UNIVERSITI TEKNOLOGI MARA

THE IMPACT OF LIQUIDITY MANAGEMENT ON PROFITABILITY OF COMMERCIAL BANKS IN MALAYSIA

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with theregulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The aim of this research is to identify the effects of liquidity risk management on commercial bank profitability in Malaysia. The research is performed using Return on Assets (ROA) to examine the relationship between Current Ratio (CR), Cash Deposit Ratio (CDR) and Loan to Total Deposit Ratio (LDR) to bank profitability. Information for this analysis were collected from the sampled companies' related databases and annual reports. This study uses secondary data from six (6) conventional banks listed in Bursa Malaysia between the year 2016 to 2020. This study uses panel data to examine the collected data. The results of this study are focused on descriptive analysis, correlation analysis, and regression analysis.

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CHAPTER ONE
INTRODUCTION

1.1 Introduction

Liquidity management is an important criterion that every company needs to meet its commitments including short-term financial and organizational expenditures. A financial institution or a corporation should be able to ensure that surplus capital is sufficient to meet short-term commitments. Therefore, because of its close relationship with the daily activities of an organization the analysis is one of the most relevant for internal and external analysts. This work is carried out to examine the liquidity management of commercial banks and determine their impact on the competitiveness of a commercial bank.

This chapter would examine the context of the research, the description of problems involved in this analysis, the nature of the study, the constraint of the study and the meaning of terms used in this study. The research focuses on the effect of liquidity management on the commercial bank's competitiveness in Malaysia.

The purpose of the study is to analyse the financial liquidity exposure of the commercial bank in Bursa Malaysia, which included 6 commercial banks in Malaysia, which will use panel details. In fact, the evaluation system of our data will be used in this analysis, using all relevant information pertaining to this research as the annual report of each of the six commercial banks, DataStream and E-views.

1.2 Background of the study

Liquidity defines how easily a property or security can be sold or bought on the market at a rate that represents its inherent value. That is to tell, the simplicity of money transfer. Money is universally regarded as the liquid asset, whereas real property, music and objects are all fairly illiquid in their tangible assets. The distribution of volatility drops at several points (Chen, 2019).

The term "liquidity" is used in order to address the bank's financial status. The liquidity in the commercial bank represents the ability to fund its obligations by the contractor at the time of maturity, which includes lending and investment commitments,

withdrawals, deposits, and accrued liabilities (Amengor, 2010). The management of liquidity is important to non-financial and financial companies. This is a duty of the bank to fulfil the financial obligations; the financial obligations include short and long-term loans and 9 other monetary expenditures. Liquidity is a means of converting capital into money for payment in cash by the financial and finance sectors.

The liquidity risk management of financial institutions or banking is a necessary consideration in the risk management framework, as it affects profitability since liquidity difficulties may deleteriously affect a certain bank's earnings and capital (Arif and Anees, 2012). A well liquidity management monitoring controls less or more the control of bank's liquidity decisions in order to prevent loss. The issue of profitability is a key financial crisis predictor. The profitability of the banking sector is crucial in order to estimate the financial and banking sector's constancy and reliability.

Profitability can also be described as the variation between expenditure and revenue over a fixed period of time, which generally comprises a fixed period of one financial year. This is essential for banks to generate sufficient income to enable further growth and expansion to take place. The decision was tangled by many factors, that the preparations for banking profitability are further and more challenging. In the highly challenging business environment, profit planning and management are more complex. Three alternative variables represent profits. The first is the return on assets, which is the most important profit ratio, and ROA shows how well bank assets can generate profit. Another ratio is current ratio, which refers to liquidity of the firms. The next is cash deposits ratio and loan to total deposit ratio.

1.3 Problem statement

Banking sectors have an essential responsibility in business sector and country's economy. Bank is a financial institution between the lenders and depositors which they save money deposited and give out loans to people, other institutions, organizations, government, and others. Banks also make profit from investment; thus, they need to utilize their resources effectively since the bank is exposed to meet the obligations of its client and depositors who want to withdraw their savings at any moment.

Incidentally, the case of the global financial crisis is one of the main reasons which caused the banks to worry about successful liquidity risk management. The Lehman Brothers had to file for bankruptcy in 2007 and 2008, unable to promise a stable

capital risk management, and even the government could not save the liquidation process at the moment (Chu, 2018). In fact, the banking sector around the world, including Malaysia during the recession, is also exposed to the same danger.

In the case of Rashid Husain Berhad (RHB) and Bank Simpanan Nasional (BSN), the liquidity deficit and the recovery were witnessed and shown in the mid-1990s. Then by merger and integration they fixed it. After the two events, people began losing trust and trust with the banking system and continued turning the company into banks which could show their sound handling of the liquidity risk. This contributes to the issue if it cannot satisfy such demands which, apart from losing confidence from its consumers over time, can shame the bank. That business bank must therefore work out how to maximize profit by keeping a sufficient amount of liquidity and to keep the financial demand of its depositors.

There will however be a problem when business banks maximize profits but disregard the liquidity effect, as each liquidity level has a different effect on profitability. Commercial banks therefore need to understand the right amount of cash to help them achieve income and liquidity fairly. Therefore, the purpose of this research is to study if the commercial banks in Malaysia are good in managing their liquidity positions in which can be grouped as the internal factors that will influence the commercial banks' performance in terms of their profitability especially after the financial crisis of banking sector in 1997. The performance will be measured by using return on asset (ROA) ratio.

As for this study, the bank performance and financial position will be evaluated by using financial statement analysis in order to examine the past and current financial data for the commercial banks. The financial ratio analysis is more general for the performance measurement, but it produces result that are more consistent. Liquidity and competitiveness tend to be another side of a coin. For example, the maintenance cost of all liquid assets may affect a bank's overall profitability. Analysts have tested this theory at any late stage. (Anamika Singh, 2016) a significant negative link with bank liquidity has been identified between the size of the bank and the gross domestic product (GDP).

Meanwhile income, inflation, deposits, and adequacy have a positive influence on a bank's liquidity. Unemployment and financing costs, though, impact bank liquidity insignificantly. This would also mean that the bank liquidity is influenced by bank capacity, GDP, turnover, inflation, deposits, and the equity ratio. In a small bank, the supply of total assets implies further equity due to limited external sources of financing

(Dinger, 2009). They hold fewer funding for large banks as they're able to arrange interbank funds as well as from other markets (Desquilbent, 2008).

1.4 Research questions

The study would aim to pinpoint the evidence of the effect on profitability of commercial banks in Malaysia liquidity management by answering following question:

i. Is there any relationship between current ratio and the profitability of the commercial banks in Malaysia?
ii. Is there any relationship between cash to deposit ratio and the profitability of the commercial banks in Malaysia?
iii. Is there any relationship between loans to total deposit ratio and the profitability of the commercial banks in Malaysia?

1.5 Research objectives

In general, the purpose of conducting this research is to identify whether the management of liquidity has effect on profitability of commercial banks in Malaysia. Specifically, the objective of this research focuses on:

i. To investigate the relationship between current ratio and the profitability of the commercial banks in Malaysia.
ii. To investigate the relationship between cash to deposit ratio and the profitability of the commercial banks in Malaysia.
iii. To investigate the relationship between loans to total deposit ratio and the profitability of the commercial banks in Malaysia.

1.6 Significance of study

The Influence Liquidity work is important because it will lead to commercial bank productivity increases and decreases. The goal of this analysis is to analyse the liquidity risk exposure of the commercial bank using data from 2016 to 2020. Current

ratio, cash deposits ratio, and loans to the total payment ratio can be used to calculate liquidity impact. It is easy to determine whether the current ratio, the cash deposits ratio and the loans to the total deposit ratio have had an effect on profitable business banks or not.

1.7 Scope of the study

The research will be based on the Malaysian commercial bank. This study would analyse six commercial banks, Malayan Banking Berhad, CIMB Group Holdings Berhad, Public Bank Berhad, RHB Bank Berhad, Alliance Bank Malaysia Berhad, and BIMB Holdings Berhad for five years from 2016 to 2020. Annual report for each commercial bank and other related outlets, such as DataStream are the primary sources for the analysis of data.

1.8 Limitation of the study

In these experiments, the first drawback is that it manually measures the ratio so that the panel details can be created. This is because the commercial bank's annual report does not provide the ratio provided in the analysis and the data source. Therefore, the study's time constraints are tight. Since the researcher has another academic obligation, the project time frames are limited.

1.9 Definition of key terms

Table 1.1
Definition of key terms

Terms	Definition
Liquidity	How simple it is to buy and sell a property or security at a cost that is its inherent value.
Liquidity risk	The bank's chance of failing to meet short-term financial demands.
Liquidity management	Investors and managers' effort to reduce the vulnerability to liquidity harm.
Liquidity ratio	To calculate the capacity of a bank to pay its short-term debt liabilities.

Return on Asset	An indication that a commercial bank is competitive in accordance with its total assets.
Current Ratio	An indication that a commercial bank is competitive in accordance with its total assets.
Cash Deposits Ratio	A measurement of bank's liquidity, specifically the ratio of a bank's total cash and cash equivalents to its current liabilities. The metric calculates the bank's ability to pay its short-term debt.
Loan to Total Deposit Ratio	To determine the liquidity of the bank by contrasting the cumulative liabilities of a bank with its deposits for the same duration. As a measure, it conveyed.
Commercial Bank	A finance organization that takes deposits and loans investment with an aim to gain income from the general public.

1.10 Summary

This chapter includes the research information on the context of the analysis, the description of problems, issues and goals of research, the value of research, the nature of research and the meaning of certain words used in this research. In brief, this study studies the effects of liquidity on profitability in the Malaysian commercial bank Malayan Banking Berhad, CIMB Group Holdings Berhad, Public Bank Berhad, RHB Bank Berhad, Alliance Bank Malaysia Berhad, and BIMB Holdings Berhad by establishing a relationship among the variables where profitability in the dependent variable is the yield on assets and the independent variables are the actual ratio, the cash-deposit ratio and the loan to the overall deposit ratio.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

Literature review is a simple summary of selected research that has been collected from secondary sources. There has been a large number of previous studies carried out by other researchers which related with this research. Thus, this chapter will be reviewed the previous studies in order to provide better understanding and further information about the effect of liquidity management on profitability of commercial banks.

2.2 Liquidity concept

Liquidity can be described as a financial institution's ability to meet all the requirements for funding (Yeager and Seitz, 1989). International Monetary Fund (IMF) said that liquidity is the ability of a financial institution to make agreed-upon payments at the right time (Drehman and Nikolaou, 2009). According to (Garber and Weisbrod, 1992), an asset is liquid if it has low risk and it is less sensitive to the volatility of interest rate. According to (Alzorqan, 2014), liquidity management is the main banking function and an essential part of the assets management process. Liquidity in commercial banks implies the capacity of the bank to fund, where appropriate, all its contractual obligations, which can include the lending, investment and withdrawal of deposits and the maturity of liabilities in the normal course of banking operations (Md Reaz, Syed M and Saurav, 2016). Most of the commercial bank activities rely on the ability of the bank to provide liquidity to its customers. In order to avoid any problem occurred, liquidity in the financial institution must be managed wisely. Liquidity is possible to be obtained by holding enough current assets and turning the assets into cash and borrowing.

2.2.1 Liquidity theories

There are a few numbers of liquidity theories which are anticipated income theory, commercial loan theory and shiftability theory. Both anticipated income theory and commercial loan theory were proposed by H.V. Prochanow in 1944 on the basis of the practice of extending term loans by the US commercial banks. Meanwhile, the shiftability theory is developed in 1918 by M.G Mouton and published in his article named 'Commercial banking and capital formation'. Anticipated income theory states that the bank will be able to manage its liquidity by giving out an appropriate loan as well as able to collect these loans during its maturity without any delays. This theory holds that the bank's management able to predict and forecast its liquidity according to the expected income of the borrower. According to this theory, this policy enables the bank to hold high liquidity (Enekwe, Eziedo and Agu, 2017). Commercial loan theory states that the bank can automatically maintain its liquidity through self-liquidation of the bank's assets which one of them is loan granted. In this theory, it states that, it is sufficient for the bank to provide for liquidity as the loan granted are normally in a short period and the borrowers will refund the borrowed funds at the maturity period. This theory is suitable for traders who need to fund their particular trading transactions in short periods (Ali, 2015). Shiftability theory is an approach that helps the bank to maintain its liquidity by holding assets that can be shifted in other word, can be sold to the other lenders when there is shortage happen in the bank itself. This approach enables the bank to run efficiently and helps the bank to avoid any liquidity crises that might happen in future. This theory suggests that supplementary liquidity can be extracted from a bank's liabilities (Moses, Tobias, and Margaret, 2018).

2.3 Probability concept

Profitability is a key measure to evaluate financial performance of the bank. Profitability refers to the ability of a firm to make profit from its sales (Durah, Ahmad Abdul Rahman, Jamil, and Ghafeer, 2016). A sound and profitable banking sector is required to endure negative shocks and contribute towards the strong and stability of the financial system (Athanasoglou, Brissimis, and Delis, 2008). According to (Athanasoglou, Brissimis, and Delis, 2008), bank profitability is usually driven by both internal and external determinants. Internal determinants are also known as micro or

bank-specific determinants such as the level of liquidity, capital adequacy, and bank size (Athanasoglou, Brissimis, and Delis, 2008). Otherwise, external determinants are variables that reflects the economic and legal environment of banking institution such as inflation, market concentration, and industry size (Athanasoglou, Brissimis, and Delis, 2008). Profitability ratios will be used in measuring performance of bank in term of profitability. Profitability ratios consists of several ratios which are typically used in analysing bank performance including return on asset, return on equity, earning per share, profit expense ratio, net profit margin, and others (Burhonov, 2006). Profitability ratio that has been highlighted in this research is return on asset.

2.3.1 Return on asset

Return on asset can be computed by dividing net income with total assets of a bank (Alper, 2011). In other words, it indicates the capability of a bank to generate profits from its assets. According to (Desa, 2003), return on asset is preferred to measure profitability of the bank as it can express efficiency and effectiveness of bank in managing its capital to obtain assets and make returns from it. Majority of previous research used return on assets to measure profitability. In order to understand the nature of profitability for Islamic banks, a study conducted by (Samad and Hassan, 1999) compared one Islamic banks with another eight conventional banks in Malaysia from the year 1984 until the year 1997. The researchers used return on asset to measure profitability and concluded that return on asset has significant relationship towards bank liquidity. Using samples of Greek banks operating abroad over the period of 1995 to 2001 (Kosmidou, Pasiouras, and Tsaklanganos, 2007) studied the domestic and multinational determinants of foreign bank profits. The researchers measured the profitability by return on assets and hence found that liquidity have positive and significant relationship with the profitability of banks. A further research done by (Moussa, 2015) on eighteen Tunisia banks from the year 2000 to 2010 to study the determinants of bank liquidity. The researcher found that return on assets have a positive significant relationship with liquidity.

2.4 Relationship between liquidity and profitability

Several studies have been conducted to determine the relationship between liquidity and profitability. Based on a study by (Bourke, 1989) the researcher found that the liquidity and bank profitability had a positive relationship. In that study, the researcher studied on the determinants of profitability of banks in twelve countries in Europe, North America, and Australia for ten years. In addition, (Olagunju, David and Samuel, 2011) also found that there was a positive significant relationship between liquidity and profitability. The study showed that the commercial banks' liquidity was significantly influenced the profitability. Several research, however, found adverse relationship between liquidity and the bank profitability. (Molyneux and Thornton, 1992) recognized that there is a weak inverse relationship between the bank liquidity and profitability. They attributed that the bank obliged to hold liquid assets as it was the requirements imposed by the authorities. This means that the liquidity of the bank itself affect the profitability in a negative way.

2.5 Past studies on liquidity risk and banks performance

2.5.1 Current ratio

Current ratio is one of the most common measures of liquidity management. According to (Gowthrope, 2005) the relationship between current assets and current liabilities can be determined by calculating current ratio whereby total current assets divided by total current liabilities. In other words, it expresses the liquid resources available when the current liabilities are met. There are many researchers used current ratio in their research in order to measure liquidity. A research done by (Priya and Nimalathasan, 2013) to study the impact of changes in liquidity levels on the profitability of listed manufacturing companies in Sri Lanka for the years 2008 to 2012. The researchers used five factors to determine liquidity management which are current ratio, debtor collection period, creditor payment period, operating cash flow ratio, and inventory sales period. Other than that, researchers used return on asset and return on equity to measure firm's profitability. The result of the study pointed that there is a significant relationship between current ratio and return on assets. (Rehman, Khan, and Khokhar, 2015) conducted a study to investigate the relationship between liquidity and

profitability on a sample of listed companies in Tadawul for the years of 2008 to 2012. Liquidity ratios used in the study include current ratio, cash ratio, and quick ratio while return on asset and return on equity is used to measure profitability of companies. Result of the study showed that there is a significant positive relationship between current ratio and return on asset. In addition, cash ratio and quick ratio have negative but insignificant relationship with return on asset.

2.5.2 Cash deposits ratio

Cash deposits ratio is the liquidity ratio that helps to determine a commercial bank's liquidity conditions. According to (Safiullah, 2010) the ratio is to calculate the financial institution's short term ability to pay its maturing obligations as well as to meet unanticipated demand for cash. Cash deposits ratio, advance deposit ratio, current asset ratio and equity multiplier are the metrics that normally used by the commercial bank in order to know the liquidity position of the commercial bank itself. One of the ratios that have been used in this study is cash deposits ratio. Cash deposits ratio shows how much a bank give out of the deposits from the depositors. This indicates how much a bank uses or utilizes its main funds that being used for lending activities. The lower the cash deposits ratio, the less liquid the bank is while the higher the cash deposits ratio of a bank, the more liquid the bank is. A bank's ability to maintain a high cash deposits ratio will help to enhance and improve the depositors' confidence to the bank (Safiullah, 2010). Based on previous research done by (Bassey, 2015) on the topic of bank profitability and liquidity management among 15 banks in Nigeria, found that cash deposits ratio had negative impact on the banks' profitability. In that study, the researcher used return on equity and return on asset as the profitability indicators and cash deposit ratio had negative impact to both ratios. Besides, (Goel and Kumar, 2016) had conducted a study on cash deposits ratio and credit deposit ratio of 5 public sector banks in India and found that cash deposits ratio does not shows significant result to the study. (Abdullah and Jahan, 2014) also found that cash deposits ratio does not give significant impact to return on asset that they have been used as profitability ratio in their study on the topic of the impact of liquidity on profitability in banking sector of Bangladesh. In their study, they used five private commercial banks in Bangladesh for the period of five years.

2.5.3 Loan to total deposit ratio

Loan to total deposit ratio is also one of the measures of liquidity that can be used to assess the commercial bank's profitability. Loans to total deposit ratio allow the bank to assess its liquidity and also influences the bank's profitability (Rengasamy, 2014). The bank profit depends on the interest charged against the deposits generated by the difference between interest of loans and interest on deposits supported a study by (Borhan and Towpek, 2006). According to (Bassey, 2015) the researcher had used loan to total deposit ratio as one of the indicators in liquidity ratio. The researcher found that loan to total deposit ratio had a positive impact on the profitability of the bank. In that study also showed that loan to total deposit ratio was statistically significant as the t-statistic was 0.37 which greater than significant level of 0.05. Based on the study conducted by (Abdullah and Jahan, 2014), they also used loan to total deposit ratio to know whether liquidity impact the profitability of the bank. The researchers found that loan to total deposit ratio had insignificant impact towards return on asset of the banks.

2.6 Theoretical/research framework

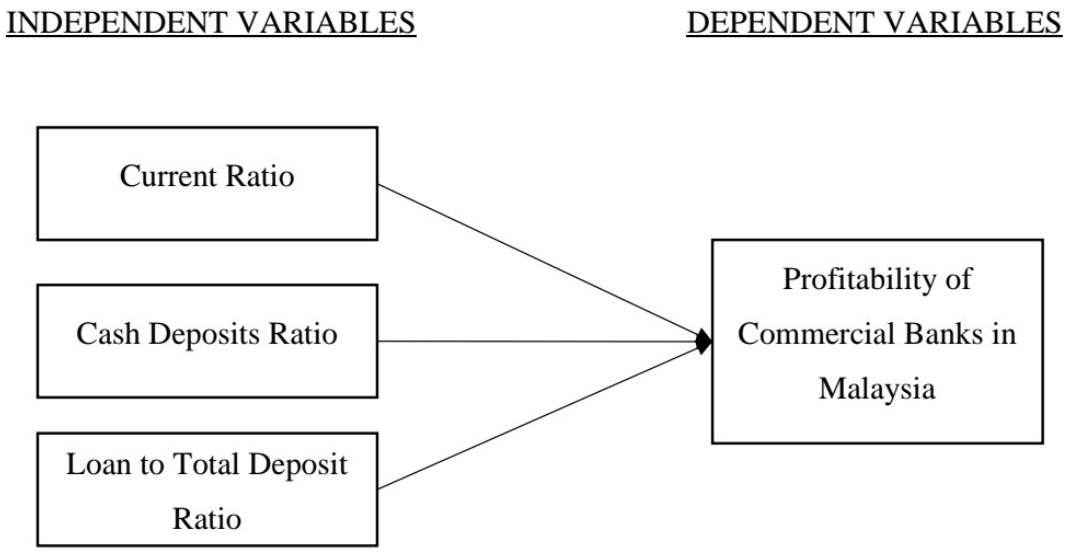

Figure 2.1 Theoretical/research framework

2.7 Summary

According to the review of the literature that have been done by the other researcher, it comprises all variables used in this study. Moreover, it also offers a brief results and outcome that can be used for future research in this study. This can help future researchers to understand the concept and achieve a better future outcome.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The research study will be carried out using the secondary information and collecting from various sources such as each company's annual report, DataStream, and Bursa Malaysia. Each data was for amount of five (5) years from 2016 to 2020. In addition, the rationale for using Datastream is to get any relevant data associated with this study that is banks' liquidity and profitability in Malaysia. This section can review the analysis technique employed in this analysis that involves sampling, research design, data collection, variables, statement of hypothesis, and methodology of analysis. This section can discuss the way to collect the information and from what sources to gather the information. Additionally, a lot of information will be provided on the kinds of variables employed in this analysis that consists of dependent and independent variables. Other than that, this chapter will cover analysis design, hypothesis statement, and analysis methodology.

3.2 Sampling

In population frame, there are 26 commercial banks according to Bank Negara Malaysia (BNM). Next, there are many institutions listed on Bursa Malaysia but due to time constraints, only six (6) were selected for the sample frame. The period for this study is from 2016 to 2020, with data collected in five (5) years.

3.3 Data collection

The analysis will use secondary information which is from secondary sources. Secondary sources are records of study using primary data to solve research problems and gather information through annual reports, databases, other journals, articles, and others. The data collected are the six (6) selected financial institutions listed in Bursa Malaysia.

3.3.1 Annual report

For each year included in this analysis, the data in calculating the ratios of the listed financial institutions will be taken from the company's annual report on an annual basis. The period for each data was from year 2016 to year 2020.

3.3.2 Bursa Malaysia

Bursa Malaysia Berhad is based in Kuala Lumpur, Malaysia. It is the stock exchange of the country and provides to businesses, associations, and governments a selection of market-related products and services licensed under Section 15 of the Capital Markets and Services Act 2007 to sell securities to the public. Six (6) financial institutions listed in Bursa Malaysia were selected for this research. The selected financial firm was listed below in the Table 3.1.

Table 3.1
List of Banking Institutions

No	Company name	Acronym
1	Malayan Banking Berhad	MAYBANK
2	CIMB Group Holdings	CIMB
3	Public Bank Berhad	PBBANK
4	RHB Bank Berhad	RHBBANK
5	Alliance Bank Malaysia Berhad	ABMB
6	BIMB Holdings Berhad	BIMB

3.3.3 Thomson Reuters Datastream

In addition, this research also uses Thomson Reuters Datastream to find any related data to be used in the research to take advantage of UiTM's opportunity as they have already subscribed to the Datastream. Thomson Reuters Datastream is a system that provides a broad and in-depth financial material, all within a workspace that is customized to its user's needs and workflow. It is a global financial and macroeconomic information platform that for 175 countries including Malaysia and 60 markets provides data on equities, currencies and much more.

3.4 Variables

A variable is a term or process that changes or differs in value. There are four main variables, which are dependent variables, independent variables, moderating variables, and mediating variables. There are two types of variables, which are dependent variables and independent variables to be used for this analysis.

3.4.1 Dependent variable

Dependent variable is a variable that being influenced by the independent variables. The dependent variable for this analysis is the return on assets and it will correspond to the firm's profitability. (Nimer, Warrad, and Omari, 2015) stated that return on assets can be explained in two ways. Firstly, it clarified that the return on assets is to calculate the management's ability and efficiency to use the assets of the company to generate operating profits. Secondly, it notes that the total returns are rising for all debt and equity providers, regardless of the source of capital. The return on assets is calculated by dividing a bank's net income by the total assets. The formula is as follows:

$$\frac{Net\ income}{Total\ assets} \tag{3.1}$$

3.4.2 Independent variable

Independent variable is a variable that influenced the dependent variable either in positive or negative way. The independent variables for this study are current ratio (CR), cash deposits ratio (CDR) and loans to total deposit ratio (LDR). The details for the independent variables are as follows:

Table 3.2
Independent variables

Variable	Measurement	Abbreviation
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	CR
Cash deposits ratio	$\frac{\text{Total cash}}{\text{Total deposits}}$	CDR
Loan to total deposit ratio	$\frac{\text{Total loans}}{\text{Total deposits}}$	LDR

3.5 Research design

Research design may be a steering for the researcher to get those ways in which the information required and be collected. It can even be use as the specifying strategies and as the procedures that the data may be analyzing. In this topic, it will contain the aim of the study, styles of investigation and time horizon.

3.5.1 Purpose of the study

Research could also be either exploratory, descriptive, hypothesis testing or case study analysis. This research is employing a hypothesis testing analysis. The aim of the study is to look at the financial firm's exposure to liquidity management within the context of economic firm that had been list in Bursa Malaysia. According to (Ismail, 2016), a company's liquidity status is essential for routine operations and the survival of any corporation in today's competitive market environment in order to acquire funds internally. Therefore, banks with a good liquidity position may pay their current liabilities without losing profitability. It will then promote the higher use of all the accessible resources and a much better performance as well as reduces the future short-term debt and current obligations.

3.5.2 Types of investigation

There are two forms of investigation, which are causal and correlational. The relationship between the variables is correlated, so the types of investigation for this analysis is known as correlational. Consequently, this analysis is to access the influence

of the liquidity in which the current ratio, cash deposits ratio and loans to total deposit ratio to the return on assets will be carried out in order to investigate the effect of liquidity management on the profitability of financial firms.

3.5.3 Unit of analysis

Unit of analysis refers to the organization used by the researcher to collect the data. There are several types of analysis unit including individual, dyads, groups, organizations, and culture. So, the unit of analysis for this study is organization. This is because of the rationale that the researcher contrasts the results of six selected financial institutions listed in Bursa Malaysia.

3.5.4 Time horizon

The time horizon for this analysis is panel data as it tests six banks over a five-year cycle from 2016 to 2020. Panel data refers to the data sets consisting of multiple observations per sample unit. This can be done by integrating the observations in time-series across several cross-sectional units. This includes the firms, regions, states, countries, or individuals or households that have been sampled at random. Basically, panel data is referring to the multi-dimensional data. It contains observations for the same individuals or firms on multiple time periods.

3.6 Hypothesis statement

The relationship between two or more variables is reflected in a statement called as hypothesis. Hypothesis can be described as an uncertain interpretation of the scientific problem in order to further investigate between two or more variables. It can be divided into two categories which are null hypothesis and alternate hypothesis. In theory, null hypothesis (H0) is represented as no significance relationship between two variables or no difference between the two groups. Meanwhile, the alternate hypothesis (H1) is the opposite of the null hypothesis. It is a statement showing the relationship between two variables of indicates the relationship between two groups. The solution can be found by testing these hypotheses in order to correct the problem. Therefore, to achieve the objectives of the research, the relationship between the current ratio, cash

deposits ratio and loans to total deposit ratio towards the profitability of the commercial banks are determined.

Current ratio

H_0: Current ratio has no significant relationship with return on assets of the commercial banks.
H_1: Current ratio has a significant relationship with return on assets of the commercial banks.

Cash deposits ratio

H_0: Cash deposits ratio has no significant relationship with return on assets of the commercial banks.
H_1: Cash deposits ratio has a significant relationship with return on assets of the commercial banks.

Loans to total deposit ratio

H_0: Loans to total deposit ratio has no significant relationship with return on assets of the commercial banks.
H_1: Loans to total deposit ratio has a significant relationship with return on assets of the commercial banks.

3.7 Research methodology

For this study, the relationship between variables will also be used to examine the effect of liquidity on the firms' profitability. The justification for using panel data is that this analysis will include data over five years from six different financial institutions and the company's historical financial statements. Therefore, analyzing panel data is the right and appropriate method to use rather than analyzing the time series. There are several analysis to be carried out under the method of panel data analysis, which include descriptive analysis, correlation analysis, and regression analysis.

3.7.1 Descriptive analysis

Descriptive statistics is the clearest way to conclude the measurements and a group of data, which depicts the fundamental characteristics of the data in a study (Zikmund, 2003). Based on (Parampreet Kaur, 2018), the most common tools of descriptive analysis to explain the data set where the central tendency is determined by using mean, median and mode; and dispersion by applying standard deviation, variance, minimum and peak variables, kurtosis and skewness.

Mean is used to determine the central tendency in which the function is to calculate the average value of the group of data. While median is deployed to find the midpoint value of a group of data, given that the data is organized from the smallest to the largest series. The last one is mode. It is the value with the most repetition in the sample (Parampreet Kaur, 2018).

As for dispersion, the use of variance and standard deviation is to determine the dispersion or spread of raw data from its mean (Parampreet Kaur, 2018). Nevertheless, since the square root of variance is the standard deviation, the standard deviation value unit will be the same as its original values. In fact, a small spread is better because the data is very closely aligned, leading to a more linear relationship between the data. The minimum and maximum variables are the measurements of a sample's smallest and largest value. In addition, kurtosis measures a normal distribution's peak, outliers, or tails. As for skewness, it tests the asymmetry of a normal distribution where the bell curve can be either positively skewed (to the right), negatively skewed (to the left) or unknown (symmetrically).

3.7.2 Correlation analysis

Correlation is the estimation of the strength of the linear relationship with the available statistical data and the linear correlation between two variables. The coefficient of correlation is measured from -1.0 which suggesting a perfect negative correlation to +1.0 which indicating a perfect positive correlation (Srivastav, 2017). A correlation of 0.80 and above, however, is remarkable since it has shown that the variables are highly correlated with each other or in a complete correlation. While zero would mean that, there is no linear relationship between the two variables being evaluated. For instance, if the liquidity to Current Ratio correlation were zero, this

would mean that the Current Ratio has no significant liquidity impact. In this case, the researchers can look for other significant independent variables to obtain a more accurate research outcome. The hypothesis is as below:

$$H_0: \rho = 0$$
$$H_1: \rho \neq 0$$

3.7.3 Regression analysis

Regression analysis is a tool used to determine whether a hypothesis should be rejected or not. This study suggests a panel study of multiple regression analysis due to more than one independent variables being tested for this study are and being regressed as panel data.

Panel least square

Panel least square regression is used by regressing a panel data to identify the coincident effects of multiple independent variables to a dependent variable (Kenton, 2019). The relationship between the explanatory and explained variables can be transmitted in a mathematical equation and the model can be extracted as follows:

$$\mathbf{Y_1 = \beta_0 + \beta_1 X_{1it} + \beta_1 X_{2it} + \beta_1 X_{3it} + e_{it}} \quad (3.2)$$

Where:

Y = Profitability

B_0 = Intercept / Constant

X_1 = Current Ratio

X_2 = Cash Deposits Ratio

X_3 = Loan to Total Deposits Ratio

i = Cross-sectional study of 5 conventional banks in Malaysia

t = The research period from year 2016 to year 2020

e_{it} = Error term

F-test

F-test is used to calculate the overall meaning value between the dependent and independent variables. According to (Editor, 2015), when researchers want to compare fitted statistical models with the data set, it is normally chosen, highlighting the most appropriate model with the population.

$$H_0: \beta_1 CR = \beta_2 CDR = \beta_3 LTDR = 0$$
$$H_1: \beta_1 CR \neq \beta_2 CDR \neq \beta_3 LTDR \neq 0$$

t-test

t-test will decide whether or not the independent variables are relevant with the dependent variable (Siegle, n.d.). It also points out whether the current ratio, cash deposits ratio, loan to total deposit ratio and asset return have either a positive or a negative profitability relationship, respectively. When calculating the t-test, the test needs the approximate formula regression value of the standard deviation. Take the current ratio as parameter, for example, and the assumption is as follows:

$$H_0: \beta_1 CR = 0$$
$$H_1: \beta_1 CR \neq 0$$

Coefficient of determination (R2)

Coefficient of determination is the statistical model, which determines how closely the actual results can be interpreted and predicted by a formula. It can also be clarified how the independent variable will explain the difference in the dependent variable (Mitchell Grant, 2019).

3.8 Summary

In a nutshell, this chapter addresses the sample and data collected to fit the template appropriate to this analysis. Other than that, the research hypothesis also discussed in Chapter 3 as well as the research methodology which includes descriptive analysis, analysis of correlation, and regression analysis.

CHAPTER FOUR
RESEARCH ANALYSIS

4.1 Introduction

This chapter will explain and address the hypothesis backed by the empirical results of all the experiments carried out that are evaluated after several studies on the data collected have been executed. The tests are conducted using E-Views software to determine the relationship between independent and dependent variables. The method used in this research are descriptive analysis, correlation analysis and regression analysis. Data from six (6) local conventional banks listed in Bursa Malaysia for five (5) years used in this research.

4.2 Descriptive Analysis

Table 4.1
Descriptive Analysis

	ROA	CR	CDR	LDR
Mean	0.008945	0.907250	0.294014	0.928382
Median	0.009292	0.866641	0.292185	0.911709
Maximum	0.013839	1.950240	0.434379	1.123862
Minimum	0.000942	0.022254	0.186326	0.819423
Std. Dev.	0.002810	0.555859	0.069612	0.087113
Skewness	-0.830108	0.442164	0.221693	0.921759
Kurtosis	4.726608	2.124835	2.278998	2.659806
Jarque-Bera	7.171860	1.934937	0.895543	4.392861
Probability	0.027711	0.380044	0.639051	0.111199
Sum	0.268357	27.21750	8.820411	27.85145
Sum Sq. Dev.	0.000229	8.960403	0.140528	0.220071
Observations	30	30	30	30

Notes: The dependent variable is return on assets (ROA). The independent variables are current ratio (CR), cash deposits ratio (CDR) and loan to total deposit ratio (LDR).

Table 4.1 shows the descriptive figures for the data used in this study. The data includes samples selected from six banks listed in Bursa Malaysia from 2016 to 2020.

A total of 30 findings are available for this study. Table 4.1 shows the mean, median, maximum, minimum, standard deviation, skewness and kurtosis for return on asset (ROA), current ratio (CR), cash deposit ratio (CDR) and loans to total deposit ratio (LDR).

Next, Table 4.1 reveals that all the variables have a positive mean ROA 0.008945, CR 0.907250, CDR 0.294014 and LDR 0.928382. Other than that, CR has the highest maximum value of 1.950240 and ROA the lowest maximum value of 0.013839. LDR has the highest minimum value of 0.819423 and ROA has the lowest value of 0.000942. Furthermore, the highest standard deviation value is CR 0.555859 and the minimum one is ROA with a value of 0.002810. In addition, (Boston, 2010) and (Bryne, 2010) argued that data is considered to be normal if Skewness is between -2 to +2 and Kurtosis is between -7 to +7. Hence, ROA, CDR, CR and LDR are considered normal distribution of data. Apart from that, pretty much we can see that almost all the variables have positive descriptive value based on the descriptive analysis.

4.3 Correlation Analysis

Table 4.2
Correlation Analysis

Correlation t-Statistic Probability	ROA	CR	CDR	LDR
ROA	1.000000			

CR	0.313055	1.000000		
	1.744205	-----		
	0.0921	-----		
CDR	-0.484684	-0.150948	1.000000	
	-2.932138	-0.808000	-----	
	0.0066	0.4259	-----	
LDR	0.160808	0.132704	0.383179	1.000000
	0.862134	0.708471	2.195137	-----
	0.3959	0.4845	0.0366	-----

Notes: The dependent variable is return on assets (ROA). The independent variables are current ratio (CR), cash deposits ratio (CDR) and loan to total deposit ratio (LDR).

The study of correlation analysis is a statistical tool used to determine the strength of the association between the changes of this study's dependant variable and independent variables. It is the process of studying the strength of relationship with the available statistical data. High correlation means that two or more variables have a strong relationship to each other while a weak correlation means that the variables are hardly related. According to (Fernando, 2020) the values always range between -1 (strong negative relationship) and +1 (strong positive relationship). Values at or close to zero imply weak or no linear relationship. Moreover, as refer to (Kenton, 2020), P-value of 5% or lower is often considered to be statistically significant.

Based on Table 4.2, the measurement of Current Ratio (CR) shows a very weak uphill linear (positive relationship) with dependant variable because the value is 0.313055. The t-statistic shows positive relationship between ROA and CR and for P-value, 0.0921 is above 0.05, meaning has insignificant relationship with dependant variable.

On the measurement of Current Deposit Ratio (CDR), it shows a moderate downhill linear (negative relationship) with dependant variable because the value is -0.484684. The t-statistic shows negative relationship between ROA and CDR and for P-value, 0.0066 is below 0.05, meaning has significant relationship with dependant variable.

The last measurement is on Loan to Total Deposit Ratio (LDR). It shows a very weak uphill linear (positive relationship) with dependant variable because the value is 0.160808. The t-statistic shows positive relationship between ROA and CDR and for P-value, 0.3959 is above 0.05, meaning has insignificant relationship with dependant variable.

4.4 Regression Analysis

Table 4.3
Panel Least Square Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004259	0.004555	0.935005	0.3584
CR	0.000879	0.000792	1.110102	0.2771
CDR	-0.024186	0.006784	-3.565380	0.0014
LDR	0.011848	0.005406	2.191523	0.0376

R-squared	0.403919	Mean dependent var	0.008945
Adjusted R-squared	0.335140	S.D. dependent var	0.002810
S.E. of regression	0.002291	Akaike info criterion	-9.195987
Sum squared resid	0.000136	Schwarz criterion	-9.009161
Log likelihood	141.9398	Hannan-Quinn criter.	-9.136220
F-statistic	5.872740	Durbin-Watson stat	1.592323
Prob(F-statistic)	0.003351		

Notes: The dependent variable is return on assets (ROA). The independent variables are current ratio (CR), cash deposits ratio (CDR) and loan to total deposit ratio (LDR).

Evaluation of regression is used to evaluate the relationship between more than two variables and to decide whether independent variables explain the dependent variable effect. Based on Table 4.3, the econometric formula is the following:

$$\mathbf{Y_1 = 0.004259 + (0.000879)CR + (-0.024186)CDR + 0.011848\ LDR + e} \quad (4.1)$$

Based on the equation, all independent variables except cash deposits ratio showed a positive correlation with return on assets.

From the Table 4.3, the F-statistic value is 5.872740 while the F-statistic P-value is 0.003351. Therefore, we can reject the null hypothesis, and accept the alternative hypothesis because the value has a significance level that below 5%. On the other hand, the value of R^2 is 0.403919 and the adjusted R^2 is 0.335140 which means that 40.39 percent of the variance in the bank's return of assets can be explained by the variation of independent variables which are the current ratio, the cash deposits ratio and the loans to total deposit ratio. Unfortunately, the condition of this 'low percentage' stipulate that this model is not doing a variable good job at explaining variations in ROA.

Next, the interpretation of coefficient value for each independent variable. The first element is the current ratio (CR). The table shows that the CR coefficient is 0.000879, which is 0.09%. It portrays that for each one percent increase in the current ratio, a 0.09 percent increase in return for the financial firm's assets assuming that other factors will remain constant. Meanwhile, the probability value is 0.2771, which is above than 5 percent significance level. This means that, the null hypothesis cannot be rejected and as a result, changes in current ratio led to insignificant effect on return on assets.

The second element is cash deposits ratio (CDR). It shows that the CDR coefficient value is -0.024186, which is -24.19%. It depicts that for each one percent increase in cash deposit ratio would result in a 24.19 percent decrease in return for the financial firm's assets by assuming that other variables will remain constant. Meanwhile, the probability value is 0.0014, which is below than 5 percent significance level. This means that, the null hypothesis must be rejected and as a result, changes in the cash deposits ratio would lead to a significance impact on asset returns.

The last element is the loan to the total deposits ratio (LDR). The coefficient value is 0.011848 which is 11.85%. It implies that each percentage increase in the loan to the total deposit ratio will result in the increase of 11.85 percent in exchange for the financial firm's assets, given that other factors remain constant. Meanwhile, the probability value is 0.00376, which is less than 5 percent significance level. Thus, this means that, the null hypothesis must be rejected and changes in the loan to the total deposit ratio would result in an effect of significance against asset return.

Table 4.4
Liquidity impact on Return on Assets (ROA)

Explanatory Variables	**Hypothesis**	**T-test at 5% level of significance p<0.05**	**Observation**
Current Ratio (CR)	H_0: Current ratio has no significant relationship with return on assets of the commercial banks. H_1: Current ratio has a significant relationship with return on assets of the commercial banks.	p= 0.1962	-Not supported -Failed to reject H_0 since the p>0.05

Cash Deposit Ratio (CDR)	H_0: Cash deposits ratio has no significant relationship with return on assets of the commercial banks. H_1: Cash deposits ratio has a significant relationship with return on assets of the commercial banks.	p= 0.0003	-Supported -Reject H_0 at 5% significance level
Loans to Total Deposit Ratio (LDR)	H_0: Loans to total deposit ratio has no significant relationship with return on assets of the commercial banks. H_1: Loans to total deposit ratio has a significant relationship with return on assets of the commercial banks.	p= 0.0167	-Supported - Reject H_0 at 5% significance level

To sum up, the results from linear regression analysis show that ROA is positively affected by the CR and LDR excluding the CDR. In addition, this study negates the findings of (Priya and Nimalathasan, 2013) that using five factors to determine liquidity management and (Rehman, Khan, and Khokhar, 2015) that used only 3 factors in the liquidity ratios. The results from both studies pointed out that there is a significant relationship between the current ratio and return on assets. Luckily, this study is consistent with the result of other studies which are (Javaid, 2013), (Uremadu, 2015), (Adeyinka, 2017), (Agbada and Osuji, 2018), (Lartey and Boadi, 2014), (Bassey, 2016). Apart from that, in my opinion, the result from this study is not clear-cut. Meaning that the result may be varied or differ across other studies due to the differences with the performance measures that is used in the study in terms of the variables and sample. For example, the certain study uses 5 banks as their sample, certain studies use more than 3 independent variables, and certain study uses 2 dependent variables which are return on equity (ROE) and return on assets (ROA) as the indicator to measure profitability. Hence, the least I can say that liquidity indeed has an impact on the profitability of commercial banks, but the factor of liquidity that affects the profitability might vary.

4.5 Summary

In short, the deliberations on the reported results were presented in this chapter to assess the findings on the tests to be performed and adhered to in this study. In order to analyse the results and outcome, an analysis on the descriptive testing analysis, correlation testing, and regression analysis are needed.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter will focus on concluding the analysis based on the summarization of data that obtain from the research study and at the same time, generate a few recommendations on the outcome of the results. The act of the recommendations is a guideline for future and further study in order to improve the results and to ensure more precise and accurate findings.

5.2 Discussion and finding

In this study, the variety of tests and regression comparison of panel data are used by manoeuvre E-Views software to obtain the best findings. The main goal is to determine the impact of liquidity on profitability of commercial banks in Malaysia. Moreover, this study also wants to identify the relationship between liquidity management and the profitability. Hence, the selected dependent variable on this research is return on asset (ROA) while for the independent variables are cash to current ratio (CR), deposit ratio (CDR) and loans to total deposit ratio (LDR).

In addition, the R^2 and the adjusted R^2 reported by E-views is 0.403919 and 0.335140 respectively. It indicates that 40.39% of the variation in the ROA of commercial bank can be explained by the variation of independent variables which are CR, CDR and LDR while the other 59.61% explained by other factors that are not been explained in this study. Therefore, the addition of other independent variables might help to explain more on the impact of liquidity on profitability of commercial banks in Malaysia. However, there is no problem of autocorrelation found in the model equation because Durbin-Watson Stat is 1.592323. In a nutshell, CDR and LDR are the factor of liquidity since they give significant effect towards ROA while CR give insignificant effect towards ROA.

5.3 Conclusion

As the liquidity is the key banking indicator and an integral part of the asset liability management process, therefore, the study was conducted to investigate how significantly liquidity affect the profitability of commercial banks in Malaysia. Six commercial banks were chosen which are Malayan Banking Berhad, CIMB Group Holdings Berhad, Public Bank Berhad, RHB Bank Berhad, Alliance Bank Malaysia Berhad, and BIMB Holdings Berhad. The dependent variable that are being used is ROA while the independent variables are CR, CDR and LDR. However, this study has its own shortcomings and limitations. One of the main limitations of this study is regarding with the sample. This study has covered only six banks in Malaysia while there is more than that. Other than that, this study has insufficient variables. In order to enhance the understanding of the subject, future research may add more dependent and independent variables because the longer period could be used in further research to ascertain if the result will be different from the current study.

5.4 Recommendation

5.4.1 Maintain adequate liquidity

Since liquidity contribute effects on profits, a bank needs to maintain adequate liquidity. The bank management can formulate a general framework for liquidity management strategy, practices, and policy such as diversifying the funding sources. Moreover, the banks need to adopt scientific methods in the detection of the strengths and weaknesses points of liquidity to assure stability and adequate liquidity.

5.4.2 Expand the study on other countries

A wider scope of future study will help to get better outcome and we can see on other banks' liquidity for other country. For example, comparative analysis between commercial bank in Malaysia and foreign country to look on which strongest determinants that will influence the banks' profitability due to different country has a different economic environment.

5.4.3 Includes more variables

It is recommended to do further study on this topic by adding another different variable. This is because there is still 59.61% that has not been explained yet. Therefore, further study is very recommended with additional independent variables such as acid test ratio (ATR), size in term of total asset, bank and others.

5.5 Summary

In summary, this chapter gives explanation about the outcomes that has been obtained in this study. Besides, this chapter also gives recommendation to the reader in order to gain their knowledge to do the research. Thus, the conclusion and recommendation for this study gives a better idea for the reader and other researcher regarding this topic. Khalas!

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