THE IMPACT OF LIQUIDITY RISK DETERMINANTS ON PROFITABILITY: AN EMPIRICAL STUDY ON ISLAMIC BANKS IN THE KINGDOM OF BAHRAIN

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ABSTRACT

The sustainability of the banking system depends on the profitability and capital adequacy. Practically, profitability and liquidity are effective indicators of the corporate health and performance of not only the Islamic commercial banks but all profit-oriented ventures. Therefore, liquidity risk is considered as one of the serious concerns and challenges for modern era banks. As the global financial crisis spread, Islamic banks in Kingdom of Bahrain began to be affected; all of a sudden, some of the biggest Islamic banks, such as the Bahrain Islamic Bank, the Gulf Finance House and the Ithmar Bank, ended up with net losses. The aim of this study is to investigate the impact of the significant determinants of liquidity risk on the profitability of Islamic commercial banks in Bahrain during the 2007-2013 periods as well as to assess the impact of the global financial crisis on the profitability of these banks during the recovery period. Multiple regressions analysis was applied.

By using Ordinary Least Squares (OLS) the results revealed that all the independent variables are significant with both models ROA and ROE except financial leverage and deposits have a statistically insignificant impact on ROA- Capital adequacy, financial leverage, deposits and GDP have a positive and significant impact; whereas bank size and the global financial crisis have a negative impact and are statistically significant.

From these results, it is recommended that these banks control and manage properly these variables in order to create a high level of liquidity in the banks which would achieve a good profitability, leading to the sustainability of the financial banking system.

Keywords: Capital Adequacy, Financial Leverage, Maturity, Non-performing Loans, Takaful and Re-Takaful.

ABSTRAK

Kemampanan sistem perbankan bergantung kepada keuntungan dan modal. Secara praktikalnya, keuntungan dan kecairan adalah petunjuk efektif kejayaan korporat dan prestasi bukan sahaja kepada bank perdagangan Islam tetapi semua dagangan berorientasikan keuntungan. Oleh itu, risiko kecairan adalah dianggap sebagai salah satu permasalahan yang serius dan cabaran bagi bank di era moden. Disebabkan krisis kewangan global yang meruncing, beberapa instititusi kewangan Islam besar, seperti Bank Islam Bahrain, Institusi Kewangan Negara Teluk dan Bank Ithmar, berakhir dengan kerugian bersih. Kajian ini bertujuan untuk menyiasat kesan penentu risiko kecairan ke atas keuntungan bank perdagangan Islam di Bahrain dalam tempoh 2007-2013 dan juga untuk menilai kesan krisis kewangan global ke atas keuntungan bank-bank ini dalam tempoh pemulihan.

Analisis regrasi telah digunakan. Menggunakan Ordinary Least Squares (OLS), keputusan mendapati bahawa semua pembolehubah bebas adalah signifikan dengan kedua-dua model ROA dan ROE kecuali pembahagian kewangan dan deposit yang tidak signifikan terhadap ROA- Capital, pembahagian kewangan, deposit dan KDNK mempunyai positif dan kesan yang signifikan; manakala saiz bank dan krisis kewangan global memberi kesan negatif dan statistik yang signifikan dari segi statistik.

Daripada keputusan ini, adalah disyorkan bahawa bank mengawal dan mengurus dengan baik pembolehubah ini bagi mewujudkan tahap kecairan yang tinggi di bank-bank yang akan mencapai keuntungan yang baik, yang membawa kepada kemampanan sistem perbankan kewangan.

Kata kunci: Kecukupan Modal, Pembahagian Kewangan, Simpanan, Tempoh Matang, Pinjaman Tidak Berbayar, Takaful dan Takaful Semula.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

CHAPTER TWO: LITERATURE REVIEW

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: RESULT AND ANALYSIS

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AAOIFI   The Accounting and Auditing Organization for Islamic

CBs   Conventional Banks

CR   Credit Risk

CAP   Capital Adequacy

CBB   Central Bank of Bahrain

DTA   Deposits ratio

DUM   Dummies Variable of Banks

DVs   Dependent Variables

EQTA   Equity to total assets

FL   Financial Leverage

GCC   Gulf Cooperation Countries

GDP   Gross Domestic Product Growth

GDPGR   Gross Domestic Product growth Rate

GFC   Global Financial Crisis

IBs   Islamic Banks

IFSB   Islamic Financial Services Bank

IIFM   International Islamic Financial Market

IIRA	Islamic International Rating Agency
IMF	International Monetary Fund
IVs	Independent Variables
LD	Loans to Deposits
LTA	Logarithmic of Total Assets
LMC	Financial Institutions Liquidity Management Centre
LR	Liquidity Risk
LOGTA	Logarithm of total assets
NIM	Net Interest Margin
NPLs/NPF	Non-Performing/Loans/Non-Performing Financing
NWC	Net Working Capital
RBs	Retail Banks
ROA	Return on Assets
ROE	Return on Equity
SZE	Size
UUM	University Utara Malaysia
WBs	Wholesales Banks

CHAPTER ONE

INTRODUCTION

1.1   Background and Motivation of the Study

Strengthening the financial sector is a pivotal concern for any economy (Paul *et al.*, 2013). Banks are the main participants in any economy and perform important activities on both sides of the balance sheets: they enhance the flow of funds by lending cash to short-term users on the assets side; and provide liquidity on the liability side (Arif *et al.*, 2012). The role of banks can be diversified into financial intermediaries as it channels the financial resources from surplus economic units to deficit economic units, i.e., as facilitator and supporter (Tesfaye, 2012). Financial institutions are effective mediators between savers and borrowers, like investment banks, central banks, development banks and commercial banks, while performing this financial intermediary role.

Commercial banks have become the main institutions with the passage of time, because banks work as retail banking units and facilitate the transfer of financial assets that are required from lenders to other financial assets that are desired by the public. So, considering the fact that the activities of commercial banks affect the greater part of society, they have been selected as the major focus of this study. The financial intermediary role of commercial banks is the bedrock for two essential functions, namely, deposit mobilization and credit extension. An adequate financial intermediation requires the purposeful attention of the bank management to

profitability and liquidity issues, which are two conflicting goals of commercial banks (Olagunju *et al.*, 2012).

So the performance of these functions by banks puts them at risk, including the main risk of liquidity. Much research has been conducted on the determinants of bank profitability; these studies have revealed that liquidity risk is one of the major determinants of profitability. Molyneux *et al.* (1992); Goddard *et al.* (2004a) and Naser Ail (2013), found that liquidity risk is a major factor that affects performance; they showed evidence of a negative relationship between liquidity risk and the performance of a bank. Therefore, the risk of liquidity is a risk of losses for a bank resulting from its inability to meet its need for cash (Lartey *et al.*, 2013). In other words, bank liquidity risk emerges when the bank would like to transform its short-term deposits into a long-term loan. Therefore, banks have to hold an optimal level of liquidity that can maximize their profit to meet their obligations (Tesfaye, 2012).

Practically, profitability (as one of financial performance measurements) and liquidity are powerful indicators of the health and performance of banks, not only of commercial banks (Eljelly, 2004), but of all profit-related ventures. Furthermore, these performance indicators are vital for shareholders and depositors because shareholders are interested in the level of profitability and the depositors are interested in the position of liquidity. These determine the ability of banks to respond to the needs of withdrawal that are normally on demand.

The global financial crisis that happened in 2008 had huge effects on the operating and financial performance of many banks all over the world. As a consequence, big losses were reported by many banks due to their relationship with the sub-prime mortgage in the United States or due to the effects of the economic recession in their own countries. The impact of the global financial crisis has forced many banks in the U.S. and all over the world to fall into bankruptcy, like the American giant bank, Lehman Brothers, that was never expected to fail (Hidayat *et al.*, 2012). Amba *et al.* (2013), through their comparative study between 65 conventional banks and 27 Islamic banks operating in the Gulf Cooperation Council (GCC) region found that the profitability of both systems has been affected by the global financial crisis.

The Kingdom of Bahrain actively enhances itself as an international hub for Islamic finance. It is notably considered as the most developed country in terms of Islamic finance infrastructure within the GCC. The vision to be the international hub for Islamic finance encouraged the Central Bank of Bahrain (CBB) to open its gates to many local and international Islamic financial institutions to operate within the country. In addition, the Kingdom of Bahrain hosts many centers and organizations, such as The Accounting and Auditing Organization for Islamic Financial Institutions'' (AAOIFI), Liquidity Management Center (LMC), the International Islamic Financial Market (IIFM) and the Islamic International Rating Agency (IIRA).

As the contagion effect of the financial crisis became global, Islamic banks in Bahrain started to get affected negatively, and suddenly, some of the biggest Islamic banks,

such as the Bahrain Islamic Bank and Ethmar Bank, experienced net losses in their profitability. Hidayat *et al.* (2012), in their study, found that the profitability of Islamic banks in Bahrain was hugely affected during the recovery period. The global financial crisis has indeed raised the importance of the need for an adequate liquidity risk measurement and management. It is therefore evident that liquidity risk and profitability are current and very up-to-date topics (Vodová, 2013).

Return on Assets (ROA) (as one of the profitability measurements) of Islamic banks in Bahrain declined sharply from 1.5% during the crisis to 0.9% during the recovery period as compared to the rest of the GCC countries that share the same aspects (see figure 1.2). Many factors contributed to this decline. As shown in figure 1.3, the banking system in Bahrain as a whole, experienced a sharp decline in its total assets growth rate from 35% during the financial crisis to 3% during the recovery period. Also, the Islamic banks in Bahrain experienced a decline in their total assets growth rate from 25% during the crisis to 08% during the recovery period (see figure 1.4).

In addition, Islamic banks in Bahrain witnessed high non-performing loan (NPL) (financing) rates, especially during the recovery period (see figure 1.5). Higher ratios mean that these banks had problems in generating revenue from customers which caused a problem of liquidity in these banks. Hence, in order to sustain a sound financial system by maintaining and achieving a good profitability margin, this study seeks to investigate the extent of the impact of the significant determinants of liquidity risk on the profitability of Islamic commercial banks in Bahrain, rather than

assessing the profitability of these Islamic banks during the recovery period of the global financial crisis.

1.2 Overview of the Banking History in the Kingdom of Bahrain

1.2.1 Highlights of the Kingdom of Bahrain's Financial Sector

According to Al-Hassan *et al*. (2010), total assets of the retail banking sector at the end of 2008 was close to 260% of the GDP. But it was least concentrated among the GCC systems. Bahrain has a vibrant wholesale banking sector. The contribution of the financial sector is about one-third of the GDP with about 3% of the country's workforce employed in that sector, with total assets of around 1200% of GDP. The global financial crisis strongly affected the wholesale banking sector due to its linkages with the global financial markets that faced many challenges and crises. Also, Bahrain is home to a huge number of investment funds with assets close to 80% of the GDP (Al-Hassan *et al.*, 2010).

1.2.2 Islamic Banks in the Kingdom of Bahrain

As published by the CBB, the banking sector has played a central role in the emergence of Bahrain as a leading financial center in the region. The banking system in Bahrain includes Islamic banks as well as conventional banks, and it is the largest part of the financial system, with approximately 85% of total financial assets. As for

the conventional system, there are 23 retail banks, 69 wholesale banks, two specialized banks as well as 36 representative offices of overseas banks. The Islamic financing sector has six retail banks and 18 wholesale banks (see Appendix A).

Currently, Bahrain has been classified as a global leader in Islamic finance and is host to the biggest concentration of Islamic financial institutions in the Middle East. Bahrain has nine Islamic insurance firms (Takaful and Re-Takaful). It also has primacy in the market for Islamic securities (Islamic bonds). A comprehensive prudential and reporting framework, tailor-made for the specific concepts and needs of Islamic banking and insurance has been installed by CBB. The CBB issued two rulebooks that is the first comprehensive regulatory framework that deals with the Islamic finance industry. The first Islamic banks' rulebook covers domains, such as licensing requirements, risk management, business conduct, capital adequacy and financial crime, while the Takaful and Re-Takaful firms' specific features are covered by the insurance rulebook.

Recently, through a special fund that has been established by the CBB to support Islamic finance education, training (i.e., fund of Waqf) and finance research, it is working with the industry and stakeholders to develop the standards of the industry as well as the standardization of market practices. All these innovative products are pivotal to the role of the CBB in positioning Bahrain as one of the foremost international financial centers.

1.3 Problem Statement

Profit generated by banks is typically one of the major resources to accumulate assets. The sustainability of the banking system solely depends on the profitability and cash availability of banks. According to Zou and Li (2014), profitability is an indicator that shows the management approach and competitive position in market-based banking. Naser Ail (2013) believes that these parameters help banks to tolerate some level of risks as well as support them against any short-term problems. In the view of Alzorqan (2014), profitability is measured by all parts and sets of the financial ratios, namely the rate of return on shareholders' investment and the rate of return on assets (ROA). These ratios can measure the efficiency of the use of the bank's potential. The banks are susceptible to liquidity risk when performing their essential role in the maturity transformation of short-term deposits into long-term loans. The creation of banking liquidity is viewed as the prime source of financial welfare contribution by banks; nevertheless, as their primary cause of risk as well. Therefore, virtually every monetary transaction or obligation has implications for a bank's liquidity risks (Tesfaye, 2012).

Current research and studies denote that liquidity risk emerges from the inability of banks to accommodate losses in liabilities or to fund growth of assets. When the bank is illiquid, it means it cannot get enough money, either by boosting up liabilities or turning into assets immediately at sensible costs. Naser Ail Yadollahzadeh (2013) notes that there are moments those banks do not enjoy much liquidity or do not

benefit from liquidity; they cannot afford the required resources without converting their fixed assets into liquid assets at reasonable cost. Likewise, as noted by Arif *et al.* (2012) and Jenkinson (2008), under such critical conditions, the performance of these banks will be affected by such liquidity risks which may make banks to lose faith in their depositors if deposits are not made in a timely manner.

As noted from the above discussion, the economies of nations of the GCC share the same aspects: all of them are exporters of oil. Likewise, they have huge investments in real estate industry mainly funded by banks (Altaee *et al.*, 2013). Goud (2015), in his study found that the expansion and growth of the assets of the Islamic banking system in the Middle East, especially the GCC nations, follows the inflow of funds into the oil-exporting markets which exposed them to the crisis from two sides: the drop in oil prices during the recession and failure of investments by the real estate sector that prompted the crisis.

The Islamic banks in GCC countries suffered from the financial crisis when they experienced a decline in terms of ROA and return on equity (ROE) (Parashar *et al.*, 2010). As was found by Altaee *et al.* (2013), the whole GCC banking system was in a high-growth mode during the crisis with a strong increase in its assets at double-digit rates (29 %), while during the recovery period, it declined to 10% (see figure 1.3). The GCC countries have seen a proliferation of financial centers and Bahrain became the international hub of Islamic finance among the GCC countries and worldwide (Wilson, 2009). Unfortunately, it was among the foremost countries that witnessed a

decline in profitability, especially during the recovery period of the global financial crisis. Thus, the profitability of the Islamic banking system in Bahrain came under pressure.

The ROA ratio witnessed a sharp decline from 1.5% during the crisis to 0.9% during the recovery period (40% decline), while the cost to income ratio increased from 41% to 46% during the recovery period (see figure 1.1 and 1.2).

Figure 1.1:

Costs of Income in GCC banks during the crisis (2006) and (2012) recovery period
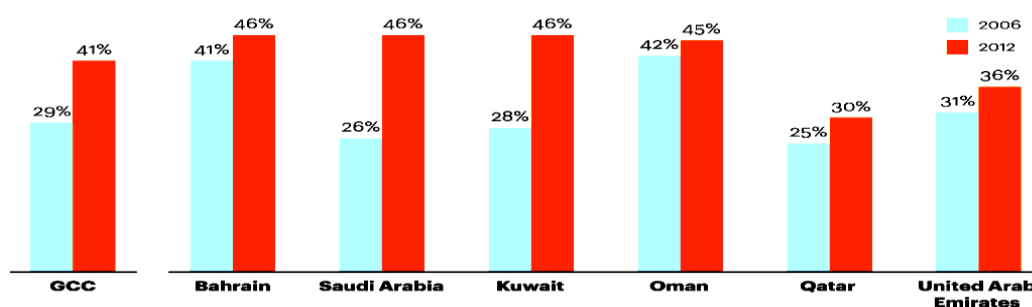
¹Cost-to-income ratio is operating expenses divided by operating income.

*Sources: A.T. Kearney Analysis (*Garbois *et al., 2013)*

Figure 1.2:

Return on Assets in GCC banks during crisis (2006) and (2012) recovery period

*Sources: A.T. Kearney Analysis (*Garbois *et al., 2013)*

9
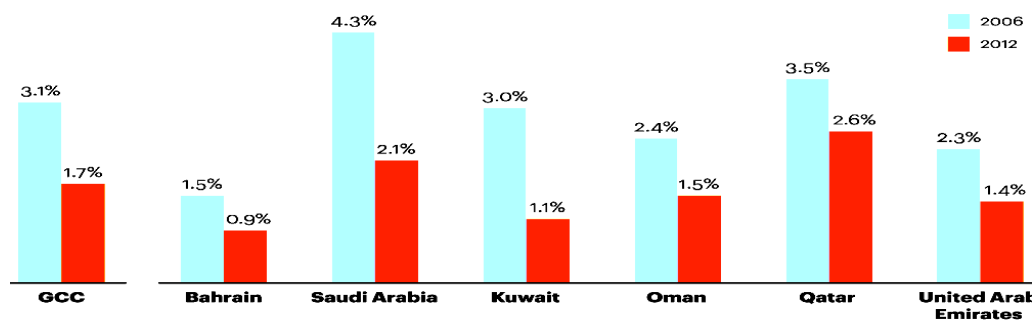
Many factors are to be blamed for this decline: Firstly, the banking system in Bahrain experienced a sharp decline in its total assets growth rate from 35% during the financial crisis to 3% during the recovery period (92% decline) as compared to the previous rate (see figure 1.3). It is the same case as witnessed by IBs when the growth rate was 25% during the crisis and decreased to 08% during the recovery period (see figure 1.4).

Figure 1.3:

Bank system Growth across the GCC during the financial crisis and recovery period
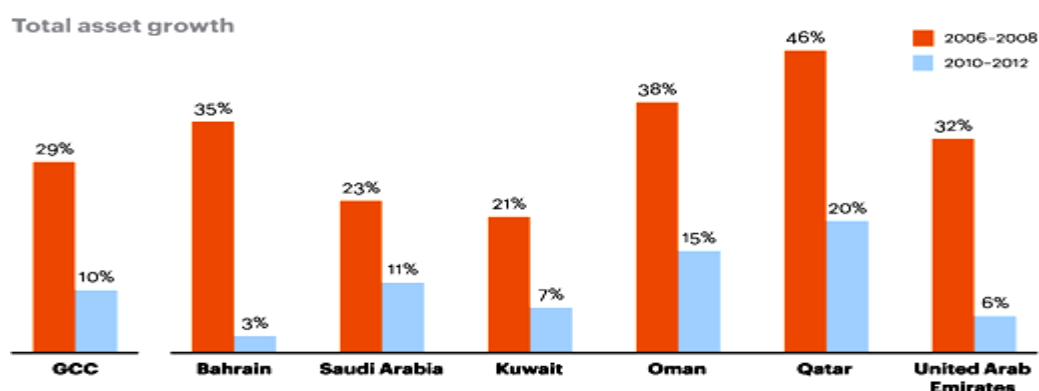
*Sources: A.T. Kearney Analysis (*Garbois *et al., 2013)*

Figure 1.4:

Declining Growth Rates of GCC Islamic Banks
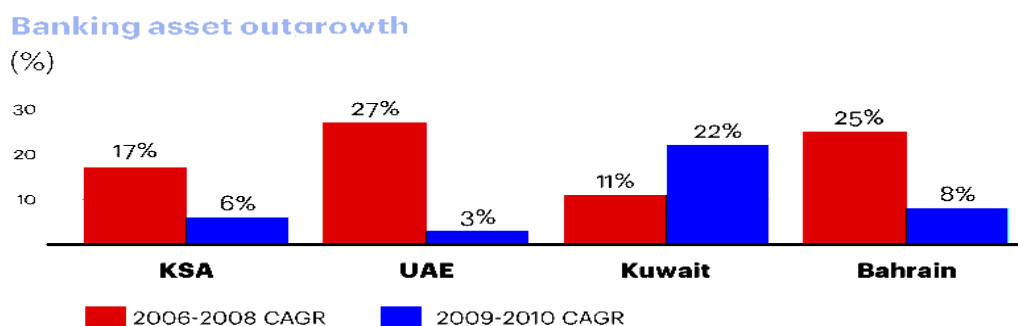
*Sources: A.T. Kearney Analysis (*Garbois *et al., 2012)*

Secondly, the quality of assets of Islamic banks in Bahrain was affected due to the large investment in the real estate's industry that was funded by these banks which were adversely impacted by the financial crisis. In terms of asset quality, as is shown below (figure 1.5), Islamic banks in Bahrain have the highest rates of non-performing finance (NPF) especially from 2010 to 2012 (during the recovery period) as compared to other countries. The high rate of NPF resulted in liquidity problems for these banks which caused them to restrict or foreclose themselves.

Figure 1.5:

Islamic Banking Asset Quality Average (NPF) from 2005/2012
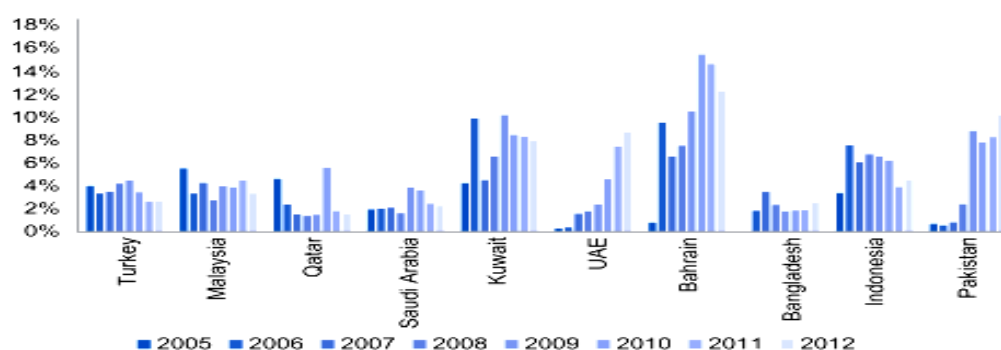
Source: Islamic Financial Services Board (IFSB) report, 2014

According to Garbois *et al*. (2013), Bahrain has the lowest GDP rate among the GCC countries. In 2008, the GDP was US$ 25.70 billion as compared to Saudi Arabia's US$ 519.70 billion. In 2009, the GDP rate declined to US$ 22.93 billion and may remain at the same low levels for the foreseeable future (see figure 1.6). It means that the economy in Bahrain does not encourage investors to invest their money in the banks, and the nation is losing ground which contributes to the slowdown in Islamic banks' growth and profitability.

11

Figure 1.6:

Gross Domestic Product (GDP) (USD Billion) in GCC Countries
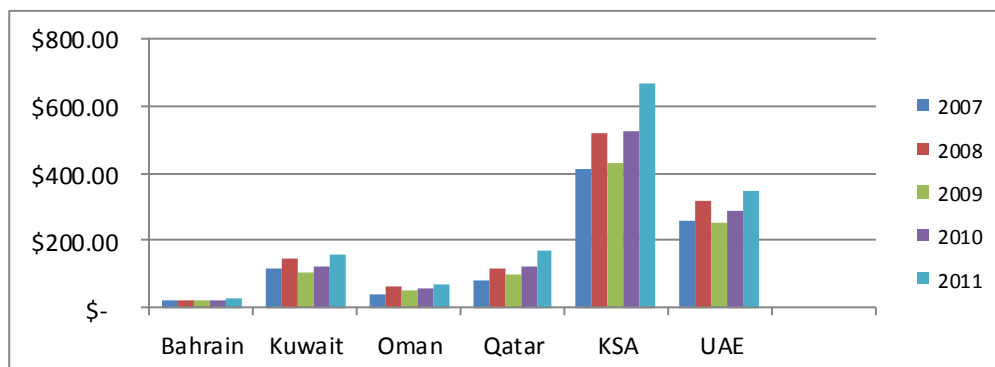
Source: International Monetary Fund IMF Website

On the other hand, Elsiefy (2013), in his study, concludes that there is not much empirical evidence in terms of the determinants of Islamic banking profitability. The researcher highly recommends replicating his study to include a larger number of banks in many different countries and also for a longer period.

To my knowledge, no such study has been carried out in the Kingdom of Bahrain, specifically to investigate the impact of the significant determinants of liquidity risk on Islamic banks' profitability. Thus, this study aims to help Islamic banks in Bahrain to improve their performance and liquidity risk management, to remain competitive and also to contribute to the current literature by providing some evidence on the impact of liquidity risk determinants on Islamic banks' profitability. In addition, the global financial crisis as a dummy variable, gives this study a good idea of how Islamic banks in Bahrain have controlled their financial situation during the recovery period.

12

1.4 Research Questions

Based on the above problem statement, the major research questions that this study attempts to provide answers for are:

a. What is the extent of the impact of liquidity risk determinants on the profitability of Islamic commercial banks operating in the Kingdom of Bahrain?

b. Does the global financial crisis have an impact on the profitability during the recovery period?

1.5 Research Objectives

The purpose of this study is to bridge the gap in the empirical literature on the determinants of liquidity risk and their impact on Islamic banks' profitability. Where determinants of liquidity risk help in the planning of liquidity, they also help in the anticipation of liquidity needs and to build defensive intervals. The overall purpose of this research is two-fold:

a. To investigate the extent of the impact of liquidity risk determinants on the profitability of Islamic commercial banks operating in the Kingdom of Bahrain over the period 2007-2013.

b. To assess the impact of global financial crisis on the profitability during the recovery period.

1.6   Significance of the Study

The major beneficiaries of this study are: Islamic banks both in Bahrain or Gulf Countries and all over the World, the academic staff and the society as a whole.

1.6.1   To the Researchers and Academic Staff

This study is a contribution to the broad literature on the performance as well as risk management in Islamic banks. It is intended to at least partly diminish the gap in the literature on liquidity risk determinants and their impact on profitability.

1.6.2   To the Islamic Banks

In order to improve the performance and to remain competitive with a good position in the market, these banks should have awareness about their profitability because as we have seen earlier, profitability is a measure that displays the management approach and the bank's competitive position in market-based banking. Also, since there is a close relationship between liquidity risk and the solvency of banks, a well-managed liquidity risk through the identification of the significant determinants of liquidity risk, can reduce the probability of banks becoming insolvent, thus reducing the possibilities of bankruptcies and bank-runs. Using the global financial crisis as a dummy variable gives our study a good idea of how Islamic banks in Bahrain controlled their financial situation during the recovery period.

14

1.6.3   To the Investors and Borrowers

Liquidity is a concern of both investors and borrowers. Liquidity is required by investors because they will be uncertain when they intend to eliminate their holding of a financial asset. Borrowers are interested in liquidity because they have doubts about their capacity to keep attracting or retaining funds. In the case where the borrowers do not have the ability to repay investors on demand, investors will require a premium or significant control rights when lending money to offset the illiquidity of investors. Banks empower depositors to withdraw at sensible costs, and buffer firms from the liquidity needs of their investors.

1.7   Scope of Study

The scope of this current study is limited to see the extent of the impact of the significant determinants of liquidity risk (adopted directly from previous studies) which are highly significant as follows: bank-specific determinants (internal factors), such as capital adequacy, financial leverage, bank size and deposits; and controller determinants (external factors), such as global financial crisis (as a dummy variable) and GDP growth rate on profitability, measured by ROA and ROE of nine licensed Islamic commercial banks in Kingdom of Bahrain over the period 2007 to 2013.

1.8   Research Organization

This study consists of five chapters. Chapter one provides the general introduction to the whole research, including introduction of the study, background of the study, which is outlined in order of issues relating to the general background, overview of Bahrain's financial system, problem statement, research questions and objectives, significance of the study, scope as well as research layout. Chapter two provides an insight into the literature review on the liquidity risk determinants that is explained by bank-specific (internal variables) and controller (external variables) determinants, and their impact on profitability. Data description and methodology are provided in Chapter three. Chapter four consists of the description, analysis and findings of the research. Lastly, in Chapter five, the researcher elaborates on the finding, provides some relevant policy recommendations and concludes the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In order to answer the study questions, the current chapter needs to go further on the theory and the empirical studies of the significant determinants of liquidity risk and its impact on the profitability. This chapter has divided into five broad sections. The starting point is the introduction followed by the theoretical Underpinning, and theoretical Underpinning has three sub-sections; they are Bank Liquidity Concept, theories of Liquidity Management and Bank Profitability Concept. Section three and Section four include the theory and the review of related empirical studies on the area of liquidity risk determinants and the impact of these determinants on Islamic banking profitability. Finally, the last section provides a summary and knowledge gap.

2.2 Theoretical Underpinning

2.2.1 Bank Liquidity Concept

The concept of liquidity relates a source of anxiety and uncertainty in the future for the management of firms. Liquidity is a financial term which means the amount of capital that is ready for investment. Now-a-days capital becomes credit, not cash because the larger financial institutions prefer to use borrowed money (Olagunju *et*

al., 2012). Moreover, bank liquidity is the ability to fulfill financial commitments which have emerged perspectives, and liquidity in commercial banks refers to the ability of the banks to finance all of their contractual commitments which include lending, investments, withdrawal of deposits as the normal course of bank action (Alshatti, 2014 and BIS, 2008).

Liquidity helps a firm to avoid the situation in which firms are forced with its problems to sell its assets at low prices and pay an extra fee to lawyers, trustee, and liquidators. The above definitions imply that, if the liquidity increases, the technical insolvency is likely to be reduced. Also, the above definitions increase the idea by knowing two areas of liquidity, the time to convert asset into money and certainty level linked with conversion ratio and price. Otherwise, in Islamic banking, liquidity largely depends on investment account and the current accounts, such as Mudarabah, Musharaka, Murabaha, Salam, Ishtisna, and Ijarah. The bank expects that the maximum benefit will be at risk at the level of liquidity when liquidity is low or high mean level of profit does not get maximal effect.

2.2.2 Theories of Liquidity Management

According to Maaka (2013) and Ejoh *et al.* (2014), the major objective of a commercial bank is to create liquidity while remaining financially sound; however, there are number of dimensions in the way banks concretely manage their

liquidity. In plain words, there are competing liquidity management theories. The most important and appropriate are given below:

2.2.2.1 Bank Liquidity Creation and Risk Transformation Theory

The present crisis has raised the issue of the response of liquidity of bank creation during crises. The modern theory of financial intermediation banks exists due to their performance on two economy's essential roles which involve liquidity's creation and risk's transformation (Berger *et al.*, 2009). Adam Smith (1776) analyzes the bank's role in liquidity creation, and an increase in the growth of economy reveals that these are long-term traditions in the corporate world. Angora *et al*. (2011) have stated that in the economy, the vital role of banks is to give fund on a long-term basis and illiquid assets with short-term and liquid liabilities within this financial intermediation. Moreover, banks create liquidity as they hold illiquid assets and supply cash and demand deposits to the rest of the economy through the function of liquidity providers.

Berger *et al*. (2009) have illustrated that the risk transformation collides with liquidity creation because banks without taking any risks provide liquid deposits to finance risky illiquid loans; furthermore, the creation as well as the transformation of liquidity does not go in the same direction, and the created amount of liquidity may vary greatly for such amount of risk transformed. Deep *et al* (2004) have defined transformation gap as a separation among liquid liabilities and the liquid assets which

are held by a bank and measured by total asset. If the difference is positive, the bank invests liquid liabilities into illiquid and performs the significant amount of liquidity creation.

Berger *et al.* (2009), by considering the "liquidity transformation gap" or the "liquidity creation" have focused on the parts of the creation of liquidity. They consider several determinants, such as bank capital, profitability, credit risk, market power, the business cycle and the level of central bank policy rate. All of these studies portray liquidity creation as a vital and important role of banks, but they do not deal with the liquidity pressures that banks may face and the possible excessive liquidity creation.

2.2.2.2 Shift-ability Theory

According to Alshatti (2014), Shift-ability is considered as idea that helps the moving of assets to sustain banks liquidity through selling its assets to liquid banks when they are undergoing short of money. This idea makes banks to work well with less saving and investment on long-term assets, and the banks try to avoid liquidity crises by ensuring to sell at reasonable prices. Moreover, assets moved to the central bank for cash without material loss in case of need than instead of focusing on maturities to solve liquidity problem (Ejoh *et al.*, 2014).

2.2.2.3 Liquidity asset theory

This theory focuses on the assets' side of balance sheet. It has stated that the banks have to hold a huge amount of assets against any possible demand and payment flexibility of current short-term marketable liquid assets against unfortunate situations. This method is very new and worthy in the dynamic money market of the present world (Ejoh *et al*., 2014).

2.2.2.4 Liability Management Theory

The above mentioned theory reveals that there is no need to precede for old and previous liquidity values which involve managing liquid assets because banks divert their focus of balance sheet on the liability side. Banks can fulfill the needy and demands liquidity by borrowing capital and money from the markets. The important aid of this theory is to consider the sources of liquidity that come from both sides of the balance sheet (Alshatti, 2014).

2.2.3 The Concept of Bank Profitability

Profitability of banks is the capacity to give rise to incomes which surpass the cost, and it is considered as banks' capital where banks are profitable. Moreover, this concept is more capable to withstand the negative shocks, and it promotes financial stability (Alshatti, 2014 and Ibe, 2013).

Wiyono *et al*. (2012) have defined profitability as an indicator which expresses the competitive position of the banks in the banking market and quality management. Profitability enables banks to sustain a certain risk profile and provides a foundation of short-term problems. Companies usually report their financial condition and performance by using two financial reports, like balance sheet and profit and loss report (income statement). The objective of analysis of profitability of a bank is to measure the level of business efficiency achieved by the banks concerned (Purbaningsih *et al.*, 2013).

2.2.4   Measurement of Bank Profitability

According to Alshatti (2014), there are many various financial ratios related to the owners as well as depositors that are used to determine the extent of ability of the banks in making profits from their invested money. The financial performance of the banks is indicated by profitability, thus, banks that have high-profit rate are performing well (Abbas *et al.*, 2012). The profitability is commonly measured by:

2.2.4.1   Return on assets (ROA)

The measurement of Return on Assets (ROA) shows how much the bank can earn after the exemption of tax for the invested assets of the firm. The ROA denotes to the profits that come from the firms' investments on the assets after the exemption of all taxes and costs (Paul *et al.*, 2013).   Islam *et al*. (2009) have considered ROA as the most rigorous and excessive test of return to shareholders.

2.2.4.2   Return on Equity (ROE)

The measurement of Return on Equity (ROE) also shows how much the bank can earn after the exemption of tax for investing in shareholders' equity of the firm. Paul *et al.* (2013) have stated that ROE is net earnings per dollar equity capital. ROE indicates how much profitability shareholders can achieve after the exemption of all taxes and expenses. The ROE can measure the efficiency of the firm in generating profits from every unit of shareholders' equity (Islam *et al.*, 2009).

2.3   Theoretical Literature on Liquidity Risk and Its Determinants

2.3.1   Liquidity Risk in Islamic Banking

Now-a-days Fiqh al-Muamalat (Islamic law) has become unavoidable in the contemporary Islamic finance. Any company, firm or bank wants to engage in an Islamic business in order to achieve revenues or maximization of profit, and this maximization should be in compliant with the Shariah teachings, for instance, the disallowance of the usury (Riba) as Allah S.W.T says in *Al-Bakara (275)-*

{و أحل الله البيع وحرم الربا }

By avoiding Riba, the maximization of profit will not have any of unethical practices and will set Islamic banking business in the preamble of ethical distinction. The Islamic finance and banking has an essential idea of the elimination of interest. In spite of this elimination, the understanding of trade and commerce (Al-Bay') in the activities of Islamic financing has not been recognized in a similar ability as the

feature of interest (Riba) has. Thus, several people have believed that Islamic banks are the banks which don't use interest in their operations, without any further elaboration. Although this involves a true concept of thinking, it does not accurately depict what actually an Islamic bank stands for. Actually, it would be more truthful to say that Islamic banking industry runs on the basis of commercial and trading doctrine (البيع) where gained profit includes the value addition (الكسب) and risk-taking (الغرم) activities. The following verses from Al-Quran and Hadith describe the concept of risk management as:

سورة طه الاية 115 { وَلَقَدْ عَهِدْنَا إِلَى آدَمَ مِنْ قَبْلُ فنسي وَلَمْ نَجِدْ لَهُ عَزْمًا}

"We had already, beforehand. Taken the covenant of Adam but he forgot: and we found on his part no resolve." Surah Ta Ha: Verses (115). Means, a Man was born weak in the nature and always liable to risk.

{ فَحَمَلَتْهُ فَانْتَبَذَتْ بِهِ مَكَانًا قَصِيًّا (22) فَأَجَاءَهَا الْمَخَاضُ إِلَى جِذْعِ النَّخْلَةِ........ }

So she has conceived him, and she withdrew with him to a remote place (22) and the pains of childbirth drove her to the trunk of a palm tree (23) Maryam Verses 22 - 23.

In addition, *the Profit Mohamed (peace be upon him) says: the Prophet s.a.w. has been asked "Oh the Messenger of Allah! Should I leave my camel (without tying it) and put trust (depend) on Allah (Tawakkal 'al Allah) or should I tie it then depend on Allah? He (the Messenger of Allah) said, "Rather tie it and then depend on Allah."*

The above chapters have supreme meanings that will never find the conventional knowledge. It has showed that everything in this life has an element of risk, for believers should manage this risk through completely obeying and worshiping of Allah SWT. These verses shed light on how Musa Alayhi Assalam and Lady Maryam Alayha Assalam manage their risks by being the complete servant of Allah SWT.

Mohd Ariffin (2012) has explained that the Islamic banks require fulfilling liquidity needs and liabilities to ensure the smooth running of their business, like conventional counterparts. However, the free interest of Islamic banks in their operations raises many issues that should be focused in to fulfill the needs of liquidity in proper Shariah compliant manner. Many Scholars said that the liquidity risk is the major risk that is faced by Islamic banks, and these do not have the equal options of funding that is present for CBs in the inter-bank markets. The lack of proper secondary capital market or money market for Islamic financial instruments increases the issue of opposing maturities, and liquidity problems are becoming big barrier for the growth of Islamic banking (Vogel *et al*., 1998).

On the other hand, the problem of liquidity also has emerged due to depositors' decisions to redeem their deposits while the banks don't have sufficient money in hands. In fact, banks have an imbalance in the asset, and liability side is needed to manage on a regular basis; otherwise, they will bear the risk of insolvency. To understand the risk of liquidity in Islamic banks, we should know the underlying principles of the Islamic Banking. Moreover, Islamic law prohibits taking funds at

short notice and by discounting debt liabilities receivables. In addition, there is no shariah compliant lender of the last resort facility given by the central bank. Islamic banks bear the risk of liquidity when they are linked with investment account holders' funds in illiquid long-term assets, such as Ijarah assets, or Mudarabah/Musharakah profit-sharing arrangements.

According to the Islamic financial services bank (IFSB), the vulnerability of banks towards liquidity risk is determined by funding as well as market liquidity risk. Funding liquidity risk is the risk which Islamic banking will not bear either it is expected and unexpected or actual, and future cash inflow become collateral without affecting their routine operations and financial of Islamic banking. The market Risk liquidity in Islamic banking cannot be satisfied or eliminated due to the inadequate market depth or market disturbance.

By summing up, Ismal (2010) has stated that liquidity risk in Islamic banking has a tendency of financing risk. It has emerged due to the liquidity risk that occurs from banks' failures to manage liquidity, and the credit risk occurs due to the bad management of financing and the mismatch risk between liability and assets that have emerged many sub risks that include unsolved risk of liquidity problems and unfavorable economic or business conditions (see figure 2.1).

Figure 2.1:

Risks Related to Liquidity Risk in Islamic Banking
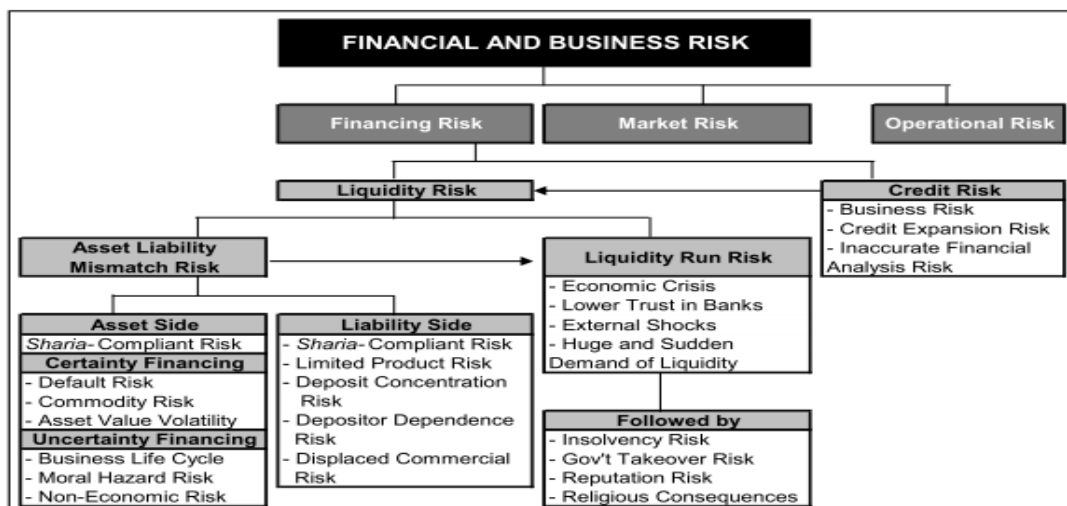
Source: (Ismal, 2010)

2.3.2 Determinants of Liquidity Risk –Theory

There remains still scarcity in the literature of liquidity risk's determinants, and liquidity risk is viewed as a determinant of other risks, such credit risk (Cucinelli, 2013) or a determinant of bank performance (Arif *et al.*, 2012).

2.3.2.1 Bank Specific Determinants (Internal Factors)

2.3.2.1.1 Bank Capitalization (Capital Adequacy) and Liquidity Risk

Abusharba *et al*. (2013) have said that capital adequacy is a situation where adjusted capital is much easy to handle all losses and to manage fixed assets of banks while

sparing adequate amount for operation in future. The capital level must be adjusted when expenses of operations seem to increase in future. Wasiuzzaman *et al*. (2013) have stated that capital adequacy shows the strength of banks' capital and the effects of equity on earning profits by banks. This ratio evaluates the ability of banks to face risks in future; according to the rule that says "*higher the ratio more the bank is safe*". Banks having the higher capital ratio is safe from any loss rather than banks have lower ratios. The Central Banks use this capital ratio to determine a bank's capacity in bearing risk. The current theories in the literature provide the opposing prediction on the effect of the capital of bank on its liquidity creation. Some researchers have showed that the capital of bank minimizes the bank liquidity creation (Cucinelli, 2013).

On the other hand, in contrast, some theories show that the capital of banks enhances banks' liquidity by absorbing risk under risk absorption hypothesis; for example, greater capital improves liquidity creation. Allen *et al*. (2004) and Diamond *et al*. (1983) have argued that liquidity creation causes a risk to many banks and more liquidity that is created, causes higher chances of losses linked with illiquid assets to fulfill liquidity demands of customers.

2.3.2.1.2   Financial leverage (Gearing Ratio) and Liquidity Risk

Šarlija *et al*. (2012) and Williamson (1988) have showed that the optimal level of debt is restricted by the liquidity of assets and relies on the average debt in most of the

industries. Likewise, the report by Šarlija *et al.* (2012) and Morallec (2001) have revealed that the role of liquid assets is polished by its assessment regardless of assets measured by liquidation value of firms' asset or by the selling price of asset throughout life of firm. In the same vein, Sibilkov (2004) has come to the conclusion that firms with more financial leveraged have more liquidity. Lipson and Mortal (2009) have revealed that the firms who rely on internal resources are less benefited. Anderson (2002) defines the relationship among the high financial leverage, high liquidity, and slower growth of the firm.

2.3.2.1.3   Bank Size and Liquidity Risk

Ln (TA) is defined as the log of total assets which are showed by the Bank size and added as additional variable to seize perfect size effects, like risk management skills (Al-Khouri, 2012). Moreover, Iannotta *et al.* (2007) have revealed the argument of *"Too Big to Fail"* as large banks can get guaranteed benefit to minimize cost of funding and permit them to invest in assets. So large banks can lead to moral hazard behaviors and expose them towards huge risks, and they are likely to perform a high level of liquidity creation which causes losses related with sale illiquid assets to satisfy the demands of customers, so it can be concluded that there is a positive relationship between size of bank and illiquidity. Vodova (2011) has showed that a big bank has a lower liquidity linked with too big to fail theory and these banks are less encouraged to hold liquidity since they rely on government intervention in case of shortages.

In contrast, small banks keep view on traditional intermediation operation and transformation actions because (Gibilaro *et al.*, 2010) have found that if the banks become larger, they will have low exposure to liquidity, and their sustain strategy could be justified based on the theory that says "*larger banks have a better reputation and so are less exposed to the liquidity risk*".

2.3.2.1.4   Deposits (Deposits to Total Assets) and Liquidity Risk:

The deposits provide a hedge to banks in opposition of liquidity risk, and if the market conditions are stressed on, the banks are perceived as investors who are not interested to issue money against the commitments of loan (Gatev *et al.*, 2006). Cash flow in banks complements each other, and that gives hedge to banks for outflows due to the advancement of loan.

2.3.2.2   Controller Determinants (External Factors) and Liquidity Risk

To differentiate the impact of bank characteristics on liquidity risk and profitability, it is necessary to control factors that the researcher has proposed in this study as possible determinants of liquidity risk and profitability. Two Controller determinants are likely to have an effect on both LR and profitability. The researcher has introduced just two indicators which were GDP and Global Financial Crisis (as dummy variable), and they interact with each other to see how they make an impact on bank liquidity risk as well as bank profitability.

2.3.2.2.1 Global Financial Crisis (GFC) and Liquidity Risk

The researcher has used the global financial crisis (GFC) as a control dummy variable in order to determine the impact of the event on liquidity risk of Islamic banking in Bahrain. The recovery period of such financial crisis (2009-2013) is indicated by number 1 and number 0 for the other periods. Cucinelli (2013), in his study has found that during the crisis, the liquidity risk management can be affected only in the short term period.

2.3.2.2.2 Gross Domestic Product GDP Growth and Liquidity Risk

Based on the aforementioned, it is understood that GDP is a country's financial health indicator. According to Roulet (2012), the macroeconomic environment is likely to affect the activities of banks as well as the decisions of the investors. The demand for financial products is greater during higher economic progress which will improve the ability of banks to enhance their financing and securities portfolio at a higher rate. Likewise, economic crisis causes lowering in bank credit supply. On the basis of these arguments, banks are expected to increase their liquidity transformation, so their maturity transformation risk enhances economic progress. The annual growth rate of real GDP reflects the overall economic conditions in which banks operate.

It can predict the different arguments regarding to liquidity and GDP; the positive coefficient on GDP growth rate indicates that liquidity is negatively linked with the cycle of business. Many borrowers want to get financing during expansion period when they have valuable investment projects. The banks like to fulfill the growing demand for financing that faces a shorter liquidity. In the case of deflation in economy, the opportunities of lending are not well to hold high share of liquid assets (Vodová, 2011). Al-Khouri (2012) has stated about the financial sector development and economic growth and showed that GDP growth is positively related with the performance of bank and credit growth.

By contrast, Ganić (2014) has empirically examined the impact of foreign banks involvement on liquidity and the ability of the banks to capture liquidity during liquidity distress period. He has revealed the fact that the liquidity is negatively related to real GDP growth. Valla (2006), in his study has found a negative relationship between liquidity risk and GDP real growth (reported by Munteanu, 2012).

2.3.3   Determinants of Liquidity Risk – Empirical Studies

The table (2.1) below has summarized some empirical studies that have showed the significant factors that affect the liquidity risk:

Table 2.1:

Liquidity Risk Determinantes, Empirical Studies

Author/ Year	Countries /Studied Data Period	Variables	Results
(Ganić, 2014)	17 commercial banks in B&H over the period 2002-2012	**DVs :** Liquidity Risk **IVs :** -Capitalization CAP -NPL -Return on Equity ROE. -Loan Loss reserves ratio LLR. -Size TOA. -GDP growth GDP. -Reserve ratio RR. -Loans to deposit ratio LTD.	**LR1:** ROE, LLR, RR and LTD were positive significant and Non-performing loan was negative significant. **LR2:** CAP , RR,LLR and LTD were positive and significant
(Vodová, 2013)	Hungarian commercial banks from 2001 to 2010. By using panel data regression analysis	**DVs :** Liquidity Risk **IVs** - Capitalization CAP -NPL -Return on Equity ROE. -Size TOA. -FIC Financial. Crisis as Dummy -GDP and INF other variables	The results were: bank liquidity risk is positively related to capital adequacy of banks, The relation between the growth rate of GDP and bank liquidity risk is ambiguous.
(Vodová, 2011)	Commercial banks in the Czech Republic. Over the period from 2001 to 2009 using panel data regression analysis.	**DVs :** Liquidity Risk **IVs** - Capitalization -NPL - ROE -Size - Financial Crisis as Dummy -GDP and INF and others	Liquidity risk has a positive relationship with capital adequacy; non-performing loans, inflation rate, and financial crisis have negative relationship with both liquidity risk models. The influence of banks size is ambiguous.

(Naveed Ahmed *et al.*, 2011)	The listed Islamic banks of Pakistan from 2006 to 2009.	**DVs :** Liquidity Risk **IVs** - Size -Tangibility -financial Leverage -Profitability -Age	The results showed that financial leverage as well as age is positive significant with liquidity risk whereas tangibility was significant and negative relationship with liquidity risk.
(Anam *et al.*, 2012)	Six conventional and four Islamic banks in Bangladesh. from 2006 to 2010	**DVs :** Liquidity Risk **IVs :**- Bank Size - NWC - ROE /ROA -CAP	LR level in Islamic banks was proven to be successful. NWC in Conventional banks and size in Islamic banks were positive and significant.
(Abdullah & Khan, 2012)	Data of 10 banks from 2001-2010 in Pakistan.	**DVs :** Liquidity Risk **IVs** - Size of the Bank - financial leverage (DTE) - ROE - Liquid Assets -And Others	Size of Bank found to be negative and significant impact on liquidity risk in the case of local banks and negative insignificant in the case of foreign banks. DTE has negative and significant relationship with liquidity risk is both banks.
(Anjum Iqbal, 2012)	Five Islamic banks and twenty-three Conventional banks in Pakistan over the period 2007-2010.	**DVs :** Liquidity Risk **IVs** - Bank Size/- NPL Ratio/- ROE - CAP /- ROA	CAR, ROA, ROE and bank size have positive relationship. NPL has a negative and significant relation.
(Ramzan & Zafar, 2014)	Five full-fledge Islamic banks of Pakistan from 2007-2011.	**DVs :** Liquidity Risk **IVs** - assets - Bank Size -ROE /ROA -CAP - NWC	Asset and size have positive and significant relationship with liquidity risk. The rest of the independent variables were not found to be significant.
(Akhtar *et al.*, 2011b)	Conventional and Islamic banks of Pakistan from 2006-2009.	**DVs** : Liquidity Risk **IVs** - Bank size - ROE /ROA - CAP - NWC	Bank size and net-working capital have positive but insignificant relationship with LR. Capital adequacy in CBs and ROA in IBs were positive and significant with liquidity risk

(Cucinelli, 2013)	The sample of this study included of 1080 listed and non-listed Eurozone banks.	**DVs:** LR measured by LCR and NSFR. **IVs** -Financial Crisis -Dummy Listed - CAP - Bank size - Bank specialization (SPEC) - Loan Loss Reserve Ratio (LLRR) - GDP and INF	**LCR:** Size was negative and significant whereas LLRR, dummy crisis, and GDP were positive and significant. **NSFR:** SIZE was negative and significant whereas CAP was positive and significant.
(Munteanu, 2012)	The sample of this study was all the commercial banks in Romania from 2008 until 2010.	**DVs :** - Liquidity Risk **IVs** **Internal factors** -capital adequacy -asset quality -z-score and others variables **External factors** -GDP /-inflation and others viarbles	**L1 Model:** Cap, assets quality and interbank funding were negative and significant. **L2 Model:** Assets quality and funding cost were positive and significant
(Kurnia, 2012)	The sample for this thesis was six Malaysian banks conventional and Islamic banks from 2007-2011	**DVs:** Liquidity risk **IVs:** -CAR -ROA -ROE -NIM -Liquidity Gaps And other variables	In conventional banks CAR and ROE were negative and significant Liquidity gap is positive and significant, while ROA has positive and insignificant effect. In Islamic banks NIM, ROE and ROA were positive and significant.
(Guthua, 2013)	The sample was forty-three commercial banks in Kenya.	**DVs:** Liquidity risk **IVs:**-ROE, ROA -CAP, -Total Assets, -Asset /Liability Mismatch -and others	ROE, CAP, ROA, total assets, asset liability management have significant and positive relationship with LR.
(Neveed Ahmed *et al.*, 2011)	The sample was all the Islamic banks in Pakistan from 2006 to 2009	**DVs:**- CR Credit Risk - LR Liquidity Risk -Operational Risk **IVs:**-size of Bank	-Bank size found has a positive significant impact and on liquidity risk. -DTE and NPLs ratio

35

		-Debt Equity Ratio DTE -Asset Management -NPLs -CAP	have a negative significant impact on LR. - CAP has positive and significant impact on LR.
Sundas Rauf *et al.*, 2014	To evaluate the regression among the variables, SPSS has been used on the collected data for 46 operational banks in Pakistan.	**DVs :** - Liquidity risk **IVs** -Operating Performance / / Credit Risk/ Spread / / Lending Rate/Internet Banking Transactions/ Non-Performing loans to advances/ deposits to total assets / intermediation cost	Though, results have enlightened that 1% increase in transaction via internet banking will lead toward more than 1% enhancement of liquidity and asset quality of banking sector in Pakistan. As liquidity and asset quality are components of CAMELS/ CAELS for measuring the performance of banking sector in Pakistan.

2.4   The Impact of Liquidity Risk Determinants on Profitability

2.3.4   Liquidity Risk Determinants and Profitability – Theory

In the banking industry, liquidity risk and profitability are opposite indictors (Naser Ail, 2013). Liquidity risk can affect profitability in a positive way as argued by Molyneux *et al*. (1992); Barth *et al*. (2003); Bourke (1989) and Pasiouras *et al*. (2007) believe in its negative effect.

2.3.4.1 Bank Specific Determinants (Internal Factors)

2.3.4.1.1 Bank Capitalization (CAP) and Profitability

Capital ratio is a vital tool for evaluating the profitability of banks and general protection of bank because many studies have found that high-intensity of banks' capital achieves good results as compared to their less capitalized peers (Tariq *et al.*, 2014). According to Elsiefy (2013), the theoretical and empirical proofs give mixed results regarding the effect of banks' capital on its profitability.

Moreover, according to the conventional wisdom in banking, *"A Higher Capital Ratio Is Associated with Lower Profitability"* (Berger, 1995), which means that a higher capital ratio will reduce the equity risk and the returns on equity required by investors. Hoffmann (2011) argued that the high capital ratio shows that banks are operating over-cautiously and neglecting the profitable trading chances which can lead towards negative profitability.

However, the report by Berger (1995), Bourke (1989) has found a positive and direct linkage among profitability of banks and capital ratio since high capital ratio causes more cost effective profitability. Also, Ben Naceur *et al*. (2008) have suggested that the high capital ratio in Islamic banks can charge more for loans or pay less on deposits because the bankruptcy risks are not likely to be faced, which would increase the profitability.

2.3.4.1.2 Financial Leverage (Gearing Ratio) and Profitability:

The pecking order theory has argued that the firms think worthy to use internal funds before going to use external financing which helps firms to have lower leverage. The theory has illuminated that the leverage should enhance a value of liquidation; moreover, it is negatively related to profitability. The financial leverage is measured by debt to equity ratio (Bhutta *et al.*, 2013). Furthermore, researchers try to calculate the ratio of debt to equity in order to determine whether an optimal debt ratio exists or not. When the debt ratio lowers the capital cost of firms and enhances their value, it can be called as the optimal debt ratio (Kebewar, 2012).

Many studies have showed that financial leverage can have negative effect on profitability. Regarding this, Titman *et al.* (1988) have agreed that firms with high-profit level will sustain a low debt level and realize funds from an internal source. Rajan *et al.* (1995) also have confirmed a significantly negative relation between profitability and financial leverage. However, some authors have observed the positive relationship between debt and profitability. In the same vein, it can be said that Abor (2005) has found positive significant impact of debt ratio on profitability and has revealed that the financial leverage and profitability are inconclusive and need more empirical work.

2.3.4.1.3   Bank Size and Profitability

The size of the bank is a vital part of the performance, and industrial economic theory supposes that an industry that is subject to economies of scale will be more efficient and able to provide low-cost services, so large size has positive impact on the profitability of bank (Muda *et al.*, 2013). By contrast, when banks become widely large, the effect of size could be negative due to bureaucratic, agency costs, and other factors related to managing extremely large firms (Ben Selma *et al.,* 2014).

The literature gives mixed results regarding the relationship of bank size and profitability (D. E. Elsiefy, 2013). Firstly, the extant literature generally has showed that there is a positive impact of bank size on banking performance. Rozzani *et al*. (2013) have mentioned that based upon the economies of scale theory, it is argued that size promotes performance by inducing the economies of scale, and it is reflected by the fact that large banks appear to take advantage of scale economies in reducing the costs of gathering and processing information. Having more resources, large banks are able to promote enhancement in performance by mobilizing more funds to generate higher returns for their depositors and equity holders. Furthermore, Goddard *et al*. (2004b) have revealed that large banks in highly penetrated market acquire imbalance profit if they acquire the power to affect the wholesale market or capital markets. Ali *et al.* (2011) has found a positive relationship between ROA and size (reported by Bilal *et al.*, 2013).

However, the effect of size can be negative for banks that are extremely large due to their bureaucratic processes, agency costs, and inflexibility (Nigmonov, 2010). The bigger banks tend to have the higher ratio of losses provision than smaller banks; thus, the size shows natural algorithm of the total asset which is used as an independent variable in many studies. Bank Size shows the scale's economies and diseconomies, and it would be beneficial to take the natural logarithm of total assets before including that in the model (Dawood, 2014).

2.3.4.1.4 Deposits (Deposits to Total Assets) and Profitability

The deposits are considered as the lifeline of the banking business, and banking operations are operated through these deposits. Moreover, if depositors start withdrawing their deposits from banks, a liquidity trap will happen, and that process forces them to get funds from the central bank or the inter-bank market at higher costs. By contrast, banks having deposits in their accounts will not face loss, and they will improve their profitability (Ahmed Arif, 2012).

According to Tariq *et al.* (2014), banks with high deposits are comparative to their assets and strength development. The deposit to total assets of ratio is also an indicator of liquidity and is considered as a liability to measure the impact on profitability (Muda *et al.*, 2013a). It is also a major source of bank funding because these are considered as an independent variable which can be compared with other ratios by simply dividing by total assets. Therefore, Deposit Ratio (DTA) can be

defined as total deposits (including Non-Mudharabah Fund and Mudharabah Fund) from customers, banks and financial institutions as a percentage of total assets.

Muda *et al*. (2013a), in his study have found that deposit ratio has positive impact on foreign and domestic banks, and also it reveals that banks' ROE can be improved by receiving more deposits. Thus, the deposits to total assets have powerful impact in evaluating the profitability of foreign and domestic banks. Alkassim (2005) evaluates the types of profitability in conventional and Islamic banks in GCG companies between 1997 and 2004 and concludes that there is positive impact of deposits on profitability in conventional banks and negative impact on Islamic banks. By contrast, Bashir and Hassan, (2004) show the negative impact of profitability on deposits.

2.3.4.2   Controller Determinants (External Factors)

2.3.4.2.1   Global Financial Crisis (GFC) and Profitability

It is used as a control dummy variable to assess the impact of the global financial crisis on the profitability of Islamic banks during the recovery period. It was indicated by 1 for the recovery period (from 2010 until 2013) and 0 for the other periods. Vodova (2013) has found that the financial crisis have impacts on many banks in Hungary when the profitability of banks becoming less and liquidity remains at the same level. Hidayat *et al*. (2012) and Amba *et al*. (2013) revealed that the global financial crisis had affected the profitability of Islamic banks in Bahrain during the recovery period.

2.3.4.2.2 Gross Domestic Product GDP and Profitability

Banks profitability is sensitive to macroeconomic variables, and the economic approach in GCC faces higher growth in 1970's when oil exports increase (Anbar *et al.*, 2011). The economic trend is calculated by GDP, and Import Export Real GDP measures the size of the economy for each country. Muda *et al.* (2013b) illustrate that GDP evaluates the economy, and the Real GDP measures the actual increase in services while it excludes the impact of the rise in prices. The GDP shows the situation of the economy as growing economy that provides growing demand for banking services and lower risk as opposed to shrinking economy. Moreover, GDP is mostly used as the indicator to measure total economic activity within an economy.

Gul *et al.* (2011) reveal that the rapid economic growth enhances the profitability in large number of countries. GDP seizes ups down appearance in business cycles and expects to generate a direct effect on probability of banks. Literature shows two versions of GDP; there is a cyclical output which shows the perversion of GDP from HP-Filtered GDP, and the use of GDP per capita caters to the level of development in the economy. Alkassim (2005), in his study reports that Bashir and Hassan (2004) have found that favorable economic conditions include GDP and inflation, show significant and positive effects on Islamic banks' profitability. The profits of Islamic banking are high during the economic session as the lender are supposed to return the capital they have borrowed.

In contrast, Ayadi *et al*. (2012) and Bilal *et al*. (2013) discuss in their study about the factors of profitability. They have found that External factors, such GDP and Inflation have negative impact on banking profitability. In addition, Sanusi *et al*. (2005) mention that the GDP growth rate has no impact on bank profitability (reported by Muda *et al.*, 2013b).

2.3.5   Liquidity Risk Determinants and Profitability – Empirical Studies

Anwar and Herwany (2006), in their study have intended to see whether the determinants have an effect on Government as well as Private Non-Foreign Exchange Banks Profitability in Indonesia from 1993 to 2000. The dependent variables are ROA and ROE as measurements of profitability. Cross-sectional and pooled data are applied in this study. The independent variables are some financial ratios that usually are used in banking Industry and also by some macroeconomic factors. The result of this research has shown that for the Sub-period I (during financial crisis), both equations show that R^2-adjusted under ROA measure has the higher value than those of under ROE measure (13.96%, 12.78% respectively). It means that for ROA measure equation, the variables have a higher degree in determinant level if they are compared with the ROE measure equation. Those equations also show that CRTA and LIQ are significant in determining the ROA. In ROE measure, besides LIQ, there are two other variables that significantly determine the ROE; those are TSTD with a negative slope and LOGTA with the positive slope. For Sub Period Ii (during recovery period) for the Sub-Period 2, both equations show that R^2 under ROE

measure has the higher value than those of under ROA measure (17.69%, 12.84% respectively). It means that for ROE measure equation, the variables have a higher degree in determinant level if they are compared with the ROA measure equation.

Ben Selma *et al.* (2014) conduct a study that includes a sample of 15 CBs and 15 IBs in the MENA region from 2002 to 2009. The GLS method is used for the study. The results show that the return on assets as well as return on equity depicts the profitability of IBs and CBs. By using ROA, the researcher has found that credit risk is found to be significant and negatively related with profitability. Liquidity risk is to be insignificant and has positive relationship with ROA (conventional) while it is significant and positive in the case of Islamic banks. The CAP has found to have positive significance with ROA (conventional banks) whiles it is found to have positive insignificant relationship with (Islamic banks). GDP is insignificant with positive relationship in the case of Islamic banks. By using ROE as a dependent variable, these results show that liquidity risk is found to be significant and has positive relationship with ROE in Islamic banks. The bank size is insignificant and has positive relationship with ROE for Islamic banks. Capital with ROE has negative and insignificant relationship in the case of Islamic banks.

Bilal *et al*. (2013), conduct a study that aims to see the effect of bank-specific and macroeconomic factors on commercial banks' profitability in Pakistan from 2007 until 2011. The dependent variables are ROA and ROE as measurements of profitability. The bank-specific variables are deposit ratio, size of bank (LN of total

assets), capital ratio (total shareholders' equity/ total assets), nonperforming loans and other variables whereas the macroeconomic factors are GDP and Inflation. The results show that there is positive significant impact bank size on both ROA and ROE. Also, capital ratio is found to be significant with positive impact on ROE. Deposit ratio has positive but insignificant impact. NPL and INF have negative significant impact on return on assets while real GDP is found to be significant and has positive impact on ROA.

Francis (2013), attempts a study in order to investigate the determinants of profitability for 216 commercial banks from 42 countries in Sub-Saharan Africa from 1999 to 2006. The researcher use unbalanced data, and the model is estimated by the use of panel random effects method. The independent variables are in the following and they are bank assets (positive sig), bank deposits (positive sig), equity to total assets (positive sig), and other bank-specific variables while the macroeconomic determinants are GDP (positive sig) and inflation. The results show that CAP and deposits ratio are positive and have significant impact on profitability. GDP and inflation are significant with negative effect on profitability.

Bashir (2003), in his study aims to investigate the impact of internal banking characteristics on the profitability and efficiency of Islamic banks in eight Middle-Eastern countries from 1993 and 1998. The variables are classified as follow: dependent variables, such ROA, ROE, and BTP/TA (measurement of profitability), Exogenous Variables, such Bank Characteristic Indicators, Macroeconomic

Indicators, Taxation Indicators and Financial Structure Indicators. The results show that capital and loan ratios have significant positive impact on profitability. This means that an adequate capital ratio and loan portfolios play a vital role in explaining Islamic banking performance. The impact of GDP and inflation rates is found to have positive relation with profitability.

Wasiuzzaman *et al*. (2013), conduct a paper of fourteen Malaysian banks (nine conventional and five Islamic), and the paper aims to analyze the differences in bank characteristics of Islamic and conventional banks with profitability from 2005 to 2009. By running the regression analysis, the results show that ROA and bank size in conventional banks are found to be significant and higher as compared to Islamic banks. The other variables, such operational efficiency, asset quality, liquidity, capital adequacy are found to be significant and higher in the case of Islamic banks.

Karim *et al*. (2010), make a study that aims to identify the impact of Bank-specific factors, financial structure, and macroeconomic factors on Islamic banking profitability in Africa over the period from 1999 to 2009. The authors have used panel data techniques. The independent variables are: Equity to total assets (Capital adequacy), asset quality, operating efficiency, the log total assets (Bank SIZE), Bank Concentration (BC), and others. The macroeconomic indicators, such as the domestic gross product growth (GDP) and the inflation, reflect the overall economic conditions in which banks operate. The findings show that Islamic banks' profitability in Africa can be explained by Bank-specific, financial structure, and macroeconomics variables.

Capital ratio and bank size increase banks' profitability whereas asset quality and operating efficiency have negative correlation with profitability. The higher of GDP and INF also spur banks' profitability.

Arif *et al*. (2012), in a study aim to examine liquidity risk determinants as well as to investigate their effect of liquidity risk that determinate the profitability of Pakistani banks over the period from 2004 to 2009. The researchers use multiple regressions analysis, and the results show that bank profitability is significantly affected by liquidity risk where the liquidity gap and non-performing loans are the determinants of LR and have negative impact on profitability; on the other hand, the results show that deposits has positive significant relationship with profitability.

Athanasoglou *et al*. (2006), in their study aim to investigate the impact of bank-specific, industry-related and macroeconomic determinants on South Eastern European (SEE) profitability over the period 1998 to 2002. The authors use unbalanced panel data with multiple regressions to test the model. The dependent variables of the study are ROA and ROE (profitability measurements). The independents variables are Bank-specific determinants that include NPL, bank capital, bank size and Deposits and cash. Industry-related determinants include Banking system reform and Concentration. Macroeconomic includes inflation and economic activities. The effect of bank-specific variables is in the following: liquidity risk is positive but insignificant with profitability. The asset quality variable is found to have negative and significant impact on profitability. The capital variable is found to be

47

positive and highly significant, especially with ROA; the effect of bank size on profitability is positive and statistically significant with ROA, and deposits ratio shows a positive significant relationship with ROA.

The rest empirical studies are summarized as it shown in (Table 2.2)

Table 2.2:

Liquidity Risk Determinants and Profitability, Empirical Studies

Author/Year	Countries Studied/Period	Method	Variables	Results
(E. Elsiefy, 2013)	The sample of this study were18 CBs and IBs in Qatar from 2006until 2011	Time series data was used to estimate the model the author used Least Squares regression analysis.	**DVs:** ROA, ROE, NIM and RORWA. **IVs :** capital adequacy, bank size, liquidity, asset quality, GDPGR, GDPPC and other variables	**ROE:** **Positive sign:** NPL & LLP **Negative sign:** Bank size Capital was negative and insignificant **ROA**: no significant
(Abduh and Alias, 2014)	All Islamic banks operating in Malaysia, from 2006 to 2010	The study used Multiple Regression Analysis through Pooled OLS estimator	**DVs :** ROA & ROE **IVs :** Asset Quality, Net Loans /Total Assets, Total Overhead Cost / Total Assets, Equity /total assets, Bank Size, GDP And Inflation	**ROA model :** Asset quality and bank size positive and significant. **ROE model :** Asset quality showed a negative and significant relationship.
(Wabwile *et al.*, 2014)	All commercial banks listed on NSE in relation to their financial leverage in Kenya from 2007 to 2011	This study used Person correlation and regression analysis to test the data	**DVs :** -Profitability (ROA) **IVs :** **Financial Leverage** -Debt to Equity -Debt to Asset -Times Interest	Debt to assets and debt to equity ratios found to be significant and negative effect on ROA and return on capital

(Velnampy and Niresh, 2012)	The study used ten listed Srilankan banks from 2002 to 2009	The study used descriptive and Correlation analysis to see the relationship between DVs and IVs	**DVs:**-Net profit, -Return on Capital -Return on Equity -Net Interest Margin **IVs:**-Debt/Equity - Debt to Total Funds	debt to equity and ROE are negative relationship as well as negative relationship with return on capital
(Opoku *et al.*, 2014)	The study used nine listed banks on the Ghana Stock Exchange over the period 2005/2012.	The study uses both quantitative and qualitative Techniques in the analysis of the data.	**DVs**:-ROE/-ROA/ -The Tobin's (TOBQ) - The Economic Value Added (EVA) **IVs :** - Debt-Equity - Bank size	Debt equity ratio and bank size have a positively significant impact on ROE as well as ROA.
(Akhtar *et al.*, 2011a)	All Pakistanis Islamic banks that have listed in Lahore stock exchange and State Bank from 2006 to 2009	This study used multivariate regression models with The least-square method to estimate the regression.	**DVs:** ROA ROE **IVs:** -Bank's Size - Debts/Equity -NPLs Ratio -Asset management -Operating Efficiency -Capital Adequacy	**ROA:** Debts/Equity and CAP have a significant positive relationship. NPLs has negative significant **ROE :** Debts/Equity and CAP found to be significant and positive.
(AL-Omar *et al.*, 2008)	Kuwaiti banks (1993-2005)	Least Square (LS) as an estimator. Pool technique using Seemingly Unrelated Regression (SUR).	**DVs :** ROA **IVs :** -CAP , -banks size , -interest assets , - Others variables.	**Positive significant :** Cap (EQTA) and bank size. **Negative significant :** Non Interest Assets,
(Almazari, 2014)	Twenty three of Saudi and Jordanian banks over the period 2005-	The study used Pearson's correlation, descriptive analysis and	**DVs:** ROA **IVs :** -CAP(TEA) , -liquidity risk, LR - Cost Income Ratio	**Saudi Arabia:** CAP and LR show positive relationship whereas CIR and

	2011	regression analysis	-bank size And other variables	bank Size showed negative relationship. **Jordan:** Liquidity risk, TEA (CAP) and CDR showed positive while CIR and bank Size were negative relationship.
(Muda *et al.*, 2013a)	The study included seventeen Malaysian Islamic banks (domestic & foreign) in form 2007 to 2010	Unbalanced panel quarterly data. The GLS is employed as an estimator	**DVs**: ROE **IVs :** **Model 1:** -LOTA (size), -Deposits ratio -GDPGR ,GDPPC -and Concentration Ratio (CONC) **Model 2 :** -Capital and Reserves (CRTA), -INF , -Bank Size, -Bank Age and -Global Financial Crisis (GFC).	**Domestic banks:** GDPGR and bank size have a positive significant. **Foreigner banks** GDPPC only has a significant effect in ROE. Deposits, CRTA, INF and banks' age have a positive significant effect in ROE of both. *The GFC affect just domestic banks*
(Ongore and Kusa, 2013)	Thirty seven commercial banks in Kenya from 2001 to 2010	The authors used panel data with multiple linear regression models. GLS used as an estimator	**DVs:** ROA/ROE / NIM **IVs:**-CAP -Asset Quality AQ -Management Efficiency ME -Liquidity LM -GDP AND INF **Moderator:** ownership	**ROA :** *Non Moderator:* CAP , ME and LM (+ sign) ,AQ,GDP, INF (-sign) **ROE:** *Non Moderator* : LM and GDP (+ sign)
(Chua, 2013)	The study used six Islamic Banks in Malaysian from	Panel data is used in this study through a fixed effects	**DVs :** ROA **IVs:** Capital Ratio, Liquidity,	Capital, size of Bank, and GDP were Positive and Significant.

	2007-2011.	(FE) model .the least square as an estimator	Bank Size, GDP and INF	Liquidity has a negative significant relationship.
(Kosmidou *et al.*, 2005)	This study included UK commercial banking industry from 1995-2002.	Panel data used in this study with fixed effects regression.	**DVs:** ROAA and NIM **IVs:** **Banks characteristics** - Cost/income ratio -Liquidity - Asset quality -equity to total assets (capital) - size of Bank **Macroeconomic and Financial Structure** GDP, Inflation, Concentration and stock market	**ROAA:** LIQ, EQAS, INF, MACPASS, CONC and GDP have positive significant relationship. COST and SIZE have negative significant relationship.
(Amba and Almukharreq, 2013)	This study included twenty-seven IBs and sixty-five CBs in Gulf Country Cooperation from 2006 to 2009.	T-Test was implied	**DVs:** ROA,ROE , NIM **IVs**: -Equity ratio and Tangible -Loans and Liquid Assets -Deposits and Overhead Costs	The financial crisis affected negatively the profitability of both banks. While GFC showed no significant effect on both banks during the financial crisis
(Ansari, 2011)	The sample of study used five IBs & five CBs in Pakistan. from 2005 to 2009	F-Statistics has been used by author to see the impact of independent variables on profitability	**DVs:** ROA **IVs :** -Banks size, -Capital (EQTA), -deposits -other variables.	**Positive** : Banks size (Islamic), Capital (EQTA), deposits ratio **Negative**: Banks size (convent)
(Dawood, 2014)	Twenty-three Pakistanis commercial banks used in this study form 2009 to 2012	Penal Data used in this study. Multiple Regression Analysis Estimated By	**DVs:** ROA **IVs:** Liquidity, EQTA(CAP), Deposits and size of	liquidity, CAP, deposits and size are the main internal determinants that affect

51

		Ordinary Least Square (OLS) Method.	the bank and other	commercial banks profitability in Pakistan
(Anbar and Alper, 2011)	The study included Turkish banking from 2002 to 2010	They used a panel data. In this study, the fixed effects model was appropriate.	**DVs:** ROA & ROE **IVs:** Assets size, Capital adequacy, asset quality, deposits , Liquidity. GDPGA, inflation and Real interest rate	**ROA:** Bank size found to be significant positive. Assets quality found to be negative effect on profit. **ROE:** Bank size was positive and significant.
(Ayadi and Boujelbene, 2012)	The study used twelve Tunisian deposit banks from1995-2005	panel data used in this study with random effect estimator	**DVs:** ROAA **IVs:** bank size, Liquidity Risk, The Capital (EQAS), Credit Risk, The Concentration, And other variables	CAP and bank size found to be positive and significant effect on ROAA
(Sufian, 2012)	Seventy-seven Bangladeshi, Sri Lankan, and Pakistani commercial banks, between 1997 and 2008	The study used unbalanced panel data. The study used linear regression model with OLS estimator	**DVs :** ROA **IVs :** **Bank specific:** LOANS/TA, size, asset quality, capitalization, and DEPO/TA (total deposits divided by total assets) and other variables. **Macroeconomic:** LNGDP,INF	The liquidity, non-interest income, asset quality capitalization, deposits and LNGDP found to be positive and significant impact on bank profitability.
(ZAMAN, 2011)	A study included ten Pakistanis banks in over the period 2004-2008	Panel data was used with POLS method. Also they used Robustness Test (Incremental Regression)	**DVs:** ROA **IVs :** Bank size, deposit ratio and Equity / total assets and Other variables.	Banks size was significant and negative with ROA. Deposit ratio and equity ratio is significant and positive with ROA
(Obeidat *et al.*, 2013)	The study included IBs in Jordan over the	Multiple regression	**DVs :** ROA **IVs :**capital ratio, loan ratio,	Total deposit, Mudarabah loans and Restricted

	period 1997-2006.		Deposits ratio, Total expenditure, and others variables.	investment deposits are negative
(ur Rahman, Odera, & Ali, 2012)	This study included Islamic and conventional banks in Pakistan from 2006-2010.	The multi-variant regression model is used on the pooled samples of cross banks.	**DVs : ROA** **IVs :** Bank size, capital ratio Total Loans/Total Asset and Deposits ratio	Capital ratio and Deposits ratio found to be significant and positive ROA. Size of Bank found to be negative and significant with profitability.
Asma'Rashidah Idris *et al.*, (2011)	This study included Malaysian listed Islamic Banking Institutions for the period 2007-2009	Panel data analysis, using quarterly data GLS estimator.	**DVs**: ROA **IVs :** -CAP, -CR Credit Risk -Liquidity, -Bank Size and others	The Bank Size showed a positive significant relationship with profitability while the rest viarbles showed no significance
(Tariq *et al.*, 2014)	This study used seventeen commercial banks in Pakistan from 2004-2010	Panel data is used with polled regression, fixed effect and random effect estimators.	**DVs :**ROE and NIM **IVs:** - Equity/total Assets. - Loons/total assets - Loans/Deposits - Deposits/assets -and others	**ROE:** EOTA and LTD were positive significant. LOTA, DTA were negative significant
(Abduh and Idrees, 2013)	The sample was Malaysian Islamic banks for the period of 2006 to 2010	Panel data was used with fixed effect model.	**DVs:** ROAA **IVs:** **Bank-Specific** - Capital Ratio - Liquidity Ratio - Bank Size -and others **Industry-Specific** - Financial Market Development - Concentration **Macroeconomic** - GDP and INF	Bank size, Concentration, Stock market capitalization and INF have positive and significant with ROAA.

(Hassan and Bashir, 2003)	The study included Islamic banks' worldwide during 1994-2001	Cross sectional data have been used in this study with linear regression model	**DVs** ROA, ROE, Net Profit before Taxes (NPBT) NIM **IVs:** **Bank's Internal factors** capital, leverage, overhead, loan and liquidity ratios **External factors** Taxation, financial structure, and country dummies	**ROA:** Capital, LATA and GDPGR were positive significant. LOANT and INF were negative and significant. **ROE:** Capital and LOANTA were negative and significant. Whereas, LATA and GDPGR were positive and sig
(Al-Tamimi and Hussein, 2010)	The sample included UAE Islamic and conventional national banks over the period 1996-2008	Multiple regression model was used in this study	**DVs:** ROE and ROA **IVs:** -GDPPC, -Bank Size, -Financial Development - Liquidity, -Concentration, -Number Of Branches	**ROA and ROE:** Concentration and liquidity were positive and significant.
(Shahchera, 2012)	This study used 17 commercial banks (private and own state banks) from 2000-2009	We adopt the unbalanced panel data. Descriptive , correlation matrix for DVs and IVs	**DVs:** ROE **IVs:** - Liquid asset,, - Capital ratio, - Loan asset ratio, - Deposit ratio	Whereas deposits ratio and capital ratio were positive and significant with return on equity.

2.4 Summary and Knowledge Gap

According to the aforementioned literature review, liquidity risk becomes the concerned of all business including banking industry since the major function is to

create liquidity in both sides of the balance sheet (asset and liability side). As we have seen the financial crisis has affected the liquidity of banking when it made a trap and problems in their liquidity. These issues are evidence that liquidity and liquidity risk are so important for the operation of the banking sector and financial markets. The gap still exists in the literature review in term of liquidity risk and its determinants. Little studies intended to determine the factors that have really impacted on liquidity risk. The above Studies suggested that commercial Banks' liquidity risk is determined both by bank-specific or internal factors (i.e. Bank size, capital adequacy and other factors), as well as external factors (i.e. economic environment indicators). Additionally, There is still lack of studies done aimed to include liquidity risk as an explanatory variable of profitability, the aims of above studies were limited just to see the determinants of liquidity risk and or the factors of financial performance. To sum up, there are no empirical studies done regarding determinants of liquidity risk and their impact on the profitability of Islamic commercials banks operating in Bahrain.

An otherwise, Akhtar *et al.* (2011a); Opoku *et al.* (2014) and Velnampy *et al*. (2012) in their papers added new variable that never used by previous authors namely financial leverage measured by debts to total equity. Their results showed a high significant of this variable either with liquidity risk or with profitability which mean financial leverage can be an explanatory of liquidity risk and profitability as well.

Since the Islamic banking industry is still in the growth stage and the absence of Islamic secondary money market in the country, it is important to inform the important of determine of Islamic banks liquidity risk and their extent impact on profitability through making many empirical investigations. Therefore, the contributions of this study were taking into accounted all the gaps and limitations that have been found in the empirical studies.

CHAPTER THREE

METHODOLOGY

3.1   Introduction

Regarding the aforementioned literature review and in order to answer the questions as well as to meet the objectives of this study, this current chapter discusses the methodology uses to conduct this research. The methodology used is very important to ensure the reliability and accuracy of the findings. In this chapter, the research framework is adopted to get a clearer view on the variables studied. The research framework shows the framework of the study on the impact of the Liquidity risk determinants on Islamic banking profitability (ROA and ROE). This chapter also discusses the hypotheses, population and sampling, data collection method, the measurement of variables and data analysis techniques.

3.2   Research Design

Research methodology is a "systematic controlled, empirical, and critical investigation of natural phenomena guided by theory and hypothesis about the presumed relations among such phenomena. In the social science context, research methodology is commonly classified into two general formats, namely quantitative and qualitative research methodologies (Sullivan *et al.*, 2008). Generally, the ordinal measures and numbers are emphasized by Quantitative research (Gray *et al.*, 2007). Particularly, Quantitative research seeks to make formal

relationships between related variables. This relationship is guided by positivist philosophy (Asutay, 2008). That social phenomenon in a positivist philosophy can be clarified by numbers which represent such conditions. The quantitative research methodology as known includes primary as well secondary data to clarify what actually happens in the specific social phenomenon.

Quantitative research has four procedures started by hypothesis which determine from the relative theory, after making hypothesis we should gathering and collecting data that contains social reality of the related field, after that we should analyze these data according to the proper tests of these hypothesis, and finally we should produce the output of the quantitative research which explains and clarifies the social phenomenon in question. Qualitative research is a holistic approach that involves discovery which investigates the conception of people, their responses, their feelings and every information relating to a specific social phenomenon.

In order to meet all the study's objectives, to reply research questions and to test the study hypotheses, Quantitative research method is found to be more appropriate for this study. The secondary data has been employed to make econometric models and analyzes the profitability of Islamic banks in Bahrain. Therefore, the researcher uses this method because this study uses financial data which was obtained and calculated from Thomson DataStream database provided by Perpustakaan Sultanah Bahiyah, Universiti Utara Malaysia, published financial report of Bahrain central bank and all

selected Islamic banks, IMF and World Bank publication for nine Islamic commercial banks in Bahrain.

Therefore, in this study the researcher implies Time series data which is defined as a simple series of numbers collected at regular intervals over a period of time. In order to make a robust short-term data, the researcher has disaggregated such given economic time series data into quarterly period from first quarter of 2007 until fourth quarter of 2013. The disaggregation of such given time series data is needed to make a robust short-term data that are not available on, for example, weekly, monthly or quarterly basis. Reported by Ayodeji *et al*. (2012), Gandolfo *et al*. (1981) suggest these equations In order to solve the general problem of temporally disaggregating a set of known values for n periods into pn sub-period values (where p is the number of sub-periods per period). It should also be noted that setting p = 4 in the system of equations yield the quadratic interpolation algorithm of Gandolfo:

$$
\left.\begin{aligned}
y_t^{(1)} &= \frac{7}{128}y_{t-1} + \frac{15}{64}y_t - \frac{5}{128}y_{t+1} \\
y_t^{(2)} &= \frac{1}{128}y_{t-1} + \frac{17}{64}y_t - \frac{3}{128}y_{t+1} \\
y_t^{(3)} &= -\frac{3}{128}y_{t-1} + \frac{17}{64}y_t - \frac{1}{128}y_{t+1} \\
y_t^{(4)} &= -\frac{5}{128}y_{t-1} + \frac{15}{64}y_t + \frac{7}{128}y_{t+1}
\end{aligned}\right\}
$$

Where y_{t-1}, y_t and y_{t+1} are three successive annual observations of a continuous flow variable y (t).

3.3   Theoretical Framework

The theoretical framework is considered as the conceptual model of how one theorizes or logically reasonable relationship between several factors or matters that have been explained as important for the study area (Sekaran *et al.*, 2003). A theoretical framework enables the researcher to hypothesize or purposes as well as to test the relationship between the variables involved in order to extent the understanding of the related study area of study. The researcher proposes a framework as known in the below Figure 3.1:

Figure 3.1:

Theoretical Framework

Independent Variables

Capital Adequacy

Financial Leverage

Bank size

Deposits

Global Financial Crisis

GDP

Profitability

Dependent Variable
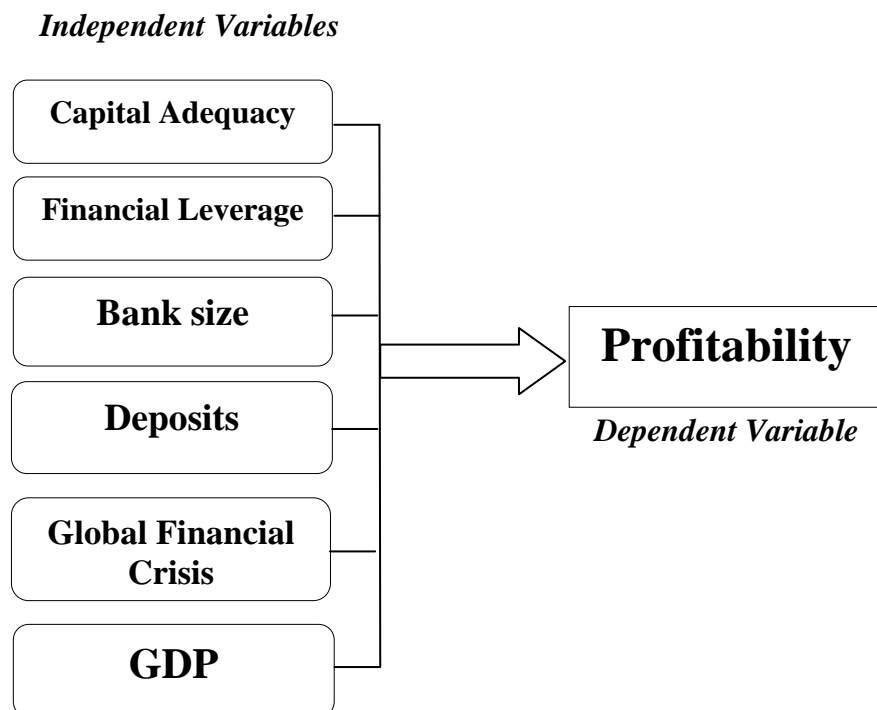
In this study, the theoretical framework is required in order to know the affiliation of one variable to other variables. Therefore, under the theoretical framework, there are two variables used which are dependent variable (DV) and independent variable (IV) which can take different or changing values. Meanwhile, the dependent variable is the concerned variable to researchers. The independent variable can affect the dependent variable either in a positive or negative manner (Sekaran, 2003).

The research framework shows return on asset (ROA) and return on equity (ROE) act as dependent variables. The capital adequacy (CAP), financial leverage (FL), bank size (SZE), and deposits (DP) act as the independent variables, While global financial crisis (GFC) and gross domestic product (GDP) act as controller variables. This model is adopted based on:

- Firstly: the previous studies of these variables have shown big significant results especially for those following authors: (Ganić mehmed, 2014); (Pavla Vodova, 2011, 2013); (Naveed Ahmed *et al.,* 2011); (Sayedu anam *et al.*, 2012); (Anjum Iqbal, 2012); (Muhammad Ramzan, 2014); (Muhammad Farhan *et al.,* 2011); (Rim *et al.,* 2014); (Anwar *et al.*, 2006) and (Abduh *et al.*, 2014).

- Secondly: besides what the above authors used as variables (Akhtar *et al.*, 2011a); (Opoku *et al*., 2014) and (Velnampy *et al.*, 2012) added new variable namely financial leverage measured by debts to total equity in their research papers, and the results showed this variable can be considered an explanatory of liquidity risk and profitability as well.

61

3.4   Research Hypotheses

The objective attained by this study is to investigate the extent impact of the significant liquidity risk determinants on Islamic commercial banking profitability. Rather, than to assess the profitability of these banks during the recovery period of global financial crisis. The determinants of liquidity risk have been adopted directly from previous studies whose showed a big significant. Based the last objective, the present study intends to test:

Specific Bank "Internal Factors"

$H_0 1$: Capital Adequacy has a negative and significant impact on profitability.

$H_a 1$: Capital Adequacy has a positive and significant impact on profitability.

$H_0 2$: Financial Leverage has a positive and significant impact on profitability.

$H_a 2$: Financial Leverage has a negative and significant impact on profitability.

$H_0 3$: Bank size has a positive and significant impact on the profitability.

$H_a 3$: Bank size has a negative and significant impact on the profitability.

$H_0 4$: Deposits have a negative and significant impact on profitability.

$H_a 4$: Deposits have a positive and significant impact on profitability.

Controller Variables "External Factors"

$H_0 5$: GFC has a positive impact on profitability during the recovery period.

$H_a 5$: GFC has a negative impact on profitability during the recovery period.

$H_0 6$: GDP has a negative and significant impact on profitability.

$H_a 6$: GDP has a positive and significant impact on profitability.

3.4.1 Dependent variables

This paper does not include all measurements of the profitability; the researcher uses just the popular ratios which were used in previous studies. Also, for the rest independents variables such bank-specific (internal) determinants and controller (external) determinants are being limited and are chosen directly from previous empirical studies based on their significant with liquidity risk. So, these variables were tested in different countries even in some GCC countries that share kingdom of Bahrain same aspects and they viewed a big significant with liquidity risk. Also the choose of these variables are based on the availability of data because some data are available in UUM DataStream but not for all banks and some data are not available for some banks and are not easy to calculated manually from financial report of these banks.

3.4.1.1　Bank Profitability

Various financial ratios related to the owners as well as to depositors which are used to determine the extent of the banks' capacity to achieve profits from the investing money (Alshatti, 2014). According to Abbas *et al*. (2012), the financial performance of banks has many measurements such as profitability indicator. The banks perform well should having high-profit rate. It is commonly judged by;

3.4.1.1.1　Return on Assets (ROA)

The banking invested in the assets which will generate revenues from it.in order to measure how much the bank is earning from such assets we use Return on Assets (ROA) as the popular measurement of profitability. Paul *et al*. (2013) stated that the Return that comes from investing on firms' assets is considered as the profits after any Taxes and costs. Also, it is a measure of managerial performance (Mahfudz, A.A, 2006). As stated by Islam *et al*. (2009), the most stringent and excessive test of return to shareholders. It is calculated as follow:

$$ROA = (Net\ income/\ Total\ Assets) \times 100$$

3.4.1.1.2　Return on Equity (ROE)

Return on Equity (ROE) is a measure that shows how much the bank is earning after exemption tax for its investment in shareholders' equity. Paul *et al*. (2013) mentioned

that the return on equity is net earnings per dollar equity capital. ROE indicates how much profitability shareholders can earn it from their shares. Islam *et al.* (2009) and Mahfudz, A. A. (2006) stated that the efficiency of a firm in generating profits from every unit of shareholders' equity can be measured by return on equity. It is calculated as follows:

$$ROE = (Net\ Income\ /\ Total\ Equity) \times 100$$

3.4.2 Independent Variable

3.4.2.1 Bank Capitalization (Capital Adequacy)

According to Merchant (2012), the capital adequacy measurement is a major parameter that should be measured by the banks. Through this measurement, It can help the banks and its management in understood the shock captivating capability during times of risk. In this study Equity to total assets ratio (EQTA) will be the measurement of capital adequacy. EQTA will back up our study in grasp the safety and financial reliability of the banks. Besides it will show the volume of assets that have been financed by owner's funds. In plain words, the high of EQTA will help banks in providing a strong cushion to increase its credit undertakings and lower the unanticipated risks.

Equity to total assets EQTA is the essential ratio for capital strength. It is anticipated that, the higher of EQTA, the lower the need for external funding which lead to a

higher of bank profitability. It shows the capacity of the bank to absorb losses and handle risk exposure with shareholder. The proxy used of capital adequacy's measurement is in line with Merchant (2012); Ben Selma *et al*. (2014) and Abduh *et al*. (2014) is:

$$CAP\ (EQTA)\ = Equity\ /\ Tot\ Assets$$

3.4.2.2   Financial Leverage (Debts to Total Equity)

 As we have seen earlier, the financial leverage is measured by debt to equity ratio. We can say that the optimal debt ratio is the ratio that diminishes the costs of capital and maximizing the profitability of the firm. In the line with Muhammad Farhan Akhtar *et al*. (2011); Eric Febiri Opoku *et al*. (2013) and Edwin Sawa *et al*. (2014) the financial leverage is measured as follow:

$$Financial\ Leverage = Debts/Total\ Equity$$

3.4.2.3   Banks Size:

The Size of the bank is an essential determinant of profitability. Al-Khouri (2012) and Gibilaro *et al*. (2010) mentioned that the natural logarithm of total assets Ln (TA) represented the measurement of Bank size.

$$Bank\ Size = Ln\ (Total\ assets)$$

3.4.2.4 Deposits (Deposits to Total Assets)

According To Ahmed Arif *et al*. (2012), all the customers' accounts are considered as banks' Deposits. The researcher took the data of deposits from the balance sheets (liability side) without any classification of deposit accounts. In line with these authors such Ahmed Arif *et al*. (2012); Muhamad Muda *et al*. (2013); Elsayed Elsiefy (2013) and Usman Dawood (2014) the deposits can be measured as follow:

Deposits ratio = Deposits / Total assets

3.4.2.5 Global Financial Crisis

The researcher uses the global financial crisis (GFC) as a control dummy variable with a view to checking its effect on the profitability of Islamic banks in Bahrain. Hidayat *et al*. (2012) and Amba *et al*. (2013) argued that, Islamic banks in Bahrain have been affected during the recovery period. Therefore, for the recovery period of financial crisis (from 2010 until 2013), it was indicated by a number 1 and for other periods was indicated by 0.

3.4.2.6 Gross Domestic Product GDP

According to Muda *et al*. (2013b), the national output of an economy can be measured by The Gross domestic product growth rate (GDPGR). Real GDP measures the current increase in goods and services and excludes the impact of rising prices.

GDP as macroeconomic indicators is known as the measurement of the total economic activity within an economy.

Table 3.1:

A Summary of Operational Definitions, Notation, and Measurement of All Variables

Type of variable	Variable	Notation	Measurement(Proxies)
Dependent Variables	Profitability	ROA	Net Income /Total Assets
		ROE	Net Income / Total Equity
Bank-Specific (internal) Independent Variables	Capital Adequacy	CAP (EQTA)	Equity / Total Assets
	Financial leverage	FL	Debts /Total Equity
	Bank Size	SZE	Ln(Total Asset)
	Deposits	DP	Deposits/ Total Assets
Controller (External) Independent Variables	Global Financial Crisis(Dummy)	GFC	Number 1 recovery period (2010-2013) and 0 other periods.
	Gross Domestic Product	GDPGR	Annual Real GDP Growth Rate

3.5   Population and Sampling Procedure

3.5.1   Population of the Study

Population indicated to the whole group of people, or events or anything that is the concern of researcher who wishes to investigate on (Sekaran, 2003). The proposed population of interest for this study is the total of Islamic commercial banks (local and foreigner) that have licensed by the Bahrain CBB. According to Bahrain central bank CBB, there are thirteen Islamic commercial banks (six retail banks and seven wholesale banks) operating in Bahrain as follow (see Appendix A).

3.5.2   Sample Size

According to Brooks (2014), a question that is often asked by those new to econometrics is "what is an appropriate sample size for model estimation?" While there is no definitive answer to above question, it should make sure that in econometrics the majority of testing procedures rely on the asymptotic theory. This theory argued that as the sample size approaches to the population, the results from the sample estimates are more appropriate for generalizing to the general population. Thus, in this study the sample size is almost equal to the population which enabled to make appropriate generalization to the overall population.

According to Uma Sekaran (2003), Instead of obtaining information from those who are most readily or conveniently available, it might sometimes become

necessary to obtain information from specific target groups. The sampling here is confined to specific types of people who can provide the desired information, either because they are the only ones who have it, or conform to some criteria set by the researcher. This type of sampling design is called purposive sampling.

The researcher uses the purposive sampling in selecting the sample based on the reason that, the Commercial banks have overtime become very important institutions in the financial system which has a big effect to a greater part of the public. And also because the only these banks can provide the desired information. The drawing sample includes those listed commercial Islamic banks having at least seven years working experience in Bahrain (i.e. from Q1 of 2007 to Q4 of 2013). With this reason four banks have been excluded namely; Arab Islamic bank (E.C) is not operating, Turkiye Finans Katilim Banakasi (A.S) was established in 2015, Bank Al-Khair B.S.C. (c) due to unavailability data, and Kuwait Turkish Participation Bank Inc which represented by Kuwait house financing. Therefore, our sampling size is 09 nine Islamic banks (see table 3.2):

Table 3.2:

A sample size of commercial Islamic banks that used in this study

No.	Institution Name	Type and Year of Incorporation
01	Al Baraka Islamic Bank B.S.C.	Locally, 1983
02	Bank Al-Salam B.S.C.	Locally, 2005

		Locally, 1978
03	Bahrain Islamic Bank B.S.C.	
04	Ithmaar Bank B.S.C.	Locally, 2003
05	Khaleeji Commercial Bank B.S.C.	Locally, 2003
06	Kuwait Finance House (Bahrain) B.S.C.	Locally, 2001
07	ABC Islamic Bank (E.C.)	Locally, 1985
08	Al Baraka Banking Group B.S.C.	Locally,1998
09	Liquidity Management Centre B.S.C	Locally, 2002

Source: Conducted by the researcher from Bahrain Central bank

3.6 Data Collection, Presentation and Analysis Techniques

3.6.1 Data and Data Collection Instruments

Only secondary data are used for the study. According to Sekaran (2003), Secondary Data that have already been collected by researchers or obtained from data published in journals and magazines, and information available from any available source. The secondary data has been used rather than primary data because it is less costly than others source. In this research, the secondary data are obtained and calculated from Thomson DataStream database provided by Perpustakaan Sultanah Bahiyah, Universiti Utara Malaysia, audited financial statements of each Islamic bank in Bahrain included in the sample, and various journals and publications of CBB, IMF, and World Bank publication for the macroeconomic data over the period of 2007 to 2013.

3.6.2 Data Presentation and Analysis

Regression is more powerful than correlation. According to Brooks (2008), unlike correlation, in the case of regression if x has the significant impact on y, thus change in y is influenced by the change in x. To test the proposed hypotheses, multiple linear regression analysis is applied to the data to investigate the extent impact of liquidity risk determinants on Islamic banking profitability in Bahrain. The multiple linear regression models are the extent of a simple linear regression model which attempts to model the relationship between two or more explanatory variable in a prediction equation for a response variable. According to Gujarati (2004), the equation in multiple linear regressions is written as:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \mu_i$$

Where, Y is the dependent variable X_1, X_2 and X_3 the explanatory or repressor variables, μ Is the stochastic disturbance term, and i the ith observation and also β_1 is the intercept term that gives the average effect on Y of all the variables excluded from the model, although its mechanical interpretation is the average value of Y when X_2 and X_3 are set equal to zero. The coefficients β_2 and β_3 are called the partial regression coefficients. Therefore, the regression model ran from the financial reports of the banks that have operated since 2007 and whose annual report are available for the study's periods. The regression is adapted from many authors such; Arif *et al.* (2012); Wiyono *et al.* (2012) and Muhammad *et al.* (2013) did a similar regression model in their researches.

72

Before running the regression analysis, descriptive statistics are obtained over the sample period to test the normality of the. Then, correlation analyzes are made to see the strength of correlation between dependent and independent variables data (refer to chapter four). The current Data are analyzed by using Eviews 8 software package.

3.6.3   Regression Model Specification

The basic application of multiple regressions involves the simultaneous use of a set of predictor variables to make the most rigorous prediction possible of scores on the dependent variables. In this study, we want to investigate the impact liquidity risk determinant on Bahrain Islamic bank profitability. According to Gujarati and Damodar (2004), there are two generally used methods of estimation: OLS ordinary least squares and ML maxi-mum likelihood. By and large, the OLS method is usually used extensively in regression analysis primarily because mathematically it is much simpler ML. Besides, in the linear regression context OLS and ML generally give similar results. To investigate the impact of liquidity risk determinants on profitability, Ordinary Least Square (OLS) equation is estimated in two models as follow:

The First Model:

$$ROA_{it} = \beta_1 + \beta_2\, CAP_{it} + \beta_3\, FL_{it} + \beta_4\, SZE_{it} + \beta_5\, DP_{it} + \beta_6\, GFC_{it} + \beta_7\, GDP_{it} + \mu_{it}$$

The Second Model:

$$ROE_{it} = \beta_1 + \beta_2\, CAP_{it} + \beta_3\, FL_{it} + \beta_4\, SZE_{it} + \beta_5\, DP_{it} + \beta_6\, GFC_{it} + \beta_7\, GDP_{it} + \mu_{it}$$

Where:

ROA_{it} **:** Return on asset ratio of it^{th} bank on year t

ROE_{it} : Return on equity ratio of it^{th} bank on year t

CAP_{it} **:** Capital adequacy of it^{th} bank on year t

FL_{it} **:** The financial leverage (debt to total equity ratio) of it^{th} bank on year t

SZE_{it} : The Bank Size of it^{th} bank on year t

DP_{it} : The deposit (deposits to total assets ratio) of it^{th} bank on year t

GFC_{it} : The global financial crisis of it^{th} bank on year t

GDP_{it} **:** The real domestic product/GDP growth rate of Bahrain on the year t.

β_1 : The intercept term

μ_{it} **:** A random error term.

As for the diagnostic tests as mentioned by Brooks (2014) and Gujarati *et al*. (2004), there are many required assumptions should be made for the linear regression model in order to show that the estimation technique ordinary least squares (OLS) had a number of desired properties, and also so that hypothesis tests regarding the coefficient estimates could validly be conducted. Specifically, it is assumed that:

- **Assumption 1: Heteroscedastic/ Homoscedastic Test**

The scholars assumed until now that the variance of the errors should be constant which known as the assumption of homoscedasticity. In the case the errors do not

have a constant variance, it is known as a heteroscedastic. To test this assumption the researcher used White's (1980) general test for heteroscedasticity (Brooks, 2014). The whit's test was used having tow hypothesis the null hypothesis H_0: when the variance residual (u) is constant which mean homoscedastic and alternative hypothesis H_1: when the variance of residual (u) is not constant which mean there is heteroscedasticity problem.

- **Assumption 2: Serial or Auto Correlation Test**

This test of this assumption is therefore required which assumed that the errors are not correlated with one another. In the case of the errors are correlated with one another, it would be stated that they are auto-correlated. The population disturbances cannot be observed, so tests for autocorrelation are conducted on the residuals $\hat{\mu}$. According to (brooks, 2014) The Breusch-Godfrey test mostly used to test for autocorrelation up to the rth order. The model for the errors under this test is as follow:

$$u_t = \rho_1 u_{t-1} + \rho_2 u_{t-2} + \rho_3 u_{t-3} + \cdots + \rho_r u_{t-r} + v_t, \qquad v_t \sim N\left(0, \sigma_v^2\right)$$

Where:

H_0: $\rho_1 = 0$ and $\rho_2 = 0$ and ... and $\rho_r = 0$ and H_1: $\rho_1 \neq 0$ or $\rho_2 \neq 0$ or ... or $\rho_r \neq 0$

So, the null hypothesis is meant that the current error is not related to any of its previous values. If the test statistic exceeds the critical value from the Chi-squared statistical tables we should accept the alternative hypothesis. Before one can proceed to see how formal tests for autocorrelation are formulated, we need to define the

75

lagged value of a variable. According to Gujarati (2004) in his book "Basic Econometrics", the length of legs is basically an empirical question. The best practical advice is to start with sufficiently large legs and then reduce them by some statistical criterion, such as the Akaike or Schwarz information criterion.

- **Assumption 3: The Disturbances Are Normally Distributed**

The assumption of normality distribution ($\mu_t \sim$ N $(0, \sigma^2)$) is needed with the view to conducting single or joint hypothesis tests about the model parameters. A normal distribution is not skewed as well as is defined to have a coefficient of kurtosis 3. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the Coefficient of skewness approach to zero and kurtosis approaches to three. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how fat the tails of the distribution are. The histogram should be bell-shaped and the Bera--Jarque statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05 to not reject the null of normality at the 5% level.

- **Assumption 4: the Absence of Series Multicollinearity**

Multicollinearity test is conducted to find the presence of multicollinearity. The most common used method to detect multicollinearity is Variance Inflation Factor (VIF). The function of multicollinearity test is to discover whether the explanatory

variables in the multiple regression are highly linearly correlated. How much correlation causes multicollinearity, however, it is not clearly defined? According to Hair *et al*. (2006), if the correlation coefficient below 0.9 it will not cause a problem of serious multicollinearity.

CHAPTER FOUR

RESULT AND ANALYSIS

4.1 Introduction

This current chapter discusses on the findings of the study. The analysis techniques used were descriptive statistics, correlation analysis and regression analysis. The data collected were analyzed by using Eviews 8 Software. At the end of the chapter, there will be a discussion on the findings.

4.2 Descriptive Statistics

This section addresses some descriptive statistics such mean, median on the variables that included in the regression which have discussed in the previous chapter. Table 4.1 shows all the descriptive statistic of variables that have been used in this current study as:

Table 4.1:

Descriptive Statistics

	Mean	Median	Maxim	Minim	Std. Dev.	Observs
ROA	0.190	0.035	1.090	-0.261	0.430	28
ROE	0.386	-0.097	4.070	-1.897	1.976	28
CAP	4.951	4.645	7.525	3.287	0.922	28
FL	24.856	26.267	40.128	6.509	8.238	28
SZE	3.248	3.260	3.795	2.472	0.255	28
DP	12.437	12.807	14.330	7.638	1.515	28
GDP	6.735	6.499	9.362	4.089	1.110	28

Source: Constructed By researcher Using banks financial reports

ROA is the popular measurement of profitability. It indicates to how much profit the bank can generate from its assets. The mean value of ROA is 0.190 % and the standard deviation is 0.430 % which denoted that there is very low variation in the data set and more close to the mean and there is possibility to increase profitability in future. The maximum value of ROA is 1.090% while, the minimum value is -0.261%. These indicate that there are some Islamic banks in Bahrain could generate profitability from their assets and others couldn't generate revenue from their assets and even couldn't generate their principle loans or financing.

On otherwise ROE which also considered as one of the popular measurements of profitability, it indicates how much profit the shareholders can generate from their shares in the bank. As it shown above, the standard deviation of ROE appears to be greater with 1.976% which mean the data is widely spread out (less reliable) from its mean.

Among the independent variables, the mean value of capital adequacy (equity to total assets) is 4.951% with the maximum and minimum values of 7.525% and 3.287% respectively. The highest of the mean and the maximum value of CAP is suggesting that some Islamic banks in Bahrain enjoying well-capitalized that will result in a good profitability. The standard deviation for CAP is 0.922% revealing a low dispersion of the data from its mean. This indicates that this variable has less variability, thus, generate higher consistency and stability.

As for Financial leverage (measured by debts to total equity) the above table shows a high mean value with 24.856% as compared to its standard deviation with 8.238% which indicates that the variable has higher variation than other variables which generates lower consistency and stability. The maximum value of FL is 40.128% indicates the big reliance of some Islamic banks on debt (external funds) rather than equities to fund their assets. Bank Size also shows a high mean value with 3.248% while, the standard deviation is 0.255%. This indicates a low dispersion of the log of total assets from its mean value. The maximum value is 3.795% indicates the big large size of banks and the minimum value is 2.472% indicates small Banks' size. The mean value of Deposits ratio is 12.437% and the standard deviation 1.515%. The maximum value was 14.330% which gives a natural hedge to banks from liquidity risk and also will give a good result on its profitability. The remaining independent variable is the gross domestic product GDP. The mean value of real GDP is 6.735 indicating the real average growth rate of the country economy over the past 7 years. The max growth of the economy is recorded in 2013 (i.e. 9.362%) and the min is recorded in 2007 (i.e. 4.089%).

4.3   Correlation Analysis

The correlation matrix shows the expected coefficient signs from the regression. Correlation analysis is used as a method to determine the level of relationship between each tested variables. According to (Hauke *et al.*, 2011) Correlations between variables can be measured with the use of different indices (coefficients).

The three most popular are Pearson's coefficient (r), Spearman's rho coefficient (rs), and Kendall's tau coefficient (τ). In this study, the researcher used the most widely bi-variant correlation statistics which is the Pearson correlation. The Correlation coefficient between two variables ranges from +1 (i.e. perfect positive relationship) to -1 (i.e. perfect negative relationship). It starts from 0 which indicates no relationship, and 1 as a perfect relationship. Correlation is an effect size and so we can verbally describe the strength of the correlation using the guide that (Hinkle *et al.*, 2003) suggested for the absolute value of r:

Table 4.2:

The Correlation Coefficient between DVs and IVs

Size Of Correlation	Interpretation
From 0.90 To 1.00 (-0.90 To -1.00)	Very High Positive/Negative Correlation
From 0.70 To 0.90 (-0.70 To -0.90)	High Positive/Negative Correlation
From 0.50 To 0.70 (-0.50 To -0.70)	Moderate Positive/Negative Correlation
From 0.30 To 0.50 (-0.30 To -0.50)	Low Positive/Negative Correlation
From 0.00 To 0.30 (-0.00 To -0.30)	Negligible Correlation

Source: (Mukaka, 2012)

The correlation matrix among the dependent variables and independent variables is shown in Table (4.3):

Table 4.3:

Correlation Matrix among the DVs and IVs

	ROA	ROE	CAP	FL	SZE	DP	GFC	GDP
ROA	1	0.879	0.5838	-0.3828	0.0335	-0.1798	-0.4591	-0.3203
ROE		1	0.3886	-0.4279	0.0123	-0.1503	-0.3558	-0.2135

Source: Conducted by the researcher using Eviews 8 software

As it shown in above table, Return on assets (ROA) ratio is positively correlated with CAP with the coefficient of correlation 0.5838. According to Hinkle *et al*. (2003), the linear relationship between ROA and CAP statistically is a moderate positive correlation, which also supports Ben Naceur *et al*. (2008) and Bourke (1989) who argued that a higher the capital ratio the more will be the bank profitability. Also, ROE has a positive correlation with CAP, and the linear relationship is also a low positive correlation with a coefficient of correlation 0.388.

Financial leverage ratio has a negative relationship with ROA as well as ROE. The linear relationship with ROA is low with a coefficient -0.3828 and also low linear relationship with ROE at -0.4279. Bank size SZE has a positive correlation with ROA as well as with ROE. But the linear relationship between bank size and both profitability measurement (ROA and ROE) is statistically not different from zero, it is observed as a negligible correlation at 0.0335 and 0.0123 respectively.

Among the controller (external factors); the global financial crisis has a negative correlation with ROA as well as with ROE. These results are in line with (Hidayat *et al*., 2012 and Amba *et al.*, 2013). The linear correlations are moderate in both measurement at the coefficient of -0.4591 and -0.3558 respectively. Finally, GDP has a negative coefficient with ROA and ROE. As for the strength of the correlation as it is observed that GDP has a low negative correlation with ROA and ROE.

4.4 Linear Regression Analysis

This section addresses regression outcomes. Under the following regression outcomes the beta may be has a positive coefficient or a negative coefficient; which mean if negative coefficient means that the independent variable influence the dependent variable in negative way. P-value denotes to the percentage or precession level of each variable is significant. R^2 Squared Values shows the explanatory power of the model. The higher of R^2 (approaching to one) indicates the fitness of the model to the data. R^2 Coefficient measures the wellness to which regression line approximate the real data point (Sekaran & Bougie, 2013)

4.4.1 Liquidity Risk Determinants and ROA

The First Model: The first time-series regression model used to find the statistical impact of liquidity risk determinants on Islamic banking profitability measured by ROA is:

$$ROA_{it} = 0.146353 + \beta_2 0.556814 + \beta_3 0.00645 - \beta_4 1.469814 + \beta_5 0.018450 - \beta_6 0.347457 + \beta_7 0.277729 + \mu_{it}$$

Table 4.4:

Regression Coefficient Analysis OF ROA

V	Coefficient	Std. Error	t-Statistic	Prob.
C	0.146353	0.186699	0.783898	0.4419
CAP	0.556814	0.104345	5.336258	0.0000***
FL	0.006450	0.012596	0.512061	0.6140
SZE	-1.469841	0.456494	-3.219845	0.0041***
DP	0.018450	0.041858	0.440784	0.6639
GFC	-0.347457	0.070704	-4.914282	0.0001***
GDP	0.277729	0.034016	8.164604	0.0000***

R-squared	**0.977375**	**F-statistic**	**151.1994**
Adjusted R-squared	**0.970911**	**Prob(F-statistic)**	**0.000000**

The coefficient are significant at the 1 % (***), 5 % (**) and 10% (*) level.
Source: Conducted by the researcher using Eviews 8 software

After running the first model using OLS. the Table (4.4) presents results of return on assets as the dependent variable and bank-specific (internal) and controller (external) explanatory variables during the 28 twenty-eight quarters starting from 2007 until 2013. The explanatory power of this model represented by R-squared is high. R-squared indicates how much percentage is explained by the benchmark model. R-squared can vary from 0 to100.

The ROA model has the high good of fitness among the variables with R-squared is 0.977375 which means that the proportion of return on asset (dependent variable) is explained by the independent variables are 97.73%. Adjusted R-squared is used here to compensate for the additional variable in the model. In this model adjusted R-squared is around 97.091%. The regression F-statistic for this model shows a significant value of 151.1994. An optimum significant value of F should be lower

84

than 0.05. In this study ρ-value is 0.0000 less than o.o5 which indicates that these explanatory variables jointly can influence the dependent variable ROA. In simple words, the value of F in this model indicates the whole regression is worthwhile.

Among the bank specific or internal determinants as shown in the table (4.4), capital adequacy, bank size, global financial crisis and Gross domestic product are the statistically significant factors affecting ROA of Islamic banks in Bahrain. Capital adequacy which was measured by equity to total assets has positive and statistically high significant impact on return on asset ROA at 1% level. A lot of previous studies found that the CAP has a positive relationship with ROA. This present study is consistent with (Akhtar *et al.,* 2011a; AL-Omar *et al.,* 2008; Almazari, 2014 and Ongore and Kusa, 2013). Financial leverage (measured by debts to total equity) found to be no effect on ROA with positive coefficient, whereas the bank size (log total assets) has negative significant impact on ROA at 1% level. This negative coefficient of bank size supports the theory ''Too Big to Fail ''and is in the line with the study expectation. Deposits ratio (measured by deposits to total assets) has a positive coefficient with ROA but, statistically is found to be insignificant which contradict our study expectation that said there is a positive and significant relationship between deposits and return on assets.

Among the controller variables (external factors) such global financial crisis has a negative relationship with ROA and statistically is significant at 1% level. This is in line with Hidayat *et al.* (2012) and Amba *et al*. (2013), when they argued that

profitability in Islamic banks in Bahrain affected negatively during the recovery period of the global financial crisis. This result supports the study hypothesis (i.e. the global financial crisis had a negative and significant effect on profitability during the recovery period from 2010 until 2013). The last controller variable is GDP which found to be positive and significant with ROA at 1%. Positive significant impact of GDP is in line with Gul *et al*. (2011); Alkassim (2005) and Hassan (2004), when they found that the GDP growth rate had positive and significant impact on bank profitability.

4.4.2 Liquidity Risk Determinants and ROE

The second Model: The second time series regression model used to find the statistical impact of liquidity risk determinants on Islamic banking profitability measured by ROE is:

$$ROE_{it} = 1.230724 + \beta_2 \, 3.876910 + \beta_3 \, 0.219882 - \beta_4 \, 13.26537 + \beta_5 \, 0.581778 - \beta_6 \, 2.832649$$
$$+ \, \beta_7 \, 1.777020 + \mu_{it}$$

Table 4.5:

Regression Coefficient Analysis of ROE

V	Coefficient	Std. Error	t-Statistic	Prob.
C	1.230724	1.324898	0.928920	0.3635
CAP	3.876910	0.740481	5.235662	0.0000***
FL	0.219882	0.089386	2.459915	0.0227**
SZE	-13.26537	3.239484	-4.094904	0.0005***
DP	0.581778	0.297045	1.958556	0.0636*
GFC	-2.832649	0.501744	-5.645611	0.0000***
GDP	1.777020	0.241394	7.361488	0.0000***
R-squared	**0.946053**	**F-statistic**		**61.37865**
Adjusted R-squared	**0.930640**	**Prob(F-statistic)**		**0.000000**

The coefficient are significant at the 1 % (***), 5 % (**) and 10% (*) level.
Source: Conducted by the researcher using Eviews 8 software

As it shown in table 4.5 the explanatory power of this model is again very high. The value for the R-squared in the model is 0.946053which endorses that 94.60% of the variation in the dependent variable is explained by the independent variables of the model. The adjusted R-squared is 93.064%. F-statistic as it viewed above is 61.37865 with p-value 0.000000 less than 0.05, which means that these independent variables can jointly be explanatory variables of ROE.

The results of the regression analysis show that all variables have been used in this study can affect ROE. The capital adequacy CAP has positive and significant impact on ROE at 1% level. Financial leverage has positive coefficient and statistically is significant at 5% level that is in line with Abor (2005) who found a positive relationship between debts ratio and profitability which supports our study hypothesis. Bank size is found to be negative and significant at 1% level. This support the theory

that banks that became extremely large, the effect of size could be negative due to agency cost and bureaucratic. Deposits ratio also in this model has positive and significant relationship at 10% level. And this is consistent with the theory that argued "high deposits can strength the performance". The controller variables such GFC variable is found to be negative and statistically significant at 1% level, Whereas GDP shows a positive and significant relationship at 1% level.

4.5   Testing Assumptions of Classical Linear Regression Model (CLRM)

4.5.1   Assumption 1: Test for Homoscedasticity

By using Whit's test (see appendix B) the p-value of chi-square $(x)^2$ of the first model (ROA) is 0.2161 whereas in the case of second model (ROE) the p-value of chi-squared $(x)^2$ is 0.2160. These results have given the same conclusion that there is evidence for the absence of heteroscedasticity. Since the ρ-value of both models is not significant we have sufficient evidence accept the null hypothesis (i.e. H0: the variance residual (u) is constant which mean homoscedastic).

4.5.2   Assumption 2: Test For Absence of Auto- correlation

By using The Breusch-Godfrey test the results as it shown in (see appendix C) are as follow; the p-value of Chi-Squared of first model (ROA) and second model (ROE) are 0.0625 and 0.0620 respectively. Since the p-value of both models is not significant at

5% which mean that the both models do not suffer from serial correlation problem at 5 percent level. Thus, we should reject the alternative hypothesis and accept the null hypothesis (i.e. H_0: the current error is not related to any of its previous values).

4.5.3   Assumption 3: Test for Normality

As it shown in the histogram (see appendix D) Skewness for ROA approaches to zero with 0.267 while kurtosis approaches 3 with 2.598. Since the histogram is bell-shaped and p-value of this model (i.e. 0.770463) is more than 0.05 which mean we accept the null hypothesis (H0: Error term in normally distributed). On otherwise, Skewness for the second model (ROE) approaches to 0.171 and kurtosis approaches to 2.823. The P-values is 0.917188 more than 0.05. We conclude that the error term in the second model also is normally distributed.

4.5.4   Assumption 4: Test for Absence of Series Multicollinearity

There are some variable are not significant and others are significant. It is suspected that there is problem of multicollinearity between variables. Bu using VIF, the results in the following correlation matrix show that the highest correlation of 0.7852 is between FL and DP (see appendix E). Since there are no correlations above 90% as suggested by (Hair *et al.*, 2006), the researcher concludes that there is no problem of multicollinearity in this study.

4.6 Discussion of the Regression Analysis Results

4.6.1 Bank Specific Determinants (Internal Factors)

4.6.1.1 Capital Adequacy and Profitability

The capital adequacy measured by Equity To total Assets is included in the regression models to examine the relationship between profitability and bank capitalization. Strong capital structure is essential for banks in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions. Furthermore, lower capital ratios in banking imply higher leverage and risk, and therefore greater borrowing costs. Thus, the relatively better capitalized banks should exhibit higher profitability levels. The current study found a positive association between ROA as well as ROE and capital adequacy (CAP). These results are contradicted with the conventional wisdom that says "a higher capital ratio is associated with lower profitability". The meaning of that argument is a higher capital ratio could denote that banks are operating over cautiously and ignoring the potentially profitable trading opportunities which can affect the profitability negatively.

The positive impact between bank capital of Islamic banks and ROA and ROE implies that higher equity capital lead to high level of profitability. The findings of positive coefficient are consistent with previous studies of Bourke (1989); and Ben Naceur *et al*. (2008), and support our study hypothesis (H1). Capital adequacy ratio,

as it mentioned in the literature review is an indicator of bank's capital strength and shows how the equity of a bank influences the profit made by the bank. According to Wasiuzzaman *et al*. (2013), a bank with a high capital ratio is protected against operating losses more than a bank with a lower ratio. This means that the higher capital ratio of banks the higher capacity of the bank to absorb risks and create a higher level of liquidity to the external public through deposits and loans. In simple words, a higher capital ratio, the more will be the bank profitability.

The Positive EQTA ratio indicates that Islamic commercial banks with a sound capital position located in Bahrain face lower costs of going bankrupt; which suggests reduced cost of funding or lower need for external funding, implying higher profitability. Furthermore, capitalized Islamic commercial banks in Bahrain are able to follow business opportunity more effectively and have more flexibility to absorb unexpected losses (Athanasoglou *et al.*, 2008). In addition, the endogeneity of this variable implies that the capital market is not perfect in Bahrain banking sector because Athanasoglou *et al.* (2005) and Berger (1995) argue that in the presence of asymmetry of information, well-capitalized banks can access funds at better terms because they are considered less risky. Thus, it is less costly for bankers to low risk capital, report capital than banks with a significant risk.

To sum up, Islamic banks in Bahrain are well capitalized and through issuing the equity to fund their assets and operation can reduce the expected costs of financial distress and expected low bankruptcy costs and reduce the costs of funding which

lead to a good performance. Therefore, the change of one unit of CAP can raise ROA

with 0.556 units whereas; the change of one unit of CAP can raise ROE with 3.876

units in Islamic banks in Bahrain.   Hence, since the ρ-value of t-test for both models

is significant at 1% level we should reject the null hypothesis and accept the

alternative hypothesis H1: there is a positive and significant impact of capital

adequacy on profitability.

4.6.1.2   Financial leverage and Profitability

The leverage ratio measures the total debt to total equity capital of the bank. It is an

indication of the banks' total level of debt in relation to the total equity or capital of

the bank. The results showed a positive impact of financial leverage on ROA and

ROE. Return on asset is found to be insignificant which is in line with Opoku *et al.*

(2014) who found no effect of this variable on ROA. But, the coefficient in the

regression analysis shows that an increase with one unit of financial leverage can

increase the return on equity with 0.2198 units. The positive significant impact of

financial leverage on ROE is in the line with Opoku *et al.* (2014); Akhtar *et al.*

(2011a) and Abor (2005). These results are opposite to our study's expectations and

the pecking order theory that says every firm or bank will initially rely on internally

generated funds, i.e. undistributed earnings, where there is no existence of

information asymmetry, and then they will turn to debt if additional funds are needed

and finally they will issue equity, only as a last resort, to cover any remaining capital

requirements. The order of preferences reflects the relative costs of the various financing options.

Generally, the profitability of Islamic banks in Bahrain was affected positively by the increasing in financial leverage ratio due to the high relying on debts as a source to finance their assets rather than equity or internal funds. Through determine the optimal debts ratio; Islamic banks in Bahrain can maintain and maximizing the value of bank and achieving a good profitability. Our conclusion, we should reject the null hypothesis as well as alternative hypothesis. So; the financial leverage has a positive significant impact on profitability.

4.6.1.3 Bank Size and Profitability

The asset size has a negative and significant effect on both models at 1% level. These results are contradict with Rozzani and Rahman (2013) and Goddard *et al.* (2004) who argued that the large banks appear to achieve a high profitability and to take advantage of economies of scale in reducing the costs of gathering and processing information which promote the performance. It would be reasonable to assume that banks with large branch networks are able to attract more deposits, which is a cheaper source of funds (Chu and Lim, 1998). The earlier studies by (Randhawa and Lim, 2005) point out that large banks may attract more deposits and loan transactions and in the process command larger interest rate spreads, while the smaller banking groups

with smaller depositor base might have to resort to purchasing funds in the inter-bank market, which is costlier.

These current results support the theory of *"Too Big to Fail"* means the status of large banks could lead to moral hazard behavior and excessive risk exposure. In addition, according to Muda *et al.* (2013), the banks who become extremely large the effect of size could be negative to their performance due to agency costs, bureaucratic and other costs related the managing extremely banks. Therefore, this result gives support to the recent papers that mention the diseconomies of scale that exist from a level of size upwards. Growing banks may face diminishing marginal returns so average profits would decline with size. Information advantage and the enforcement power gain from size are insignificant for large banks.

Generally, the large size of Islamic banks in Bahrain affects the profitability negatively because the large size of banks tends to be relatively inefficiently managerially. It could be argued that large size of banks with extensive branch networks may not have added advantage compared to their smaller bank counterparts as they may attract more deposits and financing transactions and subsequently higher profitability levels. These results concluded that little saving in cost can be achieved, and the possibility for the inability of the bank to take advantage of higher product and loans or financing diversification, and facing scale inefficiencies will increase by increasing the size of the bank.

Hence, it is suggested that the increasing with one unit in bank size will decrease the return on assets with -1.4698 units as well as decrease the return on equity with -13.265 units. Since the ρ-value of t-test is significant at 1% level the null hypothesis of this variable should be rejected and accept the alternative hypothesis H3: there is a negative and significant impact of bank size on Islamic banking profitability.

4.6.1.4   Deposits and Profitability

Deposits are the lifeline of the banking business. Most of the banking operations are run through deposits (Ahmed Arif, 2012). The regression result for the second model shows a positive relationship between deposits ratio and return on equity ROE. Statistically, the ρ-value was significant at 10% level. This result is in line with (Muda *et al*., 2013a; Alkassim, 2005; Ansari, 2011 and Rahman *et al*., 2012). Thus, the increase one unit of deposits can increase the return on equity with 0.5817 units.

Deposits ratio (DTA) has a high positive effect for Islamic commercial banks in Bahrain and it shows that receiving more deposits improves Islamic banks' ROE. The result is consistent with our study expectation that if the depositors start withdrawing their deposits from the bank, it will create a liquidity problem for the bank which will force them to borrow funds from the central bank or the inter-bank market at higher costs. Therefore, to improve the bank profitability, it is imperative for a bank to increase its deposits. In addition, According to Tariq *et al*. (2014), banks who used the higher deposits to strength the equity to enhance the performance of the bank, those

are the better developing banks. As for the first model, the deposits ratio was found to be insignificant with ROA in line with (Anbar, 2011).

Generally, the increasing in oil exporting in Bahrain lead to the swells of the banking system's deposits which resulted an increase in the assets of these banks. In other words, the above result shows that Islamic banks in Bahrain rely on receiving deposits to fund its investments and operations. As a consequence a high used of deposits may not be risky for these banks due to the well management in using these deposits in a proper way as well as the diversification of products that provided by these banks whose being satisfied towards depositors. Therefore, we should accept the alternative hypothesis H4: the deposits ratio has positive and significant impact on Islamic banks in Bahrain profitability.

4.6.2 Controller Determinants (External Factors)

4.6.2.1 Global Financial Crisis and Profitability

The regression analysis shows that the global financial crisis that was indicated by number one for the recovery period (i.e. from 2010 until 2013) which supposed that the profitability in that period was decline as compared to the profitability during financial crisis. The result of this dummy variable is found to be negatively and significant for both ROA and ROE at 1%. The results shows a strong support to our study's expectation and to those such Hidayat and Abduh (2012); Amba and

Almukharreq (2013) and Cucinelli (2013) who argued that the performance of Islamic banking in Bahrain was affected negatively by such crisis during the recovery period.

As it mentioned in the literature review, the Islamic banking in GCC and in Bahrain particularly was active financing in real estate. This sector as we know experienced a Prosperous recovery especially in USA as it known as "Housing Bubble". The global financial crisis caused a sharp decline in the real estates' prices as known as "subprime crisis". GCC countries and Bahrain particularly were the biggest guilty from this crisis due to the pure direction of their banking operations towards real estates and housing. As a consequence from the crisis these countries have born the big burden of losses rather than closing and restructuring several banks. Therefore, we accept the alternative hypothesis H5: the global financial crisis has a negative impact on the profitability of Islamic commercial banks in Bahrain during the recovery period.

4.6.2.2   Gross Domestic Product GDP

The GDP growth rate has a significant impact on the profitability of Islamic banks measured by ROA and ROE in Bahrain. The coefficient sign for real GDP growth rate is positive in accordance to hypothesis six (H6). The Islamic banks in Bahrain benefit from the growth in economic even it is ranked as the lowest rates among GCC countries. According to Alkassim (2005), Islamic bank profitability is high during good economic sessions because lending contracts are likely to be paid back by

borrowers and the default chances are low. Therefore, we should accept the alternative hypothesis H6: there is positive and significant impact of GDP on profitability.

Table 4.6: *Summary of actual and expected signs of IVs on the DVs*

Explanatory Variables	Expected Impact on Profitability	Actual Impacts	
		ROA	**ROE**
CAP	H_0 **:** Negative And Sig	Positive And Sig	Positive And Sig
	H_1 **: Positive And Sig**		
FL	H_0 **:Positive And Sig**	Positive And Ins	Positive And Sig
	H_1 **:** Negative And Sig		
SZE	H_0 **:** Positive And Sig	Negative And Sig	Negative And Sig
	H_1 **: Negative And Sig**		
DP	H_0 **:** Negative And Sig	Positive And Ins	Positive And Sig
	H_1 **: Positive And Sig**		
GFC	H_0 **:** Positive And Sig	Negative And Sig	Negative And Sig
	H_1 **: Negative And Sig**		
GDP	H_0 **:** Negative And Sig	Positive And Sig	Positive And Sig
	H_1 **: Positive And Sig**		

Note: Ins- statistically insignificant   / Sig- statistically significant

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter is presented to discuss the findings in this study as well as the Summarize and the recommendations that suggested by the researcher from the result of the whole study. The final section in this chapter discusses limitations and future research that should be done in future to improve the result of the present study.

5.2   Summary and Recommendations of Study

The safety and sustainability of finical banking system depends on the profitability of banks. To achieve and maintain a good profitability, the factors that have big effect on it should be well-controlled and managed. The previous studies show that liquidity risk is the major factor that has big impact on profitability. Therefore, the aim of this study is to determine the significant factors that affect liquidity risk in order, and the study also investigates the extent of impact on the Islamic banks in Bahrain profitability over the period of 2007 till 2013. Time series data are used for the sample of nine commercial Islamic banks in Bahrain from the first quarter of 2007 until the second quarter of 2013.

Data are presented by using descriptive statistics, correlation and regression analysis for two measurements of profitability ROA and ROE. The models are tested by using the classical linear regression model assumptions. There is no problem regarding the heteroscedasticity which is not deducted in this study, and the same case is with serial correlation. The normality of distribution also is normal with no multicollinearity between dependents variables that have been used in the study.

This study has used all the significant variables that have been found by the previous studies which have impact on liquidity risk from different countries, even from some GCC countries, such as Qatar, Kuwait and Saudi Arabia that share the same aspects as with Bahrain. The variables in the regression react differently to profitability indicators for Islamic banking in Bahrain. The capital adequacy shows big impact on profitability either on ROA or ROE in a positive way. This means that some Islamic banks in Bahrain are well capitalized, and they heavily rely on equities to fund their assets because relying on equities will prevent them from falling in bankruptcy or collapse as it happens to many banks over the world, such as Lehman Brothers bank. Thus, the higher ratio of capital adequacy will create a higher liquidity level for these banks that will give them a good reputation among depositors or shareholders resulting in a high profitability which hedges them from any future risk or costs.

On the contrary, the second variable which is financial leverage measured by debts to equity shows also a positive impact on profitability. As it is mentioned earlier, the relying on debts as a source to fund banks assets should be well-controlled and

managed through determining the optimal ratio of this variable. The positive impact in this study indicates that these banks are too cautious through choosing the optimal ratio of debts to finance their assets that prevent them from any expected risks, like default of payment that leads to bankruptcy or bearing a big burden of costs. As a conclusion for this variable, it can be said that the financial leverage has different impact on profitability either in positive way if the banks determine the optimal ratio of debts or negatively in case of excessive relying on debts rather than on internal or equities funds.

Banks size shows negative impact on profitability. The negative impact is due to the excessive size of assets, and this happens as a result of the proliferation on the oil exporter prices among GCC countries. As the previous theory says "too big to fail", the Islamic banks in Bahrain are extending their assets through opening many branches which have negative impact on its profitability. This decreasing in profitability happens due to the agency costs, bureaucratic and other costs related the managing extremely banks. The researcher recommends that these banks should take into account all the matters (i.e. the costs, the profitability and investment's environment) that surround the extending of assets, such as opening new branches which may prevent them from many risks.

Deposits are the main source of commercial Islamic banks, and they also show positive impact on profitability. The previous literature mentions that the withdrawal of deposits from the bank is one of the reasons of liquidity risk that forces these banks

to borrow from external source in high costs in order to fund their operations or to pay back the outstanding funds to their depositors. The positive impact in this study indicates that the Islamic banks in Bahrain are using these deposits in profitable investments, but these variables can have negative relationship with profitability in the case of excessive deposits which cause the incapacity of managing these deposits in a proper way. The researcher's recommendation to these banks is that, they should innovate other products that will generate revenues for the banks as money's user and increase the revenue to depositors.

Among the controller variables, the global financial crisis really has a negative impact on profitability during the recovery period as it shown in the regression analysis. The financial crisis causes a fall in the prices of real estates that are the main activities of these banks. So, the decreasing in these prices has negative effect on the profitability of these banks due to the heavy relying on real estates as the main activities without any diversification on their investment portfolios. The relying in one sector, such as real state may cause the increase in non-performing loans/financing ratio as we have seen earlier this due to the credit worthiness of customers. The researcher recommends the managers of these banks to diversify their Islamic banking activities not just in real states that may expose them to future crisis but also the mangers should direct their operations into other sectors, such as agriculture sector and Heavy industry that get less exposure to such crisis and risk.

Based on above findings the following recommendations are given:

- In order to achieve a safe Islamic financial banking system in the kingdom of Bahrain, the authority of the banks should determine measure, manage and control the liquidity risk which is considered as the major factor that has a big impact on profitability.

- To sustain a good profitability, the researcher recommends the managers of these banks to well-control and manage the capital structure of banks through determining accurately the policy of funds either by relying on equity or through an optimal ratio of debts as source of funds.

- In terms of extending assets, such as the opening of new branches, the authority of these banks are recommended to take cautions, especially in opening branches in different countries which have to look at the costs' burdens of these new branches, the opportunities from opening new branches to achieve a good revenues, the country policy, like political policy and foreign investment's policy and so on.

- Now-a-days, money market is necessary in Bahrain in order to use the surplus of Islamic banking's funds. Through this market, the Islamic banks can manage their assets and provide liquidity assets to meet any future claims of the customers.

- The effect of the global financial crisis on Islamic banks in Bahrain is back due to the relying on real estates as the main activity of these Islamic banks. In order

to recover from this financial crisis and hedge the banking system from any expected risk or crisis, the researcher suggests to the managers of these banks to diversify their activities as well as business models by not just focusing in one sector or one region. So, the diversification of investments portfolio is necessary today to hedge from any risks and to grab the possible opportunities that will achieve high profitability.

- The last recommendation is related to the country economy system. We have seen that Bahrain has a big reliance on oil as a source of swelling deposits. The kingdom of Bahrain is recommended to diversify its economic system into other sectors, such as trade, services and financial sectors.

5.3 Contributions of the Study

This study contributes to the body of knowledge by identifying the factors that have significant effect on liquidity risk that is considered as the major variable which can exert impact on the performance of banking, such as profitability. Moreover, this study focuses on the effect of these significant determinants on banks' profitability and sheds light on how the good profitability will be achieved by controlling and managing the liquidity risk efficiently. The theoretical contribution of this research is to enrich the existing literature by investigating the effect of liquidity risk determinants on profitability of Islamic commercial banks in Bahrain.

Moreover, the results of this study showed that the used variables are significant determinants of liquidity risk that helps the Islamic banks to well-control and manage them in a proper way in order to hedge and to reduce the probability of fall in an insolvent bank, and the insolvency can lead to either restrict banks or fall into bankruptcy and close the banks as this happens to many banks over the world. The results of profitability show high significant relation that means through managing liquidity, the banks will maintain its profitability that gives good competitive position of banks in the market-based banking and also achieves a safe financial system. The controlling of liquidity risk will make a bank in a good performance in term of liquidity which will be a natural hedge to the banks against the liquidity risk. The creation of new innovation products to channel their deposits and investing in profitable projects will achieve high revenues either to the bank or to the depositors. So, if the bank has a good liquidity and a high profitability, the depositors will benefit from this either by getting high revenue or they will get its deposits any time or at reasonable costs.

The last and not least, this current study provides benefits to either investors or borrowers because investors who invest their funds in the bank want to get high profit. So through achieving good liquidity and maintaining good profitability, the investors get benefits from the better conditions and vice versa. Also, maintaining profitability and creating a well liquidity will lead to attracting borrowers to fund their projects and business.

5.4   Limitations and Future Research

As we mentioned above, there is still some limitations in the literature regarding the liquidity risk determinants and their impact on profitability. So, very limited number of studies appear to include liquidity risk as an explanatory variable for bank profitability, and this relationship is not the focus of those papers and researches. More and more empirical studies need to be done in order to bridge the gap in the empirical literature either on the theme of determinants of liquidity risk and their impact of Islamic banks in Bahrain profitability;

- In order to get more conclusive results, it is recommended to incorporate more internal factors, such as regulatory factors, assets quality, asset/liability mismatch and bank charges and external factors, such as the policies of political country and oil exporting prices as the main sources of deposits. Also, financial structure and financial market development variables, such as market concentration and market development empirically are found to have significant impacts either on liquidity risk or profitability.

- This dissertation encounters many obstacles. This study emphasizes on secondary data that is restricted to information obtainable from the financial statement of banks. The data of Bahrain Islamic banking are not easily accessible or reliable in general.

- As the study's sample size is small, covering a short period of time and limited to only one country, limitation to the scope of our conclusions and interpretation of results need be borne in mind. The researcher highly recommends the reapplication of the study models to a larger number of banks across different countries for longer time series.

- Also, due to the short period of time covered in the study, the method of data analysis applied in the paper tends to be restricted. The extension of the analysis, therefore, uses other estimation techniques that would assist to validate the robustness of our results.

- This study can be extended by including more banks or by including all banks around the globe. A comparative analysis of Islamic banking and conventional banking may be included in the further research. There is also an opportunity to study the determinants of Banking System for Foreign and Domestic Banks in Bahrain or another country

5.5   Conclusion

This research aims to investigate the impact of liquidity risk determinants on Islamic commercial banks' profitability in the kingdom of Bahrain from 2007 till 2013. The research begins with the background, and the motivations of this study follow the Islamic Banking system in the kingdom of Bahrain. The study sheds light on the

problem statement and the questions that are raised in this study. The researcher mentions two main objectives, and they are the first determinant of the factor that affects liquidity risk, and the second one investigates their impact on profitability. Selected previous literature on either liquidity risk determinants or the impact of these determinants on bank profitability are summarized and reviewed with an emphasis on Islamic banking literature. In addition, variables included in the study are introduced and explained. Finally, regression results are presented, showing how liquidity risk determinants influence profitability.

By applying regression analysis, the results on Islamic banks in Bahrain are consistent with our study expectation except financial leverage is opposite to the expectation of the study. These results are in line with the findings of the previous studies. The profitability indicators (ROA and ROE) are taken as the dependent variables for the current study. All variables are significant with ROE which indicates that ROE is the best explanatory of profitability.

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