CHAPTER ONE : INTRODUCTION

1.1 Background of the Study

One of the critical risks faced by banks is liquidity risk. Liquidity risk was evidenced during the 2008 global financial crisis, where even the most highly capitalized banks (Citi Bank, Northern Rock, HSBC etc.) faced the potential failure as a result of liquidity shortages (Duttweiler, 2011). Although, based on sound regulatory requirements of liquidity ratios previously, these banks were all complied and termed as stable because it is assumed that the money market is stable. However, these issues (2008 financial crisis) rose due to the asset-liability transformation mismatches i.e., liquidity risk (Ruozi & Ferrari, 2013). The mortgage-related crises started around 2006 and hampered the supply of funds to the banking sector, leading to massive deposits withdrawals and subsequently affected the steady operation in the money markets. This event was followed by the failure of many well-capitalized banks in the UK and other parts of the globe, including Malaysia and other South-east Asian countries (Acharya & Schnabl , 2010; and Hsiao & James, 2015).

Against this backdrop, this study believed that there are bank specific factors and macroeconomic factors behind the 2008 bank's liquidity crisis and subsequent failures (insolvency) of the banks. Various studies were conducted using bank specific factors and macroeconomic factors on the bank's liquidity, profitability and insolvency risks. However, these studies mainly used traditional regressions model and only carried out separately (i.e., separate studies between banks profitability factors, and factors that

determine liquidity. In contrast, this study pooled the banks'' profitability, insolvency risks and liquidity measures and determinants and run a regression test using smart PLS-SEM 3 software that are capable to capture all the items and variables and mediate the relationship simultaneously. This study is analysed under four models; (i) the effect of bank specific factors and macroeconomic factors on profitability and insolvency risks of Islamic and conventional banks in Malaysia. (ii) the effect of bank specific factors and macroeconomc factors on the liquidity of Islamic and conventional banks in Malaysia. (iii) the effect of liquidity on profitability and insolvency risks of Islamic and conventional banks in Malaysia, and (vi) comparison between profitability, insolvency risks and liquidity of Islamic and conventional banks before and after the 2008 financial crisis.

This chapter is divided into 10 sections. Following this above introduction, second discusses the problem statement, this is followed by the discussions on the motivation of the study in the third section. Fourth and fifith sections state the objectives of the study and research questions, respectively. Sixth, seventh, eighth and nineth sections discusses the significance of the study, conceptual implication, practical implication and scope of the study, respectively. The last section (i.e. section 10) explain the details on the organization of the chapter.

1.2 Problem Statement

The recent 2008 world financial crisis showed how liquidity in one region could easily affect the whole world. After the crisis, both supervisory and regulatory bodies recommended and adopted measures to amplify banks' liquidity. The liquidity crisis in banks undermines the performance, while non-performing banks will lead to bankruptcy. Various studies were conducted on the factors affecting the liquidity,

profitability and insolvency risk (measured through Z Score), including bank specific factors and macroeconomic factors. Despite these studies, some literature showed banks' liquidity had not been taken as a significant priority in Malaysia and other countries before the 2008 crisis. It was only during the occurrence of the crisis, liquidity was unearthed as one of the major causes of it. The Basel Committee on Banking Supervision (BCBS) come up with many suggestions and structures that were believed will strengthen banks' liquidity. Amongs these measures includes; Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). Furthermore, many regulators in various jurisdictions undertook the necessary changes to the liquidity requirements of their banks including Malaysia. Even though banks' performance improved after the crisis, some studies (i.e. Iqbal 2012, and Zaman, 2015) indicated that still some banks performed poorly due to the lack of strong liquidity.

There is indeed sufficient literature that investigates between banks liquidity and profitability and insolvency risks in Malaysia. Most of these studies are based on conventional banks and used old liquidity measures. Banks are faced with a quandary of being liquid, solvent and profitable. Several concepts in the literature were produced to explain the effect of liquidity on profitability and solvency. Recently, several studies examined the bank's liquidity factors and profitability (separately) and insolvency risk using efficiency structure (ES) concept (Demsetz, 1973; and Peltzman, 1977), risk-return trade-off concept, risk absorption concept, structure conduct performance concept (SCP) (Nissan, 2003; and Shepherd, 1972), signalling concept and balanced portfolio concept. The findings of these concepts produced an inconclusive results for both bank specific factors.

One aspect of the literature is of the view that holding liquid assets will be an opportunity cost to the bank and it reduces the profitability. This showed an inverse

relationship of bank's liquidity and profitability which in line with the studies by Delechat et al. (2012), Al-Khouri, (2016), King, (2013) and Hasanov, et al. (2018). This is also consistent with risk returns tradeoff concept. On the contrary, Bordeleau & Graham (2010) opined that two concepts (i.e. expected bankruptcy cost and liquid assets as a buffer) suggest a positive association between liquidity and profitability. Funding markets give a real insight to the banks holding more liquid assets, the cost of financing reduction and eventually, profitability increase. Besides, Wojcik-Mazur & Szajt, (2015) and Ibrahim (2017) find a positive relationship between liquidity and profitability. However, the study by Muda, et al (2013) found an insignificant relationship between liquidity and profitability. Furthermore, a reasonable theoretical and empirical researches, try to define the factors that determine the bank's liquidity, profitability and insolvency risk. The findings show that bank specific factors and macroeconomic factors are the variables that can affect the liquidity, profitability and insolvency risk either negatively, positively, significantly or insignificantly, (Isik & Belke 2017, Shamas, et al. 2018, Zaghdoudi, & Hakimi, 2017; and Hasanov, et al. 2018).

Overall, the studies on the factors that determine profitability produced an inconclusive result. This study, however, differs from the previous literature in the sense that a newly liquidity measures is used (i.e. LCR and NSFR). In addition, since some of the previous studies found an indirect relationship between liquidity risk and profitability controlling for other variables (King, 2013 and Hasanov, et al. 2018), this study used a liquidity measure as a mediator to capture the relationship of liquidity risks factors and profitability and insolvency risk based on the following assumptions:

'Assuming that the liquidity (LCR and NSFR) level is determined by several factors which are called bank specific factors and macroeconomic factors "determinants of liquidity" and the liquidity level influence the bank's profitability and insolvency

risks. Then, it is reasonable to expect that factors that determine liquidity would also influence the bank's profitability and insolvency risks'. Thus liquidity is expected to serve as a mediator for the relationship between bank specific factors and macroeconomic factors of profitability and factors that determines the insolvency risks and liquidity'.

Referring to the above statement, the research investigating the relationship between banks' liquidity and profitability and insolvency risks as well as the critical roles of these factors that determine liquidity on banks' profitability and insolvency risks is quite limited. To the best of the researcher knowledge, there is no previous study that investigates the mediating roles of liquidity (LCR and NSFR) in this relationship. This is because these are newly developed measures that are still in a trial stage.

In conclusion, this research close such academic gaps by conducting a three-steps analysis through a mediating effect of these relationship. In the first stage, the research investigate how the bank specific factors and macroeconomic factors affect the bank's profitability and insolvency risks (X on Y). In step two, the research analyze the impact of these factors on both Islamic and conventional banks liquidity (X on M). Step three analyze the effects of liquidity on the banks profitability and insolvency risks. Following the above three analysis, the study test whether the liquidity mediate the relationship between the factors that determines liquidity and profitability and insolvency risks. Finally, the study look at the profitability and insolvlency risks and compare Islamic and conventional banks before and after the 2008 world financial crisis. The study uses a partial least square (PLS) model based on the structural equations modelling (SEM) precepts which enable understanding and prediction of the construct relationship between each other more appropriately. It also enable a

simultaneous one-time process of analyzing the relationship between the variables (Chin, 1998).

Mediating latent variables are the variables that examine the effects of the relationship between the dependent and independent variables to accurately and functionally determine the nature of the study (Hair 2006). A Mediator Variable (ME), sometimes referred to as, "intervening or process variable," is the variable that causes mediation between the relationship of the dependent variable (called outcome) and the independent variable (called a causal variable) (Hair 2006; and Kenny, 2014;). Although Baron and Kenny's method customarily used to determine if an independent variable affects a dependent variable through a mediator is very familiar by many authors and reviewers. Lots of projects have been stopped at its beginning or later in the review process due to the data is not in conformity with criteria set in Baron and Kenny. Thus, hindering the theoretical development. Since the technical literature has disputed some of Baron and Kenny's tests, this research presents a logic based on the model developed by Zhao et al., (2010) and Hair et al. (2017). Previously, no study employed this method.

The implication of this study is; firstly, it assists the regulators to come up with policies based on bank specific factors and macroeconomic factors that will improve the liquidity of the banks in Malaysia. By this, public confidence will be restored with the establishment of proper liquidity management by banks. Secondly, the right strategies can be formulated by banks to improve profitability. Thirdly, the public and investors can evaluate the performance of the banks and make informed decisions. Finally, other practitioners and academicians will find this study more resourceful in terms of evaluating their knowledge in the area of the bank's liquidity and profitability and insolvency risks.

1.3 Motivation of the Study.

During the initiation of the Basel I and II Accords, liquidity was not a major issue for banks' failure. Most banks' failure was inflicted by credits or other types of risks. The recent world financial crisis started in 2006 increased the importance of a fundamental strengthening of the Basel II framework. Among the factors that lead to the collapse of many financial institutions include inefficient management, inappropriate funding structures (asset-liability mismatches) and inadequate liquidity buffers. This prompted the Basel Committee on Banking Supervision (BCBS) to introduce the new Basel III Accord in December 2010. Such efforts were to strengthen the capital adequacy requirements and establish new liquidity requirements for banks (Bank for International Settlements, 2010). During the crisis, banks were highly leveraged and illiquid resulted in failures of the largest banks such as Lehman Brothers, Citibank, Northern Rock, and HSBC (Duttweiler, 2011).

Statistics showed that the amount of defaulted mortgage originated from the United Kingdom (UK) rose from $190 billion in 2001 to $600 billion in 2006 (Duttweiler, 2011). Such a crisis started with the failure of some large UK banks, subsequently spread to other parts of the world. Malaysia and other South-east Asian countries were not spared from the external shock during this financial crisis. The shock was transmitted to Malaysia and other South-east Asian countries in the fourth quarter of 2008. The domestic economic activities slowed down and the overall loan applications in the country declined (Khoon & Lim, 2010). Loan applications decelerated in some sectors such as households and businesses, and the overall Malaysia economic interest rate environment negatively affected. Before that, earlier in 2006, the inflation rate surpassed the Overnight Policy Rate (OPR) for almost seven months. In May, 2008, the unpredictability of the global crude oil price caused the price of the

national petrol pump to increase. As inflation surged, the real interest rate was negatively affected, ultimately caused Malaysia and other South-east Asian financial institutions into a downward economic condition (Khoon & Lim, 2010).

According to Dietrich, (2014), liquidity issues during the recent financial crisis of 2008 has proven an immediate threat to the survival of even well-capitalized financial institutions. Berger & Bouwman (2009) looked at the periods of excess liquidity, which caused the banking crisis in the US and claimed that the financial crisis evolved due to the sudden dried up of liquidity in major banks. A similar finding showed that banks relied heavily on non-deposits wholesale funding showcased weaker stock performance (Raddatz, 2010) and lower asset returns (Demirgüç-Kunt & Huizinga, 2009). Subsequently, banks with a low liquidity structure before the crisis failed miserably than those with a stronger liquidity structure (Bologna, 2011; and Vazquez & Federico, 2012). Based on this, there is a need for banks to have sustainable liquidity sources which will enable them to withstand short and long-term liquidity shocks, and increase their profitability and solvency. In the efforts to resolves above issues, two new liquidity ratios, i.e., LCR and NSFR were developed by Basel III in order to ensure banks have sustainable liquidity structure to withstand any normal or stressed liquidity requirements. These ratios were defined as follows:

- The Liquidity Coverage Ratio (LCR) requires banks to maintain an adequate level of ‘‘unencumbered, high-quality liquid assets that can be converted to cash to meet needs for a 30-calendar day time horizon under severe liquidity stress conditions specified by supervisors’’ (Bank for International Settlements, 2010, p.3). The standard requires the value of the ratio to be no less than 100 percent, i.e. the stock of high-quality liquid assets should at least equal the total projected net cash outflows.

- The Net Stable Funding Ratio (NSFR) is designed to ‘‘promote longer-term funding of the assets and liabilities of banking organizations by establishing a minimum acceptable amount of stable funding based on the liquidity of an institution’s assets and liabilities over a one-year horizon’’ (Bank for International Settlements, 2010: p.22). The ratio is defined as banks’ Available Stable Funding (ASF) over Required Stable Funding (RSF), which is required to be at least 100 percent”.

Banks that complied with the LCR requirements have to reduce their lending activities to increase cash holding or liquid assets (mainly government securities) at hand. This will harm the overall profitability and might lead to insolvency risks. (Ötker-Robe & Pazarbasioglu, 2010). On the other hand, NSFR compliance will lead to a higher compromise between the weighted average maturity of assets and liabilities, thereby reducing the ability to transform assets and liabilities at maturity. This will encourage the financial institutions to increase the use of more stable and expensive medium-long term funding (liability) and reduce their medium-long term assets (Atkinson & Blundell-Wignall, 2010). Reducing the maturity transformation activity by using more expensive funding and reducing the maturities of the assets will hurt banks profitability. However, this will have positive effects on the stability (in terms of reduced bank’s failure as a result of liquidity dry up) of individual banks (in future).

The pressures of maintaining enough liquidity will force banks to adjust their balance sheet structure. This will adversely affect economic growth as lending activities to the productive sector will be reduced. Researchers generally found a negative impact on economic output as a result of the introduction of these new liquidity measures (i.e., LCR and NSFR). However, these adverse effects are considered as temporary. The findings of the Macroeconomic Assessment Group (2010) indicated that the cost and

quantity of credit could both be recovered with the reduction of banks' risks in the long-run. In a study by Gambacorta (2011), the relationship among the US macro-variables between 1994 to 2008 was analyzed. The findings shows that tighter capital and liquidity requirements had limited negative impact on the level of the long-run prosperity of banks and economic growth. Yan et al. (2011) argued that LCR and NSFR would reduce the harshness of banking crises in line with expected bankruptcy cost concept, and simultaneously lower the associated losses of economic output. Overall, these studies indicated a positive net long-term effects of these new regulations (in line with the liquid asset as a buffer concept) on economic activity which subsequently leads to positive effects on the bank's profitability.

In conclusion, studies of the effects of the Basel III funding structure on the bank's profitability and insolvency risks remain a relatively scarce topic. Previously (before 2008 financial crisis), most authors appeared to focus their attention on capital and leverage rules (Bank for International Settlements, 2010) as capitalization determine banks' long-run resilience and focus mainly on conventional banks. This study attempts to close this gap by measuring banks' liquidity factors after the introduction of Basel III and its effects on the factors that determine bank's profitability and the insolvency risk using PLS-SEM approach that will harmonize all the latent variables and mediate the relationship with the liquidity. The study will further compare Islamic and conventional banks operating jointly in the same landscape (i.e., Malaysia). In addition, also the study compare the before and after the crisis period. In contrast, this study is motivated by the facts that short-term liquidity risks and unsustainable liquidity structures during the 2008 financial crisis proves more threat to the survival of financial institutions regardless of their capitalization structure, quality of the assets

held, management efficiency, earnings quality etc. and causes the declines in the bank's profitability and subsequently leads to insolvency.

1.4 Research Objectives

i. To analyse the effect of bank specific factors and macroeconomic factors on profitability and insolvency risks of Islamic and conventional banks in Malaysia.

ii. To analyse the effect of bank specific factors and macroeconomic factors on the liquidity of Islamic and conventional banks in Malaysia.

iii. To examine the effect of liquidity on profitability and insolvency risks of Islamic and conventional banks in Malaysia, and

iv. To compare the profitability, insolvency risks and liquidity of Islamic and conventional banks before and after the 2008 financial crisis.

v. To examine the mediating roles of liquidity for the relationship between the factors that determine liquidity and banks profitability and insolvency risks

1.5 Research Questions

i. What is the effect of the bank specific factors and macroeconomic factors on the profitability and insolvency risks of Islamic and conventional banks in Malaysia?

ii. What is the effect of the bank specific factors and macroeconomic factors on the liquidity of Islamic and conventional banks in Malaysia?

iii. Does the liquidity effect the profitability and insolvency risks of Islamic and conventional banks in Malaysia?

iv. Does the profitability, insolvency risks and liquidity of Islamic and conventional banks in Malaysia differ before and after 2008 financial crisis?

v. Does the bank's liquidity play an indirect/mediator role between the the factors that determine bank's liquidity and profitability and insolvency risks for Islamic and conventional banks?

1.6 Significance of the Study

The contributions of this study would be of interest to scholars in the finance and banking field. In additions, practicing managers, particularly in the banking industry will found this study useful. The studies on liquidity risk management and the newly introduced LCR and NSFR that are believed to solve the liquidity issues in banks are core areas of research in the finance field, to which this study would be significant.

1.7 Conceptual Implication

The financial literature mostly considered banking as one of the emerging fields in finance. Banks performance has greatly affected the economic, social and political conditions of both developed and developing countries (Kalim, 1985). This study contributes to the literature by considering LCR & NSFR as the factors that will improve banks' profitability and reduce the potential of banking failure which affects the growth and prospects of an economy. In addition to the financial literature, the study also contributes to two areas of research commonly studied within the banking domain: liquidity risk management and profitability. In liquidity risk management's literature, many studies have looked at the bank specific factors and macroeconomic factors that affect banks' liquidity. For example, how changes in capital ratio, management strategies, earning as well as assets and liability transformations affect banks' liquidity

(Dietrich, 2014, Sheefeni, & Peyavali, 2016;, and Isik & Belke 2017). Or how the liquidity risk factors affect profitability and insolvency risks (Mwangi, 2014, Moussa, 2015; Hasanov et al. 2018 and Shamas, et al. 2018).

Although much is known about the factors affecting liquidity risk in banks from past literature, the causal direction of these studies has mostly been from the best practices of liquidity management before the 2008 global financial crisis and the introduction of the new Basel III accord and primarily concentrates on conventional banks. In contrast, sustainable funding structures contribute to the adaptation of the best banks' liquidity risk management practice. In turn it enables or constrains the success or failure of the assets and liability transformation within the banks. Nevertheless, the study in this area is relatively scarced in the literature, hence becomes the subject of this study. This research, therefore, contributes to the literature by seeking to understand the application of LCR, NSFR and bank's profitability and insolvency risks before and after the 2008 global financial crisis. The study also contributes to the finance literature in two ways; first, it shows how liquidity and its management structure restores the confidence in banks during the crisis. Second; it brings to light the distinct nature and characteristics of liquidity that are relevant for researches on banks.

1.8 Practical Implication

From a practical standpoint, this study is relevant and timely for the banking sector, especially in the midst of significant changes in the liquidity structures. Traditionally, liquidity risk management in the banking sector has remained largely neglected, relying mainly on capital adequacy and leverage as the mechanisms to take care of the liquidity requirements. However, increasing incidents of bank failures and low performance as a result of asset-liability mismatches indicate that liquidity risk can

not be solved only by increasing the capital base of banks. Funding liquidity and market liquidity, via assets and liability transformation, should be the critical areas to be looked upon by banks. Banks are expected to change not only the transformation targetted area but also how these functions affect the overall performance of the banking sector. Before the 2008 crisis, many banks failed to foresee the performance issue, leading to disastrous outcomes from the asset-liability transformation process. Understanding the factors that impact the assets and liability management in banks will lead to better long-term success and durability of banks' profitability and solvency. Thus, it is timely and significant for the banking industry to tackle the issue at hand. Nonetheless, the contributions of this study are not expected to be exclusive only to the banking context in Malaysia. The regulators in any economy aiming to achieve better long-term growth of banking through more enormous changes in liquidity risk management could found this study useful.

1.9 Scope of the Study

The proposed research combines three (i.e. liquidity, profitability and insolvency risks concepts). Primary conceptual considerations (discussed in Chapter 4), provides a better conceptualization of liquidity risk management in banking sector. This enhanced the understanding of the factors that affect the banks' liquidity, profitability and insolvency risks, specifically in the Malaysia context. Data for bank-specific factors are obtained from the Fitch-connect database, which offers the most extensive data collection of global bank financial statements. The collection includes – annual and interim financial statements for over 33,000 active and inactive banks in over 200 countries with a history going back up to 30 years. The database also offers Granularity of over 700 financial data points focusing on income statement, assets & off-balance

sheet volumes, liabilities & equity, and analytical ratios. The data are standardized and presented in a uniform format to allow meaningful comparisons across accounting standards. The macroeconomic factors are taken from various sources including international monetary fund (IMF), World Economic Outlook and World Bank.

The critical factors explored in this study are LCR and NSFR. These ratios have been defined quite recently (see Bank for International Settlements, 2010:25-31). Thus it only requires raw balance sheet and off-balance sheet data to reproduce LCR and NSFR time series. Unfortunately, some data elements required for the precise calculation of LCR and NSFR were not reported historically. An example is a piece of detailed information on the composition and duration of liquid assets and 30-day liabilities, a breakdown of customer deposits into a stable and less stable component. However, a good approximation of LCR and NSFR seems feasible. This research approach is inspired by Ötker-Robe & Pazarbasioglu (2010) and Yaakub, et al (2017) who derived their LCR and NSFR time series comparably.

The initial raw data sample includes financial data of over 100 banks operated in Malaysia from 2000 to 2016. For the sake of econometric analysis, the data were subsequently narrowed down to achieve a more homogeneous sample of 42 Islamic and conventional banks. The primary motivation for narrowing the sample is, there is good data quality for banks in these markets throughout the sample period. This includes a continuous series of observations, which is crucial for the exploration of dynamic effects. Further filtering criteria include size limits, asset structure criteria (lending business from the institution must be material), as well as selected specializations activity as defined by Fitchconnect database. The latter criterion is meant to exclude specialized financial institutions such as investment banks, security firms or finance companies. Once a bank is chosen, the researcher applied the additional criteria to

ensure the derived LCR and NSFR data, as described in table 1-3 of appendix, are available with a certain consistency and satisfy the minimal data quality standards. As a reference, all of the above data filter criteria are shown in table 4 of appendix section.

1.10 Organisation of the thesis

This thesis is divided into eighth chapters. Following the above chapter one (i.e. introduction), the next chapter (i.e. chapter two) discusses overview of banking Industry in Malaysia and banking risks. Chapter three review the literature and it is followed by chapter four on conceptual framework and hypotheses development. Chapter five discusses the research methodology and chapter six and seven presents findings of the study. The last chapter (chapter eight) concludes the study.