample was from the female element. This does not imply that men (approximately 1:3) had more opportunity to participate than women. Note, however, that during the distribution of the questionnaire by the researcher to bank customers, men were more willing and confident to express their point of view regarding electronic banking services in Libyan

commercial banks. Thus, the majority of participation in the survey sample was from males.

Table 6-1 Summary of the sample gender

Gender	No	Percentage
Male	397	74 %
Female	139	26 %

- The largest number of participants (203) was in the category of those aged between 35-44; with a participation rate of 38% in this category. It is followed in second place by participants aged between 25-34 (182 or 34%). Participants from the age category of 45-54 elicited a participation rate of 17% (91 participants). The other age groups were almost equal (age 18-24 numbered 21), (age 55–64, numbered 22) and those aged 65 or older numbered 17—with rates 3.9%, 4% and 3.1% respectively.
- Most of the participants were from the High Diploma category and numbered 232 with a participation rate of 43.3%. This was followed by high school holders (general and specialised) with 133 participants (24.8%). Undergraduate and post-graduate university numbered 80 and 29 (rated 15% and 5.4 % respectively).

Table 6-2 Summary of the sample education level

Education level	No	Percentage
Primary/secondary school	62	11.5 %
High school	133	24.8%
High Diploma	232	43.3%
Undergraduate university	80	15%
Post-graduate university	29	5.4 %

- Results show that 86% of the 461 respondents to the survey have their own computer. However, 14% of respondents do not have a personal computer.
- The results show that most of the members of the sample (472 respondents or 88%) can connect to the Internet in Libya, while 64 respondents (12%) cannot connect to the Internet.
- The results indicate that 337 (63%) of respondents with experience in the use of the Internet does not exceed one year. Users who exceed their experience of more than 2-5 years numbered 112, or 20.9%, while the number of individuals who exceed their use of the Internet over five years was 84 (15.6%) members.

Table 6-3 Summary of the sample Internet experience

Period	No	Percentage
Do not use	3	0.05 %
1 year (or less)	337	63 %
2–5 years	112	20.9 %
Over 5 years	84	15.6 %

- The results reported that all members of the sample have bank accounts at commercial banks under study and research (*Wahda Bank, Development and Commerce Bank, National Commercial Bank and Jumhouria Bank*). These results indicate that the highest level of participation in the survey was from clients of the Jumhouria Bank with 161 participants (30%). The second group of clients was from the Development and Commerce Bank with a participation rate of 138 (25.7%). From Wahda Bank, 126 (23.6%) customers participated and, finally, 111 (20.7%) National Commercial Bank clients participated.

Table 6-4 Summary of the survey participants of each bank

Bank	No	Percentage
Wahda Bank	126	23.6 %
Development and Commerce Bank	138	25.7 %
National Commercial Bank	111	20.7 %
Jumhouria Bank	161	30 %

With respect to the means used by the customer upon completion of their business with banks, including face-to-face banking services, Internet banking, e-mail banking, phone banking and mobile banking, the results are detailed as follows:

- The results show that most of the respondents still prefer to visit the bank and complete their banking transactions face-to-face, with 36.4% visiting the bank on a daily basis, 42.9% going to the bank every week, and the remainder (0.02%) going to the bank on a monthly or quarterly basis.

Table 6-5 Summary of face to face banking

Method	Daily		Weekly		Monthly		Quarterly	
	No	%	No	%	No	%	No	%
Face to face	195	36.4	230	42.9	97	18.0	14	0.02

- The results show that 236 (or 44%) of respondents are unaware of the existence of banking services via the Internet; and 245 said that they do not use the Internet to complete their transactions with the bank. Internet banking by users on a daily, weekly, monthly or quarterly basis was rated 1.3%, 2.98 %, 1.3 % and 3.73%, respectively.

Table 6-6 Summary of Internet banking users

Not available		Do not use		Daily		Weekly		Monthly		Quarterly	
No	%	No	%	No	%	No	%	No	%	No	%
236	44.0	245	45.7	7	1.3	16	2.98	7	1.3	20	3.73

- Results indicate that most participants (92.2%) do not use email banking for their dealings with the bank. E-mail banking means that bank

customers can send and receive information, requests, news, offers and applications for any services.

- The results show that banking services via phone banking usage is very limited, and 41.9% said that banking services via phone is not available.
- Banking services via mobile banking are used in a small number of services such as balance inquiry via text messages or receiving text messages in the event of any banking operations in the calculation of work such as a deposit or withdrawal.

6.5 Discussion of the measurement model

This section deals with the set of data gathered from Libyan banking customers via questionnaire. Structural Equation Modelling (SEM) was employed to analyse the set of data using AMOS software. This approach was adopted to analyse two models: measurement model and structural model. The measurement and structural models (section 6.4) are employed to examine the proposed model. The measurement model using Confirmatory Factor Analysis (CFA) shows how each observed variable relates to their construct. The structural model was used to represent the hypotheses of the endogenous and exogenous factors formulated in studies adopting SEM. The results from analysis of the measurement model for each construct will now be discussed.

6.5.1 Perceived Ease of Use

This study adopted Perceived Ease of Use (PEOU) as a basis construct to achieve the success of Internet banking adoption in Libyan commercial banks. Five items were used to measure this construct and each item was engaged to measure a specific aspect of PEOU construct: the ease of learning to operate online banking, the ease of reaching online banking, clear and understandable interaction with online banking, flexibility and interaction of Internet banking and the ease of using online banking. However, one item was eliminated as a measure of PEOU: the ease of learning to operate online banking. This item was eliminated based on theoretical and statistical grounds as described in section 5.3.1.1. The measurement model indicators have confirmed the reliability and validity of PEOU construct in evaluating the success of Internet banking adoption. The results support the significant role of PEOU in measuring Internet banking adoption from the viewpoint of bank customers. These results regarding the valid and reliable role of PEOU in assessing the success of Internet banking adoption are consistent with results of several (Davis 1989; Fenech 1998; Jahangir & Begum 2008; Riffai, Grant & Edgar 2012; Shen & Chiou 2010; Suki & Suki 2011; Venkatesh & Davis 1996)

6.5.2 Perceived Usefulness

The study assumed that Perceived Usefulness (PU) is a fundamental measure of the success of Internet banking adoption in Libya. The latent construct for PU is measured by five items. One item was eliminated based on theoretical and statistical grounds. Subsequently, the rest of the items become satisfactory, then, four items significantly represented PU of Internet banking adoption: the speed in accomplishing banking services, improvement in banking performance, increased productivity and online banking making banking services simpler. The findings from the measurement model confirm that PU in the adoption of Internet banking is a

valid and reliable construct. The results confirm the significant role of PU in assessing Internet banking adoption from the perspective of bank customers. This result is in agreement with results of studies undertaken in the e-banking field, for example, Fenech (1998), Jahangir and Begum (2008), Wu, Lin, Li and Lin, (2010), and Suki and Suki (2011). In a study conducted by Echchabi (2011) in Morocco he stated that ‘perceived usefulness has significant positive influence on the customers’ attitude towards online banking’ (p. 4).

6.5.3 Internet quality

The Internet quality (IQ) construct was adopted in this study to assess the Internet connection quality for adoption of Internet banking by customers. Five items distributed through the questionnaire were adopted to measure this construct regarding bank customers’ perceived: ease of accessing the bank’s website, access to the bank’s website anywhere and anytime, the ability to use handy mobile equipment to access the network of online facilities, the compatibility of infrastructure of the online banking network with mobile phones and the cost of Internet services in Libya. One item was eliminated because it did not significantly represent the construct ‘the cost of Internet services in Libya’. The results presented in this study confirm the validity and reliability of IQ construct and confirm the role of Internet network quality as an essential construct in evaluating the achievement of Internet banking adoption—as previously found by various studies (Al-Somali, Gholami & Clegg 2008; Pikkarainen et al. 2004; Sathye 1999; Shih 2011). These studies have explored and confirm the role of Internet quality construct. Internet access is considered one of the factors affecting the adoption of online banking (Sathye 1999).

6.5.4 Support

The support (Sp) construct is assumed in this research to evaluate the accomplishment of e-banking services via the Internet network in Libya. Five items were established in the questionnaire to measure the ‘Sp’ construct. As explained in the results Chapter (section 5.3.1.4), only three items out of five were significant to measure the bank customers’ support to accept using banking websites to accomplish their banking services: the availability of an online help facility on the bank’s website, providing 24 hour customer support via the bank’s website and the ability of online banking to enable customers to provide feedback or lodge complaints and receive a response in a reasonable timeframe. The loading coefficients for these three items are very good. Two items were eliminated because they did not significantly represent the importance of the support construct: the commitment of bank personnel to supporting customers using online banking services and training of bank management and personnel to enable them to provide assistance and support in the usage of online banking. The measurement model indicators have confirmed the reliability and validity of Sp construct in assessing the success of Internet banking adoption by Libyan bank customers. Twati (2008) pointed out that ‘There are many issue to consider when adopting IS, lack of organisational readiness for adoption; inadequate support for the needed change and inadequate support and user involvement’ (p. 5). ‘Sp’ construct in estimating the success of Internet banking adoption was previously established by many studies (Chong et al. 2010; Hasan & Gould 2001; Khan 2005; Stewart 2000; Twati 2008; Wu et al. 2010).

6.5.5 Security

Security (S) was selected in this study to be an essential construct of Internet banking adoption. The items used to measure S factor about Internet banking adoption in Libya reflected five aspects: using online banking that is financially secure, concerns about the security of online banking, security concerns about disclosing personal information on the bank website, the safety of online banking versus visiting the actual bank branch, and security concerns about online banking despite lack of knowledge in this area. One item was eliminated because it did not significantly represent the S construct 'the safety of online banking versus visiting the actual bank branch'. Subsequently, four aspects (items) significantly represented the construct of 'S' based on the perspectives of Libyan banking consumers. The results from the measurement model regarding 'S' confirmed the reliability and validity of the 'S' construct in measuring the success of Internet banking adoption by customers in the Libyan banking sector. The results are consistent with results of many studies, for instance, Alnsour and Al-Hyari (2011), Guo, Yuan, Archer, and Connelly (2011), Jahangir and Begum (2008), Hernandez and Mazzon (2007), Chen and Barnes (2007), Sathye (1999), Hamlet and Strube (2000), Tan and Teo (2000), Polatoglu and Ekin (2001), Black et al (2002), Howcroft et al (2002) and Moga, Nor, Neculita, and Khani (2012). Chen and Barnes (2007) highlighted that 'perceived security had a positive influence on consumers' online initial trust' (p. 30). According to Yousafzai et al (2003), 'the negative perception of the security of electronic banking seems to remain one of the most significant barriers for its adoption' (p 848). Security is widely recognised as one of the main obstacles in the adoption of electronic banking (Aladwani 2001).

6.5.6 Trust

This study hypothesised that customer trust (T) in Internet banking is a key measure in the adoption of online banking in Libya from the perspective of bank customers. Five items were used to estimate 'T' of bank customers: trust in using online banking services, ability of online banking to protect privacy, trust in the benefits of online banking rather than face-to-face banking services, tendency to trust online banking is high and online banking will keep the promises made to the customer. One item was removed as a measure of 'T': ability of online banking to protect privacy. This item was eliminated based on theoretical and statistical grounds as explained in the results Chapter (section 5.3.1.6). The indicators of the measurement model have confirmed the reliability and validity of 'T' construct in assessing customer intention to use Internet banking. The crucial role of 'T' in measuring the customers' adoption of Internet banking was confirmed by previous studies such as Yousafzai, Pallister and Foxall (2003), Suh and Han (2003), Trbovich and Patrick (2004), Schaefer (2005), Pearson (2007), Grabner-Kräuter and Faullant (2008), Goles, Lee, Rao, and Warren (2009), Alnsour and Al-Hyari (2011), Moga, Nor, Neculita and Khani (2012).

6.6 Discussion on the structural model and hypotheses

The suggested model of this study proposes to achieve the study objective of measuring factors that may affect banking consumers' attitude toward the adoption of Internet banking services in Libya. The model is an extension of the TAM model to measure individual intention to use Internet banking (endogenous factors: *Perceived Usefulness and Perceived Ease of Use*); and additional external variables

have been supplemented to the model (exogenous factors: *Internet Quality, Support, Trust and Security*).

This section will discuss the structural model which seeks to examine the relationships among these constructs based on the model design and seven hypotheses formulated to explore the nature of relationships of the model constructs. The model of this study is suggested to measure the abstracts of Internet banking adoption employed with Libyan bank customers. The discussion of the relationships among the constructs of the proposed model is based on the hypotheses formulated in this study.

6.6.1 Discussion on the results of the endogenous factors

The Technology Acceptance Model (TAM) is theory used to investigate the new technology adoption. TAM is applied in this study to test the endogenous factors (*Perceived Ease of Use (PEOU)* and *Perceived Usefulness (PU)*) as two main reasons for bank customers to adopt new technology. The endogenous factors hypotheses are outlined based on the relationships among the PEOU and PU constructs employed in this study. Based on the model relationships, PEOU and PU are hypothesised to be a determinant of customer intention to use Internet banking in Libya. The results of each hypothesis will now be discussed.

6.6.1.6 Perceived Ease of Use

Two hypotheses (H1 and H2) were formulated to explore the impact of PEOU on the preparedness of Libyan banking consumers to adopt Internet banking. The findings of this study support hypothesis (H2); and the impact of PEOU on customer attitude toward acceptance online banking (H1) was unusual as it was positive but not significant. The effect of PEOU construct is now discussed.

- **H1: Perceived ease of use is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.**

Hypothesis (H1) was formulated to test the influence of PEOU on Libyan banking customers' attitude toward adoption of Internet banking services offered by Libyan commercial banks. The results of the customer perspectives indicate that the impact of PEOU was unexpected as it was positive but not significant. TAM studies found that PEOU has less influence on the new technology acceptance compared to PU (e.g. Davis, 1989; Davis et al., 1989). Grandy reported that the relationship between ease of use and attitude to use Internet banking is not significant (Grandy 1995). Pikkarainen et al conducted a study in 2004 and found that perceived ease of use does not influence the adoption of online banking. Gefen and Straub (2000) stated that 'PU affects intended adoption of IT, but has mostly failed to do so regarding PEOU' (p. 1). The results of this study regarding consumers' perceptions show that PEOU did not significantly support customer intention to use Internet banking.

The results indicate that ease of use of Internet banking is important and users or non-users do not face difficulties when they use new technology and Internet banking is an easy method to conduct banking business. This also indicates that the PEOU of online banking services alone cannot determine bank customers' adoption unless associated with the other attributes such as the quality of Internet network and bank staff support that can subsequently influence the customers' intention to use

online banking. Previous studies conducted by Adams et al. (1992), Chau (1996), Davis (1989) and Keil et al. (1995) have argued that PEOU is not an important factor in consumer acceptance of technology. Nonetheless, there are some factors that have an influence on the relationship between PEOU and individuals' behavioural intention. Those factors encompass Internet quality (IQ) and customer support (Sp).

H2: Perceived ease of use is positively related to perceived usefulness.

The results of this study regarding hypothesis (H2) are supported by the customers' perspective. According to Libyan banks' perceptions, PU is affected by PEOU; and aspects of PEOU are clearly related to supporting PU. Wu, Lin, Li and Lin (2010) indicated that 'PEOU has an impact on PU. This association is explained with the fact that as users is convinced with perceived ease of use, its impact becomes instrumental, PEOU impinges on acceptance through PU' (p. 6). The findings of other TAM studies also found that PEOU has an impact on PU (Al-Somali, Gholami & Clegg 2009; Cheng, Lam & Yeung 2006; Davis 1989). Jahangir and Begum (2008) conducted a study to investigate the effects of perceived usefulness, ease of use, security and privacy on customer adaptation mediated through customer attitude in the context of e-banking and stated that the 'study presented a conceptual framework that considers how perceived usefulness, ease of use, security and privacy affect customer adaptation to e-banking service through customer attitude in the context of Bangladesh' (p. 38).

6.6.1.7 Perceived Usefulness

Perceived Usefulness (PU) refers to the degree to which an individual believes that using a particular system will enhance his or her performance. PU is hypothesised to be a fundamental determinant of Libyan banking consumers' preparedness to accept using Internet banking. Based on the study model relationships, the result of PU hypotheses was tested to investigate the role of this construct.

- **H3: Perceived usefulness is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.**

The results of testing the hypotheses (H3) confirmed that the impact of PU construct is supported by the customers' perceived attitude toward their willingness to adopt and use online banking services. The results show that the PU construct plays a critical role in the effective adoption of Internet banking services by Libyan banking consumers. PU aspects such as speed in accomplishing banking services, improvement in banking performance and increased productivity, play a key function in supporting customers in their e-banking activities. These aspects can assist banking consumers in conducting their banking easily and quickly. The results of assessment of hypothesis (H3) are consistent with findings of several studies conducted by Fenech (1998), Jahangir and Begum (2008), Joo, Lim and Kim (2011), Suki and Suki (2011) and Wu, Lin, Li and Lin (2010). Jahangir and Begum (2008) conducted a study on the role of perceived usefulness and other factors to engender customer adaptation of electronic banking in Bangladesh and highlighted that 'the main focus of management attention should be on customer attitude of which perceived usefulness is very important antecedents' (p. 38). Echchabi (2011) conducted a study in a developing country by using TAM to explore factors that may lead Moroccan banking customers to adopt online banking. Echchabi stated that 'the

Moroccan banking customers are willing to adopt online banking. This will depend on the perceived usefulness of the online banking services' (p. 11). According to Lee (2009), 'perceived usefulness has a significant effect on the intention to use online banking; It has an indirect influence via attitude on behavioural intention to use online banking' (p. 138).

Table 6-7 Results of the hypotheses of the endogenous factors

Construct	Code	Hypothesis	Results
Perceived ease of use	H1	Perceived ease of use is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.	Rejected
	H2	Perceived ease of use is positively related to perceived usefulness.	Accepted
Perceived usefulness	H3	Perceived usefulness is positively related to the preparedness of Libyan banking consumers to adopt Internet banking.	Accepted

6.6.2 Discussion the results of the exogenous factors

This study has employed four exogenous factors (*Internet Quality, Support, Trust and Security*). Four hypotheses were formulated to explore the impact of these factors on the proposed model. The results of each hypothesis will now be discussed.

6.6.2.6 Internet Quality

Hypothesis (H4) is supported by Libyan banking consumers' perceptions. The results show that Internet Quality is a critical factor in providing customers with opportunities to connect to the bank website anytime and anywhere to accomplish their banking transactions easily. Internet Quality has an impact on PEOU.

- **H4: The availability of adequate, reliable Internet infrastructure is positively related to perceived ease of use.**

Internet Quality is one the most significant factors in supporting customers to obtain the benefits of Internet banking services. The relationship between PEOU and users' intention to use Internet banking needs to be supported by the Internet Quality constructs. The importance of Internet Quality was evident in previous studies by Pikkarainen et al. (2004), Sathye (1999) and Al-Somali et al. (2008).

The quality of Internet communications is also supported by customers' comments. Participants' comments confirmed that the Internet network is the most important factor impacting their attitude toward adopting Internet banking services in commercial banks in Libya. They identified factors such as communications network quality, efficiency and subscription cost. Survey members also commented on various aspects concerning the significance of communication, government attention to improving the network and that the Internet network should cover all areas of Libya.

6.6.2.7 Support

The study model hypothesised that support is a determinant of PEOU to adopt online banking services. The hypothesis (H5) was formulated to examine the relationships between customer support and PEOU. The result of testing the influence of support on PEOU is discussed as follows.

- **H5: The level of support available to consumers is positively related to perceived ease of use.**

Hypothesis (H5) relates to the effect of the support construct on customers' ability to use e-banking services easily. The result of testing this hypothesis was supported by customers' perceptions. Regarding customers' perceptions, bank support is significant in supporting their attitude towards using online services. Aspects of support factors such as the availability of an online help facility, providing 24 hour customer support and the ability to provide feedback or lodge complaints and receive a response in a reasonable timeframe play a vital role in encouraging non-users to accept conducting their banking transactions via the Internet. This result is also supported by comments of the survey participants such as 'the importance of customer support when needed' (section 5.4.8). According to Wu et al. (2010) 'as e-services become more widely accepted, it will be important that banks meet the needs of consumers. In order to cultivate consumer Internet-banking demands, banks must make key improvements that address consumer concerns' (p. 106). Consumers who lack sufficient knowledge about e-financial services cannot make informed decisions (Chong et al. 2010). Customers feel that support is essential even for primary registration and set up, prior to teaching more online skills. With such training, a user would learn how Internet banking works and could receive ongoing training at bank branches. There is a need for extensive and more advanced user support from the banks, particularly via interactive channels (Wu et al. 2010)

6.6.2.8 Security

Hypothesis (H6) was tested with banking customers' perceptions. The findings of the study conclude that this hypothesis supports the significant impact of security on perceived usefulness in accepting the use of banking services via the Internet.

- **H6: The perceived level of security is positively related to perceived usefulness.**

As shown in the results chapter (Section 5.3.5.1), Libyan banking customers are aware of the important role of the security factor in increasing their performance and assisting them to accomplish their banking business quickly and effectively. Customers also confirmed through their comments (section 5.4.8) that the issue of safety and security are main factors in the acceptance of Internet banking. These issues are concerned with security features in protecting websites from piracy or spying, protecting their personal and financial information, virus attacks on banks' software and the absence of laws to protect their piracy. Customers believe that these issues are the biggest threat when using banking services via the Internet in commercial banks in Libya. Libyan commercial banks can employ the necessary security measures perceived by customers to encourage them to use electronic services, and improve their organisational reputation. This fact is consistent with

studies conducted by Jahangir and Begum, (2008), Kim, Tao, Shin and Kim (2010), Alnsour and Al-Hyari (2011), Guo, Yuan, Archer and Connelly (2011), and Moga, Nor, Neculita and Khani (2012). In their study, Al-Fahim and Jusoh (2013) asserted that ‘security is the main challenge because customers are doing the financial transaction through banking website and they are not sure about the successful transaction or hacking of important personal information. So, the greatest concern expressed by most non-adopters was security’ (p. 9). Customers may avoid online banking services if they think they will be susceptible to fraud (Al-Somali, Gholami & Clegg 2009).

6.6.2.9 Trust

Trust factor was selected as an essential construct in the study model. This construct has a direct effect on PU. Consequently, Trust was hypothesised to directly impact on PU constructs in the study model. This section discusses the results of trust and PU relationships.

- **H7: The perceived level of trust is positively related to perceived usefulness.**

The results of examining the study model established that trust factor significantly influenced PU from banking consumers’ point of view. The findings support hypothesis (H7). The trust aspects lead to all banking customers feeling positive toward the usefulness of Internet banking services. For instance, trust in using online banking services, ability of online banking to protect privacy, trust in the benefits of online banking rather than face-to-face banking services, tendency to trust online banking and keeping the promises made to the customer regarding online banking will impact on customers’ attitude towards their willingness to use Internet banking services. This result is consistent with studies by Stewart (1999), Gefen et al.(2003), Suh and Han (2003), Yousafzai et al. (2003), Chen and Barnes (2007), Pearson (2007), Grabner and Faullant (2008), Yang et al. (2009), Kim et al. (2010), Zhao et al. (2010), and Alnsour and Al-Hyari (2011). Moga, Nor, Neculita and Khani (2012) stated that ‘there are many factors that may influence the individual's’ intention to accept the technology; trust and security are among the pivotal factors’ (p. 8). One important reason for the importance of trust in e-commerce is the fact that in a virtual environment the degree of uncertainty of economic transactions is higher than in traditional settings (Grabner-Kräuter & Faullant 2008). The influence of technology or system trust on online consumer behaviour is largely neglected (Grabner-Kräuter & Kaluscha 2003). According to Grabner and Faullant (2008) ‘the influences of Internet trust on risk perception and consumer attitudes towards Internet banking. Propensity to trust is a determinant not only for interpersonal relationships but also for trust in technological systems’ (p. 483).

Table 6-8 Results of the hypothesis of the exogenous factors

Construct	Code	Hypothesis	Results
Internet quality	H4	The availability of adequate, reliable Internet infrastructure is positively related to perceived ease of use.	Accepted
Support	H5	The level of support available to consumers is positively related to perceived ease of use	Accepted
Security	H6	The perceived level of security is positively related to perceived usefulness	Accepted
Trust	H7	The perceived level of trust is positively related to perceived usefulness.	Accepted

6.7 Discussion of content analysis of bank customers' comments

Content analysis was used to analyse the comments or suggestions received from bank customers. An optional open-ended question was added to the survey. The purpose of the optional question is to allow customers of commercial banks to add any comments or suggestions they deem important when making decisions relating to Internet banking services. It also enables customers to comment about factors that may impact on their preparedness to use such a service. The results were consistent with the quantitative results regarding factors affecting the adoption of Internet banking services.

Most respondents confirm that Libyan banks are slow to adopt banking technology, or are only in the early stages of adoption. According to customers' perceptions, most of the comments support the importance of e-banking services. Many customers' answers support the study factors considered in the study model such as Communications Infrastructure (Internet Network Quality), Security, and Trust. Also, they confirm other factors that need to be addressed before making their decision to use Internet banking services such as 'Banking products and services, Culture, Media, Technology used in commercial banks and Privacy'.

The factor of communications infrastructure (Internet Network Quality) was considered in the study model and was measured in the study survey. Customers commented that the quality of communications in general and the Internet in particular are the most important factors impacting their decision whether or not to adopt electronic banking—as displayed on the websites of commercial banks in Libya. The most important issues identified with this factor were communications network and Internet quality (speed), efficiency, constant interruptions, subscription cost, and poor communication. Participants mentioned different aspects concerning the importance of communication and the Internet such as government attention to improving and maintaining the network on a regular basis and that the network should cover all parts of Libya. Sathye (1999) highlighted this issue as a key factor affecting the adoption of online banking: 'availability of access to computers/Internet is a prerequisite for adoption of Internet banking; the more widespread the access to computers/Internet, the greater the possibility of use of Internet banking' (p. 326). Without a satisfactory Internet connection, the use of online banking is not possible (Pikkarainen et al. 2004). Internet Network Quality as a key factor in the success of Internet banking adoption is confirmed by several studies (Al-Somali, Gholami & Clegg 2008; Pikkarainen et al. 2004; Sathye 1999; Shih 2011).

Customers' comments emphasised the issue of safety and security as main factors to accepting the use of Internet banking. The utmost important issues identified relating to the security factor were protecting the bank website from acts of Internet/computer piracy or spying on customers' accounts, the protection of personal and financial information, the general risks associated with the site and running programs to guard against viruses, as well as frequent breakdowns experienced by electronic devices and the absence of laws to protect personal and financial information. According to customers' perceptions, they believe that these issues are the biggest threat when using banking services via electronic means in commercial banks in Libya. They also highlight the need for adequate protection of their assets from any theft or loss, piracy, mistakes by banking staff, virus attacks on banks' software, or electronic faults that occur while using banking services via the Internet. Alnsour and Al-Hyari (2011) stated that 'consumers' perceive a greater uncertainty when a transaction is carried out using the Internet and are very concerned about security in the online context' (p. 7). The issue of security was also identified by Jahangir and Begum (2008) who claim that 'As the amount of products and services offered via the Internet grows rapidly, consumers are more and more concerned about security and privacy issues' (p. 34). The security was identified as an important factor by the studies of Guo, Yuan, Archer and Connelly (2011), Kim, Tao, Shin and Kim (2010), Moga, Nor, Neculita and Khani (2012), Al-Fahim and Jusoh (2013) and Al-Somali, Gholami and Clegg (2009).

The customers' comments confirmed that the trust factor directly affects the acceptance of the use of electronic banking services. The key issues highlighted by customers were that they did not trust services provided via the Internet and they lacked trust when using the electronic banking services such the use of Visa Card or transfer of funds compared with the direct dealing of money via hand-in-hand delivery. Grabner-Kräuter and Faullant (2008) pointed out that 'trust is central to any economic transaction, whether conducted in a retail outlet in the real offline world or over the Internet, by means of a web site, however, trust is even more important in an online situation' (p. 485). Studies investigating e-banking adoption have identified trust as a factor affecting e-banking adoption. Trust is found to be the common issue presented in most studies (Goles et al. 2009; Grabner-Kräuter & Faullant 2008; Kim et al. 2010; Moga et al. 2012; Pearson 2007; Schaefer 2005; Suh & Han 2003; Yang et al. 2009; Yousafzai, Pallister & Foxall 2003).

According to customer comments, provision of electronic banking products is ranked as the second most significant factor (after communication infrastructure) regarding the acceptance of banking services via the Internet in Libya. Online banking products and services factor was not considered in the study model and was not measured in the study survey. The most significant issues provided by customers' comments were the resoluteness of legislators in the provision of banking services, electronic subscription costs, the desires and needs of customers of those services, conditions of access to banking products and electronic services and pricing, a variety of services still to be activated, and the speed of response to requests by bank customers. The survey participants also believe that government banks are not serious about providing electronic banking services.

Another comments of participants not considered in the study model are related to culture and media. Many customers are unfamiliar with the use of computers and Internet as a result of their culture, level of education and the role of media, as well

as displaying a lack of understanding or knowledge of the benefits of information technology and developments in financial services provided via the Internet. They highlighted issues such as the failure by the media to improve the Libyan population's awareness and dissemination of electronic culture; following worldwide attempts to keep up with developments in various electronic services; deficiencies in the provision of guidance bulletins by banks for users of electronic banking services; and the need for bank management to bear responsibility in contributing in earnest to customer awareness of banking services through electronic means over various media outlets.

Customers provided comments about the technology used in commercial banks and the need for advanced technology and modern banking systems. This factor was not considered in the study model. Participants also called for the provision of modern, unified systems to connect bank branches, as well as connecting all banks operating in Libya with each other and with banks in other countries.

Another factor not measured in the study model related to customers' comments on whether the mobile service should be used with all banking operations. This will allow them to conduct banking services in locations where they are not connected with the network of Internet services.

Respondents were concerned about their privacy when using the websites of the commercial bank. The most important issues are their concerns about how banks will use the information collected and the parties involved, the lack of clarity in how banks are forced to disclose personal and financial information by law, assurances that their information is being treated as confidential and has the highest level of security, to what extent the bank applies standards and strict security measures in order to prevent access to personal information without authorisation, and the confidentiality of the user's identity and log-on details. The importance of privacy for the adoption of Internet banking has been illustrious in many banking studies (Black et al. 2002; Chen & Barnes 2007; Hernandez & Mazzon 2007; Howcroft, Hamilton & Hower 2002; Jahangir & Begum 2008; Polatoglu & Ekin 2001; Sathye 1999; Tan & Teo 2000). According to Jahangir and Begum (2008) 'privacy and security issues have proven important barriers to the use of online services' (p. 34). Privacy and security issues are crucial for the adoption of cyber banking (Haq & Khan 2013).

6.8 Chapter summary

This Chapter explored the outcomes of the study. The results were discussed in four sections. The first section discussed the results achieved from analysing demographic variables. The second section discussed the findings of the measurement model. The study adopted Structural Equation Modelling (SEM) and testing the measurement model is the first stage in this technique. The results confirm that each construct selected in the study model were valid and reliable to measure factors that may impact bank customers' intention to adopt Internet banking services. The third section is related to the subsequent stage of SEM that examines the structural model and tests the hypotheses. The outcomes of testing all hypotheses were discussed in detail and compared with the information systems and e-banking literature. The fourth section discussed the results of content analysis of comments from customers. The outcomes wholly support the proposed model to measure the factors that may affect Libyans' attitude to accepting the use of online banking.

CHAPTER SEVEN

The previous Chapters in this study were allocated to introducing the study (chapter 1), providing an overview of the Libyan banking sector (Chapter 2), detailing the literature review (Chapter 3), describing the research methodology adopted for the study (Chapter 4), and explaining the research findings (Chapter 5). Chapter 6 presented a conclusion regarding this study. This final chapter provides a summary of the previous six Chapters, research contributions, recommendations, limitations and future research.

7. CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

The issues of information technology adoption and diffusion have been the subject of extensive study. E-banking services are relatively recent applications in banks and financial organisations. Determining individual attitudes toward the acceptance of e-banking is one of the most critical issues currently confronting the banking sector. Internet banking has contributed to the creation of a global market in most advanced countries. Developing countries, including Arab countries, are clearly late or slow in the adoption of modern technology usage. Issues of awareness, education, security, trust, support and ICT infrastructure undoubtedly play an important role in the adoption of technology for economic growth. This thesis has examined the adoption of online banking in Libya. The research adopted a framework consisting of a set of factors aimed at identifying the behaviour of Libyan banking customers towards the adoption of banking services via the Internet.

This study has employed a framework based on the Technology Acceptance Model (TAM) (Davis 1986; 1989) which is widely accepted and adapts the Theory of Reasoned Action (TRA). TAM is used in this study to investigate the research questions about different aspects of the phenomenon of individual perceptions towards the adoption of electronic banking services in Libya using the external variables of Security, Trust, Quality of Internet Network and Support, in addition to both the basic variables of the TAM (PEOU and PU). This research has revised TAM which was adopted and extended through its creators, others and by this study. In other words, TAM has been expanded to include a number of specific issues such as Trust and Security factors that come from an individual's side and Support or assistance on the part of the banks, in addition to the Quality of the Internet Network as an external variable that may contribute to the adoption of information systems. The main constructs of the study model have been found to be reliable and valid.

Many researchers have proposed extensions and modifications to TAM by adding constructs and variables. The majority of research to date has been conducted in developed economies such as the USA and the EU. Studies where TAM was examined in countries such as Japan (Straub 1994; Straub et al. 1997), Switzerland, (Straub et al., 1997) and Arab countries (Rose & Straub, 1998) elicited varying results of TAM. Existing research has not established clear relationships between external variables such as security, trust, Internet quality and support, and IT acceptance and adoption. These constructs and the aim of this study were to increase understanding of the impact of security, trust, Internet quality and support on Internet banking adoption in Libya. Seven hypotheses supported the study constructs which play a vital role in explaining Internet banking adoption.

7.2 Research objectives

Results of the study outlined in Chapter Five supported the objectives of this research study, as reported in the first Chapter, and the objectives of this study are as follows:

1. Identifying barriers affecting customers' decision to adopt online banking in Libya.
2. Determining the most significant factors that need to be addressed for the successful adoption of electronic banking applications and the order of importance of these factors for the Libyan banking sector.
3. Researching the effects of the variables on customers' intention to adopt online banking in Libya.
4. Identifying the problems perceived by individuals in Libya in the adoption or use of these new technologies.
5. Suggesting a strategy for individuals and organisations to detect hidden problems, thereby improving the use and acceptance of online banking.

These objectives were achieved based on the study stages. Firstly, the study involved a comprehensive review of the literature and development of a theoretical framework. Seven constructs were employed to evaluate the adoption of Internet banking services in Libya: PEOU, PU, security, trust, Internet quality and support. Secondly, the study established the relationships between these constructs in one model and formulated the hypotheses between these constructs based on the causality approach. Seven hypotheses were adopted to represent the relationships between the constructs of the study model. The third step of selecting these constructs was through empirical research. The study was conducted with Libyan banking customers. The quantitative data of the study was collected via questionnaire and qualitative data was collected via an open-ended question. Confirmatory factor analysis was used to measure the model of the study sample to identify the reliability and validity of constructs in evaluating the adoption of Internet banking services. The finding confirmed that the seven constructs of the study model to evaluate the adoption of Internet banking are valid and reliable to assess this phenomenon from the perspective of bank customers.

7.3 Research problem

Libya enjoys enormous economic benefits compared to other Arab and developing countries: the wealth of Libya, particularly in the oil sector, has had a decisive influence in its economic recovery. Libya contributes about 2 per cent of the total world oil production. It is believed that Libya's oil reserves amount to about 46 billion barrels—placing it second to Africa, which occupies first ranking. This will no doubt provide the revenues necessary to achieve economic development and reconstruction in the country. With the commencement of the process of recovery in Libya after the conflict, Libya asked the World Bank to lead efforts in the area of public expenditure, financial management, repair infrastructure, and the provision of job opportunities for young people and the provision of services. The World Bank joined the United Nations and the European Union as one of three institutions assisting in the coordination of aid in Libya during the drafting of its path forward after months of violent conflict.

On the one hand, the institutions and private sector companies play a strategic and influential role as the third partner in providing viable investment financing. The objectives of the strategy are to encourage the private sector and the mechanisation of the Libyan administration to grow the economy to build a modern state on its own. This contributes to the attainment of Libya to new heights. On the other hand, there is no doubt that the process of transition to a 'new Libya' will face significant challenges. These are the challenges in addressing the root causes of the revolution and the building of a democratic system under the new regional high risk and uncertainty at the global level. The Libyan economy shared the same problems, including high unemployment—especially among young people—as other regional areas and caused revolutions in some countries in the region.

Hence, the banking sector has an important leadership role in the rebuilding of the economy and in financing short-and long-term projects. Libya is country among the Arab countries that are seeking to adopt sophisticated electronic system to speed the completion of banking globally. Since Libya started using modern technology, it seeks to modernise its system of banking to enable them to keep abreast of global developments in the banking industry, which will allow individuals and companies to easily pay and withdraw money inside and outside Libya. The Libyan banking sector has made considerable progress in adopting this technology, based on the support, cooperation and participation of the Central Bank of Libya, as well as expanding use between banks, but it acknowledges the existence of challenges faced by this system—particularly in relation to the delay in adoption by individuals. This study is based on the identification of the causes of the failure to adopt the banking system and developed in order to improve banking services commensurate with the aspirations of bankers and the public to have fast access to banking services and products.

7.3.1 Research questions

This study seeks to contribute to the knowledge of e-banking services, particularly Internet banking in developing countries such as Libya. This will be achieved by concentrate on questions relating to factors affecting individual attitudes toward the acceptance and usage of new technology in relationships between security and trust from the banking customers' viewpoint, customer support from bank staff and managers on the side of the banks, and Internet network quality on the government

side. The results from the survey are now discussed in relation to the study questions identified in the introduction chapter.

Question 1: What are the barriers to adopting Internet Banking in Libya based on consumers' perceptions?

Question 2: How important are the barriers to the successful adoption of Internet Banking in Libya?

The study recognises that there are numerous factors (barriers) that could affect Internet banking adoption and acceptance in Libya. The result of the survey with an evaluation of the literature in the Libyan context suggests that an extension of TAM includes three sets of factors—security and trust from the customer side, customer support from the bank side, and Internet quality from the government side—which relate to the two key determinants of perceived ease of use and perceived usefulness in the use of new technology.

The findings of the study have indicated that Libyan bank customers perceive that Internet banking is risky but essential to the development and growth of the economy. Bank customers are planning to adopt banking services through the Internet despite their concerns relating to factors such as security, trust, support and Internet quality that relate to PEOU, and PU of the new technology. The adoption of Internet banking technology may expand extensively in the Libyan banking sector in near future. However, this system still presents a number of challenging issues. Assessing the acceptance of Internet banking usage is seen as an important issue encountered by the banking sector. The key reasons behind the reluctant to use online banking services is the persistence relating to factors that impact the adoption of e-banking services. The quantitative analysis results from the survey questionnaire confirmed all the relationships in the traditional TAM, as well as the importance of trust and security in the new technology and issues relating to Internet network quality and support. Factors such as PU confirmed its impact on user or non-user intention to use new technology. PEOU was another major determinant factor influencing customers' intention to use Internet banking technology.

7.4 Research contributions

The implications of the study results are that banks need to play a leading role in influencing customers' behaviour as potential Internet banking users. The study provides a general guide on Internet banking users' and non-users' behaviour, and for information system managers in the banking sector to achieve success in major investments in new technology. The findings of this study have two practical implications and contribute in regard to knowledge and practice of e-banking services in Libya.

7.4.1 Contribution to knowledge

The purpose of the study model is to test and measure Internet banking adoption in Libya. The study was established based on a specific philosophy and methodology approach. The contributions of this study with regard to knowledge in information systems and Internet banking systems are as follows:

1. The contribution of this study is in developing and testing a model to measure Internet banking adoption. The results support the validity of this model to measure the study model based on banking customers' perceptions.
2. The study confirmed the validity and reliability of the TAM model to evaluate individual acceptance to use Internet banking. The study model has extended the TAM model by adding four exogenous factors (Internet Quality, Support, Trust and Security) to achieve the adoption of new technology.
3. There is a lack of empirical evidence about the impact of Internet quality, support, trust and security to measure the adoption of e-banking systems in Libya. The most important contributions of the study are the exploration and identification of the vital role of these constructs as potential barriers to the success of Internet banking adoption. This research provides empirical evidence about the role of these constructs in accepting new technology.
4. The results of the study have contributed to anticipating future Internet banking user issues, determining strategies to encourage user acceptance and determining why the new technology is being used or not.
5. The study has the potential to be generalised to Arab nation economies.
6. The study identifies issues for policymakers to assist Libyan commercial banks achieve the adoption of e-banking services systems and give rise to useful future studies in this area.

7.4.2 Contribution to practice

The study outcomes obtained were based on data collected from bank customers in the Libyan banking sector. Consequently, this study achieved several contributions for practitioners, namely:

1. The study provides commercial banks and other financial institutions with a model and evidence to enable them to estimate online services based on customers' perceptions.
2. The study attempts to disseminate technology awareness to the banking sector of the important role of Internet quality, customer support, security and trust in the adoption of Internet banking services.
3. The Libyan banking sector and the Central Bank of Libya (CBL) in particular, can consider the barriers identified in this study that impact on customers' attitudes toward adopting Internet banking, including Internet network, customer support, security and trust.
4. The study results provide CBL information about the issues relating to the adoption of new technology based on the perceptions of banking customers.
5. The study provides recommendations relating to these issues to encourage customers to use online banking.

7.5 Recommendations

The study model was proposed and tested with perceptions of banking customers to assess factors impacting their adoption of Internet banking services. A number of general recommendations can be offered to the Libyan banking sector as a result of the study's findings:

1. The key recommendation to the commercial banks and the CBL is that proper evaluation of Internet banking adoption should be taken into account and different factors considered in the estimation process such as security, trust, customer support and Internet network quality.
2. The opinions of users and non-users regarding the acceptance of e-banking services should be considered and improvements made to the services provided via the e-service system to bank customers, bank staff and bank management.
3. Based on the results of this study a significant recommendation to the banking sector when considering the successful adoption of e-banking systems is to pay considerable attention to ICT infrastructure via developing and maintaining infrastructure. Additionally, it is recommended that the factors of security, trust, Internet quality and customer support in Internet banking services should be adequate to encourage an extensive range of non-users to accept using Internet banking.
4. The bank customers' attitude toward Internet banking service should be considered in evaluating the adoption of e-banking systems because the opinions of this group will provide a comprehensive picture about the usage of the e banking system, and the factors that impact non-users' attitude should be identified based on customer perceptions.
5. Factors that influence perceived usefulness and perceived ease of use of e banking services should be taken into account by top management in the banking sector to enhance this construct. For example, aspects of security, trust, support and Internet network quality.
6. Website design and security should be considered by bank management and IT divisions. The website and mobile banking services should be easy to use and active, because most customer experience problems with non-active aspects of a number of e-banking services.

7.6 Research Limitations

This research has limitations that should be considered when interpreting the study's results and for future study, which can be summarised as follows:

1. Results of the study are limited to the study sample selected from the two cities, and the results may not fully reflect the view of the entire population of Libya.
2. Results of the study identified the behaviour of individuals of banking services via the Internet, and thus may not apply to the results of the study of other electronic services such as ATM, phone banking and mobile banking.
3. The results of the study are based on the viewpoint of a limited number of bank customers and, therefore, may not represent the behaviour of all clients in the Libyan banking sector regarding the use of modern technology.
4. Variables added to the model study may be limited in judging in a comprehensive manner the behaviour of individuals; it may be appropriate to add other variables, such as those referred to in the customer comments (see section 5.4).

Internet banking services in Libya were initially introduced in 1995, but with very limited acceptance until recent years. The fact that Internet banking is still in the early stages of the diffusion process in Libya, supported by the findings achieved in this study, would not necessarily be representative of the circumstances at a future stage in time. With the move towards e-commerce in Libya and with the encouragement of top officials in its implementation, Internet banking may find more support from the public. Future study would rectify this limitation and a comparison of findings would be useful.

7.7 Future research

This study is the first study conducted to investigate Internet banking adoption in Libya. Further research on issues raised by this study regarding the adoption of new technology in Libya would be beneficial, particularly in the banking sector.

There is an opportunity for future studies to redesign and expand the study model to add more constructs that may impact on the Libyan population's attitude toward Internet banking services, such as online banking products and services, culture, media, the technology used in commercial banks and privacy that were not tested in this study, as well as incorporating factors relating to alternative channels such as ATM and mobile banking.

Internet banking services are still regarded as a new technology in Libya, which creates issues that affect bank consumers' intention to accept and use such services. There are still issues which might be explored to further understand the behaviour of Internet banking customers in Libya. These include research that may identify more factors that influence the adoption of new technology and the decision making process involved. Further research could be conducted on the data of the current research to identify factors that could influence acceptance rates.

This study has established an integrated model that provided a systematic way to understand adoption of Internet banking services by Libyan banking customers. A number of useful areas for future studies remain. For instance, the findings of this study are limited to Internet banking services; future research may conduct and replicate the current study in other electronic services such as ATM, mobile banking and online shopping. This could be valuable in supporting the validity of the model.

8. REFERENCES LIST:

- Abdelkader, P 2009, 'Quality banking services as an input to increase the competitiveness of banks', *Journal of North African economies*, no. 23.
- Abukhzam, M & Lee, A 2010, 'factors affecting bank staff attitude towards e-banking adoption in Libya', *The Electronic Journal of Information Systems in Developing Countries*, vol. 42, no. 2, pp. 1-15.
- Ahmed, YA-S 2013, 'Measuring E-Learning Systems Success', Doctor of Philosophy thesis, UNIVERSITY OF SOUTHERN QUEENSLAND.
- Ajzen, I 1991, 'The theory of planned behavior', *Organizational behavior and human decision processes*, vol. 50, no. 2, pp. 179-211.
- Ajzen, I & Fishbein, M 1980, 'Understanding attitudes and predicting social behaviour'.
- Akash, F 1991, *Technology management in developing countries*, 1 edn, Voice of the Gulf Press, Sharjah.
- Akel, M 2008, *The role of commercial banks in financing economic development*, Jordan, viewed 23/01/2012, <<http://www.muflehakel.com/not%20classified/Syria.htm>>.
- Akinci, S, Aksoy, S & Atilgan, E 2004, 'Adoption of internet banking among sophisticated consumer segments in an advanced developing country', *International Journal of Bank Marketing*, vol. 22, no. 3, pp. 212-32.
- Al-Mabrouk, K & Soar, J 2009, 'An analysis of the major issues for successful information technology transfer in Arab countries', *Journal of Enterprise Information Management*, vol. 22, no. 5, pp. 504-22.
- Al-Somali, SA, Gholami, R & Clegg, B 2008, 'Internet banking acceptance in the context of developing countries: an extension of the technology acceptance model', in European Conference on Management of Technology: *proceedings of the European Conference on Management of Technology*.
- Al-Somali, SA, Gholami, R & Clegg, B 2009, 'An investigation into the acceptance of online banking in Saudi Arabia', *Technovation*, vol. 29, no. 2, pp. 130-41.
- Al-Sukkar, A & Hasan, H 2004, 'Internet banking in the Middle East: A Jordanian study', in Proceeding of CISTM conference. Transforming business performance through knowledge management. Alexandria, Egypt: *proceedings of the Proceeding of CISTM conference. Transforming business performance through knowledge management. Alexandria, Egypt*.
- Al-Sukkar, AS 2005, 'The application of information systems in the Jordanian banking sector: a study of the acceptance of the internet', *University of Wollongong Thesis Collection*, p. 419.

- Aladwani, AM 2001, 'Online banking: a field study of drivers, development challenges, and expectations', *International Journal of Information Management*, vol. 21, no. 3, pp. 213-25.
- Aladwani, AM 2003, 'Key Internet characteristics and e-commerce issues in Arab countries', *Information Technology & People*, vol. 16, no. 1, pp. 9-20.
- Alfaro, L, Chanda, A, Kalemli-Ozcan, S & Sayek, S 2004, 'FDI and economic growth: the role of local financial markets', *Journal of international economics*, vol. 64, no. 1, pp. 89-112.
- Altaib, T 2010, *E-trade policies and legal issues*, Arab Group for the law, viewed 11/2/2013, <<http://www.ityarabic.org/>>.
- Amin, H 2007, 'Internet banking adoption among young intellectuals', *Journal of Internet Banking and Commerce*, vol. 12, no. 3, pp. 1-13.
- Anderson, JC & Gerbing, DW 1988, 'Structural equation modeling in practice: A review and recommended two-step approach', *Psychological bulletin*, vol. 103, no. 3, p. 411.
- Asongu, SA 2012, 'The impact of mobile phone penetration on African inequality'.
- Asongu, SA 2013, 'How has mobile phone penetration stimulated financial development in Africa?', *Journal of African Business*, vol. 14, no. 1, pp. 7-18.
- Athanassopoulos, AD & Labroukos, NS 1999, 'Corporate customer behaviour towards financial services: empirical results from the emerging market of Greece', *International Journal of Bank Marketing*, vol. 17, no. 6, pp. 274-85.
- Bagozzi, RP & Yi, Y 2012, 'Specification, evaluation, and interpretation of structural equation models', *Journal of the Academy of Marketing Science*, vol. 40, no. 1, pp. 8-34.
- Banker 2011, *Libya*, theBanker, viewed 27/9/2011, <<http://www.thebanker.com/>>.
- Banks, J 2012, 'Ownership structure of Libyan commercial banks ', *Banks Journal*, no. 15/5/2012.
- Barrett, P 2007, 'Structural equation modelling: Adjudging model fit', *Personality and Individual Differences*, vol. 42, no. 5, pp. 815-24.
- BCD 2012, *Bank services* The Bank of Commerce & Development, <<http://www.bcd.ly/english/Default.aspx> >.
- Bengdara, F 2008, 'The development and restructuring of commercial banks Libyan', *Banking Journal*, pp. 4-6.
- BJ 2012, 'Libyan specialized banks', *Banks Journal*, vol. 7, no. 7.

Black, NJ, Lockett, A, Winklhofer, H & Ennew, C 2001, 'The adoption of Internet financial services: a qualitative study', *International Journal of Retail & Distribution Management*, vol. 29, no. 8, pp. 390-8.

Black, NJ, Lockett, A, Ennew, C, Winklhofer, H & McKechnie, S 2002, 'Modelling consumer choice of distribution channels: an illustration from financial services', *International Journal of Bank Marketing*, vol. 20, no. 4, pp. 161-73.

Borensztein, E, De Gregorio, J & Lee, J-W 1998, 'How does foreign direct investment affect economic growth?', *Journal of international economics*, vol. 45, no. 1, pp. 115-35.

Browne, MW, Cudeck, R, Bollen, KA & Long, JS 1993, 'Alternative ways of assessing model fit', *Sage Focus Editions*, vol. 154, pp. 136-.

Byrne, BM 2009, *Structural equation modeling with AMOS: Basic concepts, applications, and programming*, CRC Press.

CBL 2009, *Economic Bulletin*, Central bank of Libya, viewed 17/11/2009, <<http://www.cbl.gov.ly/eg/>>.

CBL 2011, *Safety indicators and financial stability in the Libyan banking sector*, Central Bank of Libya -Tripoli, viewed 2 / 8 / 2013, <http://cbl.gov.ly/eng/index.php?option=com_content&view=article&id=276&Itemid=118>.

CBL 2012a, *Banking Supervision*, Central Bank of Libya, viewed 21/01/2013, <<http://www.cbl.gov.ly/eg/>>.

CBL 2012b, *Legislation*, Ceteral Bank of Libya, viewed 25/12/2012, <http://www.cbl.gov.ly/eg/index.php?option=com_content&view=article&id=22&Itemid=29>.

CBL 2012c, *Economic Bulletin*, Central Bank of Libya, viewed 20/01/2013, <http://www.cbl.gov.ly/eg/index.php?option=com_content&view=article&id=88&Itemid=94>.

CBL 2012d, *'functions of the Central Bank of Libya'*, Banks Journal, Central Bank of Libya -Tripoli.

CBL 2012e, *The National Payment System*, Ceteral Bank of Libya, viewed 26/12/2012, <http://www.cbl.gov.ly/eg/index.php?option=com_content&view=article&id=22&Itemid=29>.

CBL 2013a, *Economic Bulletin. Annual Report 2002-2012*, Central Bank of Libya - Tripoli.

CBL 2013b, *Strategic Plan*, Central Bank of Libya, viewed 25/6/2013, <http://www.cbl.gov.ly/ar/index.php?option=com_content&view=article&id=153&Itemid=140>.

CBL 2013c, *Issuance of currency*, Central Bank of Libya, viewed 24/07/2013, <<http://cbl.gov.ly/ar/>>.

Çelik, H 2008, 'What determines Turkish customers' acceptance of internet banking?', *International Journal of Bank Marketing*, vol. 26, no. 5, pp. 353-70.

Chang, P 2004, 'The validity of an extended technology acceptance model (TAM) for predicting intranet/portal usage', *University of North Carolina, Chapel Hill, NC*.

Chau, PY 1997, 'Reexamining a model for evaluating information center success using a structural equation modeling approach', *Decision sciences*, vol. 28, no. 2, pp. 309-34.

Chen, Y-H & Barnes, S 2007, 'Initial trust and online buyer behaviour', *Industrial Management & Data Systems*, vol. 107, no. 1, pp. 21-36.

Cheng, T, Lam, DY & Yeung, AC 2006, 'Adoption of internet banking: an empirical study in Hong Kong', *Decision Support Systems*, vol. 42, no. 3, pp. 1558-72.

Chin, WW 1998, 'The partial least squares approach for structural equation modeling'.

Chong, AY-L, Ooi, K-B, Lin, B & Tan, B-I 2010, 'Online banking adoption: an empirical analysis', *International Journal of Bank Marketing*, vol. 28, no. 4, pp. 267-87.

Claussen, M, Kubatzki, C, Brovkin, V, Ganopolski, A, Hoelzmann, P & Pachur, HJ 1999, 'Simulation of an abrupt change in Saharan vegetation in the Mid-Holocene', *Geophysical Research Letters*, vol. 26, no. 14, pp. 2037-40.

Cohen, J 1988, *Statistical power analysis for the behavioral sciences*, Routledge.

Creswell, JW 2013, *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage Publications, Incorporated.

Daniel, E 1999, 'Provision of electronic banking in the UK and the Republic of Ireland', *International Journal of Bank Marketing*, vol. 17, no. 2, pp. 72-83.

Dash, M, Swain, PK, Das, GP, Samantaray, A & Sahoo, DS 2012, 'Consumers' Perception about Internet Banking: The Case of Odisha', *European Journal of Social Sciences*, vol. 30, no. 1, pp. 92-100.

Davis, D & Cosenza, RM 1993, 'business research for decision making ', *California: Wedsworth Publishing Company*.

Davis, F, Bagozzi, R & Warshaw, P 1989, 'User acceptance of computer technology: a comparison of two theoretical models', *Management science*, vol. 35, no. 8, pp. 982-1003.

Davis, FD 1986, "'Technology Acceptance Model for Empirically Testing New End-user Information Systems: Theory and Results" PhD thesis in MIT Sloan School of Management', Massachusetts Institute of Technology, Cambridge.

Davis, FD 1989, 'Perceives Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology', *MIS Quarterly*(13:3), pp. 319-40.

Doll, WJ, Xia, W & Torkzadeh, G 1994, 'A confirmatory factor analysis of the end-user computing satisfaction instrument', *MIS quarterly*, pp. 453-61.

Dragovic, M 2004, 'Towards an improved measure of the Edinburgh Handedness Inventory: A one-factor congeneric measurement model using confirmatory factor analysis', *Laterality: Asymmetries of Body, Brain and Cognition*, vol. 9, no. 4, pp. 411-9.

Duidrhy, RW 2006, *scientific research: fundamental theory and scientific practice*, Dar Al-Feker, Beirut, Lebanon.

ECB 2000, *Report on electronic money*, European Central Bank,<

Echchabi, A 2011, 'Online Banking Prospects in Morocco: An Extension of Technology Acceptance Model', *Journal of Internet Banking and Commerce*, vol. 16, no. 3.

Elgahwash, FO & Freeman, MB 2013, 'Self-Service Technology Banking Preferences: Comparing Libyans' Behaviour in Developing and Developed Countries', *International Journal of Intelligent Information Technologies (IJIT)*, vol. 9, no. 2, pp. 7-20.

Emzio, SOO 2010, 'Factors Influencing E-Banking Adoption Among Customers in Libyan Banks', PhD thesis, Universiti Utara Malaysia, Malaysia, 2010.

Eriksson, K, Kerem, K & Nilsson, D 2005, 'Customer acceptance of internet banking in Estonia', *International Journal of Bank Marketing*, vol. 23, no. 2, pp. 200-16.

Fara, Y 2010, *The reality of the Internet and e-commerce and e-banking services Arabic*, Minshawi for Studies and Research, viewed 21/3/2013, <<http://www.minshawi.com/outsite/farah.htm>>.

Faraj, MA 2011, 'The development of a framework to aid the identification of factors inhibiting bank staff's attitude towards e-banking adoption in Libya', (Doctoral dissertation, University of Salford), UK

- Fenech, T 1998, 'Using perceived ease of use and perceived usefulness to predict acceptance of the World Wide Web', *Computer Networks and ISDN Systems*, vol. 30, no. 1, pp. 629-30.
- Fishbein, M 1979, 'A theory of reasoned action: some applications and implications', *Nebraska Symposium on Motivation*, vol. 27, no. 1979, pp. 65-116.
- Fisher, A 2000, 'Internet buyers are not what you think', *Fortune*, vol. 141, no. 1, pp. 190-1.
- Fowler, FJ 2009, *Survey research methods*, vol. 1, Sage.
- Freeman, M & Elgahwash, F 2011, 'Does technology use change when in a developed country? A case study of Libyans in Australia', *Association for Information Systems - Australia*, pp. 1-10.
- Gefen, D, Straub, D & Boudreau, M-C 2000, 'Structural equation modeling and regression: Guidelines for research practice', in *Communications of the Association for Information Systems: proceedings of the Communications of the Association for Information Systems* Citeseer.
- George, D & Mallery, M 2012, *IBM SPSS Statistics 19 step by step: a simple guide and reference*, 12th edn, Pearson, Boston.
- Gikandi, JW & Bloor, C 2010, 'Adoption and effectiveness of electronic banking in Kenya', *Electronic Commerce Research and Applications*, vol. 9, no. 4, pp. 277-82.
- Given, LM 2008, *Qualitative Research Methods*, vol. 2, Sage.
- GNC 2013a, *Decisions and legislation*, The General National Congress viewed 21/07/2013, <<http://www.gnc.gov.ly/>>.
- GNC 2013b, *News*, The General National Congress <<http://www.gnc.gov.ly/>>.
- Goles, T, Lee, S, Rao, SV & Warren, J 2009, 'Trust violation in electronic commerce: customer concerns and reactions', *Journal of Computer Information Systems*, vol. 49, no. 1, pp. 1-9.
- Gounaris, S & Koritos, C 2008, 'Investigating the drivers of internet banking adoption decision: a comparison of three alternative frameworks', *International Journal of Bank Marketing*, vol. 26, no. 5, pp. 282-304.
- GPC, *The Libyan Economy*, 2012, General Planning Council, Tripoli.
- GPCCM 2008, 'Libya', *General People's Committee for Culture and Media*, vol. 3 July 2008.
- Grabner-Kräuter, S & Kaluscha, EA 2003, 'Empirical research in on-line trust: a review and critical assessment', *International Journal of Human-Computer Studies*, vol. 58, no. 6, pp. 783-812.

Grabner-Kräuter, S & Faullant, R 2008, 'Consumer acceptance of internet banking: the influence of internet trust', *International Journal of Bank Marketing*, vol. 26, no. 7, pp. 483-504.

Grandy, T 1995, 'Banking in E-space', no. 145, pp. 74-7.

Guides, E 2006, *Developing banking services in Libya*, viewed 14/2/2011, <http://books.google.com.au/books?id=Yqc5LheR0P0C&pg=PA116&dq=developing+banking+services+in+Libya&hl=en&ei=LARZTeiUC87MswbP_MGICw&sa=X&oi=book_result&ct=result&redir_esc=y#v=onepage&q=developing%20banking%20services%20in%20Libya&f=false>.

Guo, KH, Yuan, Y, Archer, NP & Connelly, CE 2011, 'Understanding nonmalicious security violations in the workplace: A composite behavior model', *Journal of Management Information Systems*, vol. 28, no. 2, pp. 203-36.

Hair, J, Ringle, C & Sarstedt, M 2012, 'Partial Least Squares: The Better Approach to Structural Equation Modeling?', *Long Range Planning*.

Hair, J, Anderson, R, Tatham, R & Black, W 1998, *Multivariate data analysis*, New Jersey: Prentice Hall.

Hamed, A 2009, 'E-commerce and Economic Development in Libya', Doctor of Philosophy thesis, the University of Wales Institute.

Hankins, M, French, D & Horne, R 2000, 'Statistical guidelines for studies of the theory of reasoned action and the theory of planned behaviour', *Psychology and Health*, vol. 15, no. 2, pp. 151-61.

Haq, S & Khan, BM 2013, 'E-BANKING CHALLENGES AND OPPORTUNITIES IN THE INDIAN BANKING SECTOR', *INNOVATIVE JOURNAL OF BUSINESS AND MANAGEMENT*, vol. 2, no. 4.

Hasan, H & Gould, E 2001, 'Support for the sense-making activity of managers', *Decision Support Systems*, vol. 31, no. 1, pp. 71-86.

Hernandez, JMC & Mazzon, JA 2007, 'Adoption of internet banking: proposition and implementation of an integrated methodology approach', *International Journal of Bank Marketing*, vol. 25, no. 2, pp. 72-88.

Hoehle, H, Scornavacca, E & Huff, S 2012, 'Three decades of research on consumer adoption and utilization of electronic banking channels: A literature analysis', *Decision Support Systems*, vol. 54, no. 1, pp. 122-32.

Holmes-Smith, P 2011, *Advanced Structural Equation Modelling using Amos* Australian Consortium for Social and Political Research Incorporated, Monash University, Clayton.

- Holmes-Smith, P & Rowe, K 1994, 'The development and use of congeneric measurement models in school effectiveness research: Improving the reliability and validity of composite and latent variables for fitting multilevel and structural equation models', in International Congress for School Effectiveness and Improvement, Melbourne: *proceedings of the International Congress for School Effectiveness and Improvement, Melbourne*.
- Holsapple, CW & Sasidharan, S 2005, 'The dynamics of trust in B2C e-commerce: a research model and agenda', *Information Systems and e-business Management*, vol. 3, no. 4, pp. 377-403.
- Hooper, D, Coughlan, J & Mullen, M 2008, 'Structural equation modelling: guidelines for determining model fit', *Articles*, p. 2.
- Howcroft, B, Hamilton, R & Hewer, P 2002, 'Consumer attitude and the usage and adoption of home-based banking in the United Kingdom', *International Journal of Bank Marketing*, vol. 20, no. 3, pp. 111-21.
- Hu, L-t & Bentler, PM 1998, 'Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification', *Psychological methods*, vol. 3, no. 4, p. 424.
- Hunter, Laura & Leahy, E 2008, 'Collaborative research in the meetings: patterns and influencing factors', *American Sociologist*, vol. 39, pp. 290-306.
- ISMAIL, MA & OSMAN, MA 2012, 'Factors Influencing the Adoption of E-banking in Sudan: Perceptions of Retail Banking Clients', *Journal of Internet Banking and Commerce*, vol. 17, no. 3.
- IWS 2013a, *Internet User in The Middle East*, Internet World Stats, viewed 22/3/2013, <<<http://www.internetworldstats.com/stats5.htm>>>.
- IWS 2013b, *internet user in africa*, Internet World Stats, viewed 25/3/2013, <<<http://www.internetworldstats.com/stats1.htm>>>.
- IWS 2013c, *Internet User in The world*, Internet World Stats, viewed 17/3/2013, <<<http://www.internetworldstats.com/stats.htm>>>.
- Jahangir, N & Begum, N 2008, 'The role of perceived usefulness, perceived ease of use, security and privacy, and customer attitude to engender customer adaptation in the context of electronic banking', *African Journal of Business Management*, vol. 2, no. 1, pp. 32-40.
- Jahangir, N & Begum, N 2008, p 36, 'The role of perceived usefulness, perceived ease of use, security and privacy, and customer attitude to engender customer adaptation in the context of electronic banking', *African Journal of Business Management*, vol. 2, no. 1, pp. 32-40.
- Jayawardhena, C & Foley, P 2000, 'Changes in the banking sector—the case of Internet banking in the UK', *Internet Research*, vol. 10, no. 1, pp. 19-31.

JB 2013, *about the bank*, The Jumhouria Bank, viewed 22/01/2013.

Karahanna, E, Straub, DW & Chervany, NL 1999, 'Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs', *MIS quarterly*, pp. 183-213.

Khan, MS, MA 2005, 'Managing customer relationships on the Internet', Lulea University of Technology, Sweden.

Khasim, A 2011, 'Electronic banking and its patterns, and options acceptance and rejection', *Journal of Baghdad College of Economic Sciences University*, vol. 27.

Khbresh, IAS 2012, 'Study on Service Quality and Customer Satisfaction on the Mobile Phone Provider: A Case of Postgraduate Students in Al-Fateh University of Libya', Universiti Utara Malaysia.

Kim, C, Tao, W, Shin, N & Kim, K-S 2010, 'An empirical study of customers' perceptions of security and trust in e-payment systems', *Electronic Commerce Research and Applications*, vol. 9, no. 1, pp. 84-95.

Kingsley, P & Anderson, T 1998, 'Facing life without the Internet', *Internet Research*, vol. 8, no. 4, pp. 303-12.

Kline, RB 2011, *Principles and practice of structural equation modeling*, Guilford press, New York.

Koufteros, X, Babbar, S & Kaighobadi, M 2009, 'A paradigm for examining second-order factor models employing structural equation modeling', *International Journal of Production Economics*, vol. 120, no. 2, pp. 633-52.

Lama, M 1998, 'computer develops the office work', *Computer and electronics magazine*, vol. 9, no. 11, pp. 63-6.

Lassar, WM, Manolis, C & Lassar, SS 2005, 'The relationship between consumer innovativeness, personal characteristics, and online banking adoption', *International Journal of Bank Marketing*, vol. 23, no. 2, pp. 176-99.

Lee, BC 2012, 'The determinants of consumer attitude toward service innovation—the evidence of ETC system in Taiwan', *Journal of Services Marketing*, vol. 26, no. 1, pp. 9-19.

Lee, M-C 2009, 'Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit', *Electronic Commerce Research and Applications*, vol. 8, no. 3, pp. 130-41.

Leedy, PD & Ormrod, JE 2010, *Practical research: Planning and design*, 9th edn, Pearson Education International, New Jersey.

- Levine, R & Zervos, S 1996, 'Stock market development and long-run growth', *The World Bank Economic Review*, vol. 10, no. 2, pp. 323-39.
- Lewis-Beck, M, Bryman, AE & Liao, TF 2004, *The Sage encyclopedia of social science research methods*, vol. 1, Sage.
- LFB 2012, *Participation*, Libyan Foreign Bank, viewed 11/11/2012, <<<http://lfbank.ly/english/>>>.
- LFB 2013, *About the bank*, Libyan Foreign Bank, <<<http://lfbank.ly/english/>>>.
- Liao, S, Shao, YP, Wang, H & Chen, A 1999, 'The adoption of virtual banking: an empirical study', *International Journal of Information Management*, vol. 19, no. 1, pp. 63-74.
- Libya Watanona 2008, *Libyan News*, libya-watanona.com, viewed 22/06/2012, <<http://www.libya-watanona.com/>>.
- Libya: Ministry of Planning 2006, "Achievements of the National Economy for 27 Years".
- Libyan Investment 2007, *General News*, libyaninvestment.com, viewed 25/06/2012, <<http://www.libyaninvestment.com/register-if-not-member.html>>.
- Libyan Investment 2007, *Libyan Economic Development Board LEDB*, libyaninvestment.com, viewed 23/08/2011, <<http://www.libyaninvestment.com/libya-reports-a-statistics.html>>.
- LibyanInvestment 2009, *Libyan banking*, viewed 8/11/2009, <<http://www.libyaninvestment.com/>>.
- LIG 2013a, *Decisions*, Libyan Interim Government, viewed 11/07/2013, <<http://www.pm.gov.ly/>>.
- LIG 2013b, *News*, Libyan Interim Government viewed 7/7/2013, <<http://www.pm.gov.ly/>>.
- Lin, F, Fofanah, SS & Liang, D 2011, 'Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success', *Government Information Quarterly*, vol. 28, no. 2, pp. 271-9.
- Loch, KD, Straub, DW & Kamel, S 2003, 'Diffusing the Internet in the Arab world: The role of social norms and technological curation', *Engineering Management, IEEE Transactions on*, vol. 50, no. 1, pp. 45-63.
- Lomax, RG & Schumacker, R 2012, *A beginner's guide to structural equation modeling*, Routledge Academic.

- Lowry, G 2004, 'Translation and validation of the technology acceptance model and instrument for use in the Arab world', *ACIS*.
- Mansumittrchai, S & Chiu, C 2012, 'Adoption of Internet Banking in UAE: Factors Underlying Adoption Characteristics', *International Journal of Management and Marketing Research*, vol. 5, no. 1, pp. 103-115.
- Marsh, HW 1985, 'The structure of masculinity/femininity: An application of confirmatory factor analysis to higher-order factor structures and factorial invariance', *Multivariate Behavioral Research*, vol. 20, no. 4, pp. 427-49.
- Maruyama, G 1997, *Basics of structural equation modeling*, Sage.
- Meligi, I 1996, 'About public policy for the application of Computer', *Studies in Economics and Commerce*, vol. 7, no. 2, p. 40.
- Mertens, DM 2009, *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*, Sage.
- Moga, LM, Nor, KM, Neculita, M & Khani, N 2012, 'Trust and Security in E-banking Adoption in Romania', *Communications*, vol. 2012.
- Moore, GC & Benbasat, I 1991, 'Development of an instrument to measure the perceptions of adopting an information technology innovation', *Information systems research*, vol. 2, no. 3, pp. 192-222.
- Moore, GC & Benbasat, I 1996, 'Integrating diffusion of innovations and theory of reasoned action models to predict utilization of information technology by end-users', in *Diffusion and adoption of information technology*, Springer, pp. 132-46.
- MSR 2010, *Electronic Banking*, Minshawi for Studies and Research, viewed 11/2/2013, <<<http://www.minshawi.com/old/index.htm>>>.
- Myrtveit, I & Stensrud, E 2012, 'Validity and reliability of evaluation procedures in comparative studies of effort prediction models', *Empirical software engineering*, vol. 17, no. 1-2, pp. 23-33.
- Nasri, W & Charfeddine, L 2012, 'Factors affecting the adoption of Internet banking in Tunisia: An integration theory of acceptance model and theory of planned behavior', *The Journal of High Technology Management Research*.
- NCB 2013, *About the bank*, National Commercial Bank, viewed 20/02/2013, <<http://ncb.ly/ar/>>.
- Nellis, J 1998, 'Strategies for staying ahead: The major challenges facing the finance industry and sets the agenda for the strategies necessary for success in the 21st century', *Chartered Banker*, vol. 4, pp. 28-33.
- Neuman, LW 2007, *Social Research Methods*, 6/E, Pearson Education India.

- Neuman, WL 2005, *Social research methods: Quantitative and qualitative approaches*, Allyn and Bacon.
- Neuman, WL 2006, *Social Research Methods: Quantitative and Qualitative Methods*, 6th edn, Pearson Education, Inc, Boston.
- Otman, WA & Karlberg, E 2007, *The Libyan Economy, Economic Diversification and International Repositioning*, Springer, UK.
- Pallant, J 2011, 'A step by step guide to data analysis using SPSS program', *Australia/NSW: Allen & Unwin*.
- PC-Magazine 2008, 'Online Banking', *PC Magazine*, vol. 8, no. 15.
- Pearson, JM 2007, 'The influence of trust on internet banking acceptance', *Journal of Internet Banking and Commerce*, vol. 12, no. 2.
- Phang, CW, Sutanto, J, Kankanhalli, A, Li, Y, Tan, BC & Teo, H-H 2006, 'Senior citizens' acceptance of information systems: A study in the context of e-government services', *Engineering Management, IEEE Transactions on*, vol. 53, no. 4, pp. 555-69.
- Pikkarainen, T, Pikkarainen, K, Karjaluoto, H & Pahlila, S 2004, 'Consumer acceptance of online banking: an extension of the technology acceptance model', *Internet Research*, vol. 14, no. 3, pp. 224-35.
- Plouffe, CR, Hulland, JS & Vandenbosch, M 2001, 'Research report: richness versus parsimony in modeling technology adoption decisions—understanding merchant adoption of a smart card-based payment system', *Information systems research*, vol. 12, no. 2, pp. 208-22.
- Polatoglu, VN & Ekin, S 2001, 'An empirical investigation of the Turkish consumers' acceptance of Internet banking services', *International Journal of Bank Marketing*, vol. 19, no. 4, pp. 156-65.
- Quryna New Magazine 2010, 'Fifth of the population of Libya memorized the Qoran', *Quryna News*.
- Reavley, N 2005, 'Securing online banking', *Card Technology Today*, vol. 17, no. 10, pp. 12-3.
- Reid, M & Levy, Y 2008, 'Integrating trust and computer self-efficacy with TAM: An empirical assessment of customers' acceptance of banking information systems (BIS) in Jamaica', *Journal of Internet Banking and Commerce*, vol. 12, no. 3, pp. 2008-12.
- Riffai, M, Grant, K & Edgar, D 2012, 'Big TAM in Oman: Exploring the promise of on-line banking, its adoption by customers and the challenges of banking in Oman', *International Journal of Information Management*, vol. 32, no. 3, pp. 239-50.

- Rochdi, KM 2009, 'Barriers to the Adoption and the Usage of Internet Banking by Tunisian Consumers', *Available at SSRN 1415847*.
- Rogers, EM 1995, 'Diffusion of innovations', *New York*.
- Rogers, EM 2003, *Diffusion of innovations*, New York., NY, Free Press.
- Rotchanakitumnuai, S & Speece, M 2003, 'Barriers to internet banking adoption: a qualitative study among corporate customers in Thailand', *International Journal of Bank Marketing*, vol. 21, no. 6/7, pp. 312-23.
- Salem, A 2009, 'Electronic banking reality and future challenges', *Journal of Law*, vol. 4, no. 7, pp. 2-8.
- Sathye, M 1999, 'Adoption of internet banking by Australian consumers: an empirical investigation', *International Journal of Bank Marketing*, vol. 17, no. 7, pp. 324-34.
- Schaefer, G 2005, 'Money, Trust, and Banking: An Integrated Approach to Monetary Theory and Banking Theory', *Palgrave Macmillan*.
- Schafersman, S 1994, 'An introduction to science: Scientific thinking and the scientific method', *online whitepaper, January*.
- Schumacker, RE & Lomax, RG 2004, *A beginner's guide to structural equation modeling*, (2nd ed.) edn, New Jersey, Lawrence Erlbaum.
- Shanab, A 2005, *Internet banking and customers' acceptance in Jordan: The unified model's perspective*, Southern Illinois University at Carbondale.
- Shen, C-C & Chiou, J-S 2010, 'The impact of perceived ease of use on Internet service adoption: The moderating effects of temporal distance and perceived risk', *Computers in Human Behavior*, vol. 26, no. 1, pp. 42-50.
- Shevlin, M & Miles, JN 1998, 'Effects of sample size, model specification and factor loadings on the GFI in confirmatory factor analysis', *Personality and Individual Differences*, vol. 25, no. 1, pp. 85-90.
- Shih, A 2011, 'The contribution of mobile telecommunication technology to sustainable development in selected countries in Africa', PhD thesis, Massachusetts Institute of Technology.
- Sridharan, B, Deng, H, Kirk, J & Corbitt, B 2010, 'Structural equation modelling for evaluating the user perceptions of e-learning effectiveness in higher education', in 18th European Conference on Information Systems: *proceedings of the 18th European Conference on Information Systems* University of Pretoria, pp. 1-13.
- St John, RB 2008, 'The changing Libyan economy: Causes and consequences', *The Middle East Journal*, vol. 62, no. 1, pp. 75-91.

- Steiger, JH 1990, 'Structural model evaluation and modification: An interval estimation approach', *Multivariate Behavioral Research*, vol. 25, no. 2, pp. 173-80.
- Stewart, G 2000, 'Organisational readiness for ERP implementation'.
- Suh, B & Han, I 2003, 'Effect of trust on customer acceptance of Internet banking', *Electronic Commerce Research and Applications*, vol. 1, no. 3, pp. 247-63.
- Suki, NM & Suki, NM 2011, 'Exploring the relationship between perceived usefulness, perceived ease of use, perceived enjoyment, attitude and subscribers' intention towards using 3G mobile services', *Journal of Information Technology Management*, vol. 22, no. 1, pp. 1-7.
- Sukkar, AA & Hasan, H 2005, 'Toward a model for the acceptance of internet banking in developing countries', *Information Technology for Development*, vol. 11, no. 4, pp. 381-98.
- Tan, M & Teo, TS 2000, 'Factors influencing the adoption of Internet banking', *Journal of the AIS*, vol. 1, no. 1es, p. 5.
- Taylor, S & Todd, PA 1995, 'Understanding information technology usage: A test of competing models', *Information systems research*, vol. 6, no. 2, pp. 144-76.
- TechnologyAwards 2004, *Best use of IT in Retail Banking*, viewed 28/8/2012, <[http://www.thebanker.com/news/printpage.php/aid/690/Best use of IT in Retail Banking_.html%3e](http://www.thebanker.com/news/printpage.php/aid/690/Best%20use%20of%20IT%20in%20Retail%20Banking_.html%3e)>.
- Tingari, W & Abdelrahman, AB 2012, 'Acceptance of Banking Technology in Sudan: An Analytical Study', in A paper presented in the first Taibah University International Conference on Computing and Information Technology Al-Madinah Al-Munawwarah, Saudi Arabia: *proceedings of theA paper presented in the first Taibah University International Conference on Computing and Information Technology Al-Madinah Al-Munawwarah, Saudi Arabia* pp. 12-4.
- TL 2009, *Government 'Libya' new demand legal reforms meet the banking ambitions*, Transparency-Libya, viewed 15/07/2013, <http://www.shaffaflibya.com/index.php?option=com_content&view=article&id=1160:g--lr-----&catid=209:2011-10-07-18-23-27&Itemid=198>.
- Trochim, WM & Donnelly, JP 2008, *Research methods knowledge base*, Atomic Dog/Cengage Learning Mason, OH.
- Tu, Y-T, Wang, C-M & Chang, H-C 2012, 'Corporate brand image and customer satisfaction on loyalty: An empirical study of Starbucks coffee in Taiwan', *Journal of Social and Development Sciences*, vol. 3, no. 1, pp. 24-32.
- Turnbull, B 1998, 'A Confirmatory Factor Analytic Model of Evaluation Use', *The Canadian Journal of Program Evaluation*, vol. 13, no. 2, pp. 75-87.

- Twati, JM 2008, 'The influence of societal culture on the adoption of information systems: The case of Libya', *Communications of the IIMA*, vol. 8, no. 1, pp. 1-12.
- Twati, JM 2014, 'The influence of societal culture on the adoption of information systems: The case of Libya', *Communications of the IIMA*, vol. 8, no. 1, p. 1.
- Twati, JM & Gammack, JG 2006, 'The impact of organisational culture innovation on the adoption of IS/IT: the case of Libya', *Journal of Enterprise Information Management*, vol. 19, no. 2, pp. 175-91.
- Ullah, R, Kamal, Y & Ghani, U 2013, 'Quality evaluation of banking services for development of e-banking in Libya', *African Journal of Business Management*, vol. 7, no. 9, pp. 701-12.
- USQ 2012, *Ethics*, University of Southern Queensland, viewed 20/7/2012, <<http://www.usq.edu.au/research/students/candidature/ethics>>.
- van Zyl, JM, Neudecker, H & Nel, D 2000, 'On the distribution of the maximum likelihood estimator of Cronbach's alpha', *Psychometrika*, vol. 65, no. 3, pp. 271-80.
- Veisi, M 2012, 'Factors That Influence Customers to Use Electronic Services in the Customer's Bank Meli Bank (West Branches of the Case Study)', *Journal of Basic and Applied Scientific Research*, vol. 2, no. 4, pp. 3568-76.
- Venkatesh, V & Davis, FD 1996, 'A model of the antecedents of perceived ease of use: Development and test*', *Decision sciences*, vol. 27, no. 3, pp. 451-81.
- Venkatesh, V & Davis, FD 2000, 'A theoretical extension of the technology acceptance model: four longitudinal field studies', *Management science*, vol. 46, no. 2, pp. 186-204.
- Venkatesh, V, Morris, MG, Davis, GB & Davis, FD 2003, 'User acceptance of information technology: Toward a unified view', *MIS quarterly*, pp. 425-78.
- Wang C.L. 2003, 'Knowledge management orientation, organisational capabilities and performance: An empirical test of performance relationships using structural equation modeling', Doctor of Philosophy thesis, University of Wolverhampton, UK.
- Wang, Y-S, Wang, Y-M, Lin, H-H & Tang, T-I 2003, 'Determinants of user acceptance of internet banking: an empirical study', *International Journal of Service Industry Management*, vol. 14, no. 5, pp. 501-19.
- WB 2013, *About the bank*, Wahda Bank, viewed 18/1/2013, <<http://wahdabank.com.ly/english/index.asp>>.
- Weber, RP 1990, *Basic content analysis*, Sage.
- WFE 2013a, *The Tourism* Wikipedia The Free Encyclopedia, viewed 11/07/2013, <<http://en.wikipedia.org/wiki/Libya>>.

WFE 2013b, *Libya*, Wikipedia The Free Encyclopedia, viewed 23/07/2013, <<http://en.wikipedia.org/wiki/Libya>>.

WFE 2013c, *scientific method* Wikipedia The Free Encyclopedia, viewed 25/06/2013, <http://ar.wikipedia.org/wiki/%D9%85%D9%86%D9%87%D8%AC_%D8%B9%D9%84%D9%85%D9%8A>.

WFE 2013d, *Quantitative Research*, Wikipedia The Free Encyclopedia, viewed 12/02/2013, <http://ar.wikipedia.org/wiki/%D8%A7%D9%84%D8%A8%D8%AD%D8%AB_%D8%A7%D9%84%D9%83%D9%85%D9%8A>.

WFE 2013e, *Libya Religion*, Wikipedia The Free Encyclopedia, viewed 15/7/2013, <<http://en.wikipedia.org/wiki/Libya>>.

World Economic Outlook Database 2009, *Report for Selected Countries and Subjects*, International Monetary Fund.

WorldBank 2000, *Entrering the 21st century. World development report 1999/2000*, Oxford Univerity Press.

WorldBank 2011, *Libya*, viewed 9/9/2011, <<http://www.worldbank.org/en/country/libya>>.

Wu, H-Y, Lin, C-C, Li, O & Lin, H-H 2010, 'A Study of Bank Customers' Perceived Usefulness of Adopting Online Banking', *Global Journal of Business Research*, vol. 4, no. 3, pp. 101-8.

Yang, M-H, Chandrees, N, Lin, B & Chao, H-Y 2009, 'The effect of perceived ethical performance of shopping websites on consumer trust', *Journal of Computer Information Systems*, vol. 50, no. 1, p. 15.

Yousafzai, SY, Pallister, JG & Foxall, GR 2003, 'A proposed model of e-trust for electronic banking', *Technovation*, vol. 23, no. 11, pp. 847-60.

Zhao, AL, Koenig-Lewis, N, Hanmer-Lloyd, S & Ward, P 2010, 'Adoption of internet banking services in China: is it all about trust?', *International Journal of Bank Marketing*, vol. 28, no. 1, pp. 7-26.

Zikmund, WG, Babin, BJ, Carr, J.C & Griffin, M 2009, *Business Research methods*, 8th edn, Cengage Learning, USA.

Zikmund, WG, Carr, JC & Griffin, M 2012, *Business research methods*, CengageBrain. com.

Zulu, SL 2007, 'The impact of project management process quality on construction project performance: a structural equation model', PhD thesis, Heriot Watt University, UK.

9. APPENDICES

9.3 Appendix A: Ethics Approval of USQ



University of Southern Queensland

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Ethics Committee Support Officer
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Monday, 16 July 2012

Ghaled K Elsaber Hossen
Email: Khaledborwis.hossen@usq.edu.au or
kkborwis@yahoo.com

CC: Jeffrey Soar (Supervisor)

Dear Ghaled

The Chair of the USQ Human Research Ethics Committee (HREC) recently reviewed your responses to the HREC's conditions placed upon the ethical approval for the below project. Your proposal now meets the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethics approval has been granted.

Project Title	Consumer Perceptions of the Barriers to Adoption of Internet Banking: A Case Study in Libya
Approval no.	H12REA095
Expiry date	31.11.2012
FTHREC Decision	Approved

The standard conditions of this approval are:

- conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
- advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
- make submission for approval of amendments to the approved project before implementing such changes
- provide a 'progress report' for every year of approval
- provide a 'final report' when the project is complete
- advise in writing if the project has been discontinued.

For (c) to (e) forms are available on the USQ ethics website: <http://www.usq.edu.au/research/ethicsbio/human>

Please note that failure to comply with the conditions of approval and the *National Statement (2007)* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.

Melissa McKain
Ethics Committee Support Officer
Office of Research and Higher Degrees

9.4 Appendix B: Questionnaire

Survey of Consumer Perceptions of the Barriers to Adoption of Internet Banking: A Case Study in Libya.

Dear Sir/Madam.

You are invited to participate in this questionnaire that constitutes part of my PhD thesis at the University of Southern Queensland (USQ). The purpose of this research is to identify the factors that influence consumers' behaviour using Internet Banking in the banking sector in Libya, particularly with regards to their decision to adopt or not to adopt Internet banking products and services.

You have been randomly selected to take part in this research. While participation is voluntary, your contribution is important to the success of this research.

I would be extremely grateful if you would complete the following questionnaire. This survey questionnaire will take approximately 5-10 minutes to complete.

All responses will be anonymous and participants will not be identified. No questions are asked which would identify you as an individual and the red identification number on the questionnaire (above) is used for survey management purposes only. All responses will be aggregated for analysis using the identification number only, and no personal details will be reported in the thesis or any future publications. This research is completely voluntary and completing the questionnaire implies consent to participate in this survey.

Please, do not hesitate to contact me, if you have further questions related to this research or the to the survey itself, by mobile on **0061 422 192 890** or by email at khaledborwis.hossen@usq.edu.au & kkborwis@yahoo.com

This project has been approved by University of Southern Queensland Human Ethics Committee.

Thank you for your kind collaboration and assistance.

Yours Sincerely

Ghaled Hossen

PhD Student - Faculty of Business & Law

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Research Supervisors:

Professor Jeffrey Soar.

Dr. Mustafa Ally.

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Faculty of Business & Law

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Part A: background information.

The function of this part is to collect general information about you. Please SELECT the appropriate answer for each the following questions. (Please answer the entire questions).

1 - Your gender.

Male	Female

2 -Your age.

18-24	25-34	35-44	45-54	55-64	65 or older

3 -Your highest education level.

Primary/secondary school	High school	High Diploma	Undergraduate university	Post-graduate university

4 - Do you have your own computer?

Yes	No

5 - Do you have access to the internet?

Yes	No

6 -How long have you been using the internet?

Do not use	Under one year	1 - years	2-5 years	Over 5 years

7 - What bank(s) do you use for the majority of your banking services?

1- National Commercial Bank	
2- Bank of Commerce & development	
3- Jumhouria- bank	
4- Wahda Bank	
5- other	

8 - Which of the following have you used to do your banking in Libya?

Items	Not available	Do not use	Daily	Weekly	Monthly	Quarterly
Face to face banking						
Internet banking						
Email banking						
Phone banking						
Mobile banking						

Part B: consumers Internet banking perceptions.

Note: please SELECT the number which most accurately reflects how you strongly disagree or agree with each statement to answer the following questions taking into account the scale below:

1 = Strongly disagree	2 = Disagree	3 = Neutral (Neither agree nor disagree)	4 = Agree	5 = Strongly agree
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Part B.1: Please select the number which represents your answer about how much you believe that the internet banking service offered by your bank is easy to use and that you find useful.

Ease of use	1	2	3	4	5
1 Learning to operate online banking is easy for me.					
2 I find it easy to get online banking to do what I want to do.					
3 My interaction with online banking is clear and understandable.					
4 I find online banking flexible and interactive.					
5 I find online banking easy to use.					

Usefulness	1	2	3	4	5
1 Using online banking enables me to accomplish banking services more quickly.					
2 Using online banking improves my banking performance.					
3 Using online banking increases my productivity.					
4 Using online banking makes it easier to do banking services.					
5 I find online banking useful.					

Part B.2: please select the number which most accurately reflects how you feel about each statement.

Internet network quality	1	2	3	4	5
1 The internet network quality makes it easier for me to access the bank's website.					
2 I can access the bank's website anywhere and anytime.					
3 I can use handy mobile equipment to access the network of online banking facilities.					
4 Infrastructure of the online banking network is compatible with my mobile.					
5 Using internet services is not expensive in Libya.					

Support	1	2	3	4	5
1 The bank personnel are committed to support me using online banking services.					
2 Help facilities to use online banking are available on the bank website.					
3 The bank's personnel help and support with training in how to use online banking.					
4 The bank website provides customer services support 24/7.					
5 The online bank enables me to feedback my complaints in reasonable time.					

Part B.3: The statement below represents how you trust the security of the online banking services. Please select the appropriate number which reflects how strongly you agree or disagree.

Security.	1	2	3	4	5
1 Using online banking is financially secure.					
2 I am not worried about the security of online banking.					
3 I feel secure putting my personal information on the bank's website.					
4 Online banking is a safe place to do my banking rather than visiting actual the branch.					
5 I feel secure about online banking even though I have little knowledge of it.					

Trust.	1	2	3	4	5
1 I trust using online banking services.					
2 Online banking can protect my privacy.					
3 I trust in the benefits of online banking rather than face to face banking services.					
4 My tendency to trust online banking is high.					
5 I believe online banking will keep the promises made to me.					

Part C: Please, state how strong your intention is to use internet banking to perform your banking services such as account transfers, balance inquiries, bill payment and stop payment requests ... etc.

Intention to use the internet banking	1	2	3	4	5
1 I predict that I would use the internet banking to do my banking services in the future.					
2 I intend to use the internet banking services frequently.					
3 It is likely that I will adopt the benefits of the internet banking services and products.					

We would appreciate any comments and/or if you would like to add any additional information which has not been mentioned in this survey and you believe it is significant for this research.

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Thank you for your kind collaboration and assistance.

Ghaleed Hossen

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kborwis@yahoo.com