

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter explores the literature review on various aspects of risk management and bank performance. The chapter is outlined with a discussion on the literature gap and a presentation of this study's conceptual framework.

#### 2.2 Risk Management

Risk management is the essential process of identifying, analyzing and accepting or reducing uncertainty in investment decisions. This definition of risk management has been identified in the studies by Karami et al. (2020). In this studies risk management being used as a tool to find a good place in a short time and at the same time understanding the risk involved along the process of investment. Samimi Amir (2020) identified the concept of risk management as a process for identifying and evaluating risks and selecting management strategies. Theoretically, risks cannot be wholly eliminated. However, risks can be controlled, monitored and mitigated.

Risk management is an indispensable element in every institution, especially Banks. Good risk management may significantly impact the banking system in every country (Gurendrawati, 2020). Proper risk management and internal control systems such as the company's governance, management, and operations may influence the firm's overall performance (Rimin et al., 2021; Ashari et al., 2021). Particularly for banks, sound risk management controls the perceiving service quality provided by the financial institution (Shah, Sukmana and Fianto, 2021). The framework should be broad enough to capture all risks to which a bank is exposed and flexible to accommodate any changes in business operations (Kamau, 2010)

The first stage in risk management is understanding the risk in the microfinance operations and the institution's surroundings. Previous research has demonstrated that knowing risk and risk management is a critical component of risk management techniques (Hassan, 2009). Second, risk identification refers to the process of identifying and categorizing potential hazards to the project, as well as recording such threats. According to Tchankova (2002), an efficient risk identification comprises four components: sources of risk, hazard factors, perils, and risk exposure.

Due to the importance of the bank's risk management technique, the Basel Committee on Banking Supervision produced Basel III, a set of international banking standards to measure and monitor the risk. A standardized approach is employed, which compels banks to determine risk weightings using conventional risk assessment. The internal ratings-based (IRB) foundation method is also used, which is based on an internal evaluation of the risk of default from the counterparty (PD), quantified estimates of exposure at default (EAD), and loss given default (LGD). Besides, the IRB advanced method is also used, and the formula is based on the internal assessments in PD, EAD, and LGD.

In risk management techniques, credit risk optimization seeks to optimize the risk-reward trade-off. According to the Basel Committee on Banking Supervision (2001), credit risk is the most prevalent cause of bank failure. According to Basel I, several problems arise from the framework that increases the credit risk for the bank. It is such as lack of sufficient risk differentiation for individual loans. The weights did not sufficiently differentiate credit risk by the counterparty, whether the party involved is an individual or an organization. This implied that banks with the same capital adequacy ratio (CAR) could have very different risk profiles and degrees of risk exposure. Besides that, there is no recognition of diversification benefits. It is a well-diversified (less risky) loan portfolio from one that is very concentrated or riskier. According to Basel I, the credit risk also inappropriate treatment of sovereign risk and mispricing risks. It is identified that lack of emphasizing on the types of risk such as interest risk, operational risk or business risk. All this lack of credit risk management control over the bank led to failure and misappropriation of power and rights.

Meanwhile, Basel II has been formed to revised the capital adequacy framework. The main objective of the framework is to further strengthen the soundness

and stability of the international banking system via better risk management by bringing regulatory capital requirements more in line with the current bank good practices. This will be achieved by making credit capital requirements significantly more risk-sensitive and introducing an operational risk capital charge. The intention is to broadly maintain the aggregate level of capital requirement and provide incentives to adopt the more advanced risk-sensitive approaches of the revised framework. Compared to Basel I, the scope of application is broader and includes, on a fully consolidated basis, all major internationally active banks at every tier within a banking group.

Basel III currently provides more efficient management of risk and portfolios, adequate supervision, more transparency in operations, and more risk-sensitive and balanced risk-return (Tanna, 2016). Basel III can be divided into two phases: the 2010 framework and the reforms of 2017. The 2010 phase of Basel III focused on few criteria as which are: strengthening the quality of bank regulatory capital, increasing the level of capital requirements to ensure resilience in times of bank stress, enhancing the risk capture for the risk-weighted capital framework, introducing capital buffers and exposure systems to mitigate risks, enhancing the minimum leverage ratio, and introducing an international framework for mitigating excessive liquidity risk. The framework required banks to maintain few risk management practices inclusive of: higher-quality capital to cover unexpected losses, enhanced risk capture by increasing capital requirements based on market risk, focused on bank leverage ratio to ensure adequate debt availability for funding banks investments and activities, improved the bank's liquidity that is sustainable for 30 days during times of stress, and called banks to build capital buffers to fall back during times of economic strain (BCBS, 2010).

Following that, risk assessment and analysis are essential in the financial industry because they guarantee a balance between the risks incurred and the profits earned by financial organisations. It has been revealed that gauging the danger of bank collapses is the primary focus of bank rules. An appropriate, precise, and adaptive credit risk assessment and valuation model or system is required to build a thriving credit risk management environment in the banking industry. Rahman (2011) underlined that credit monitoring consists of frequent evaluations, ratings, and audits to detect early signs of a borrower's financial health.

### 2.3 Credit Risk Management effects on Banks Financial Performance

Credit risk is the potential of losing the outstanding debt in part or all due to default risk or credit events. On the other hand, banks financial performance shows the effectiveness and the efficiency of the bank as an organisation to achieve their goal (Tulung and Ramdani, 2016). Effectiveness is defined as the management's ability to select the appropriate purpose and the right instrument to perform the objective. Meanwhile, efficiency refers to the particular income being produced, which is in optimal amount. Credit risk is the primary risk in the banking system resulting from counterparty failure to perform outstanding debts. Due to credit risk and the immediate risk, banks have invested so much in improving banks credit risk management (Musyoki & Kadubo, 2012). Many research studies have been done on the importance of credit risk management for banks (Deng, Rono & Sang, 2020; Sleimi, 2020). The research elaborates on the importance of credit risk management for banks. Deng, Rono, & Sang (2020) show that only those compliance with the Basel accord significantly affect financial institutions' performance while monitoring corporate credit risk and risk management environment seem not to influence the performance of financial institutions in South Sudan extremely.

On the other hand, credit risk operational practices negatively and insignificantly affect the country's financial institutions. Meanwhile, Sleimi, M. (2020) findings corroborate existing work in the Western settings and underscore the importance of risk management in the Arabian banking context. Furthermore, based on the data and results, the components of risk management practices had positive and significant impacts on banks performance.

Due to the linkage, many researchers try to identify the impact of credit risk management on banks financial performance. In the finance literature, the primary sources of bad credit risk management were due to various reasons such as: the limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, massive bank licencing, poor loan underwriting, reckless lending, the inadequate credit assessment, laxity in credit assessment, poor lending practises, and government intervention by

(Ayayi, 2012). Besides, several economic events positively impact risk management awareness, such as financial crises, stagnation, and company bankruptcies. The situation leads to various models to measure default probability via credit risk assessment, such as a recent model with current Artificial Intelligent technology to forecast the likelihood of default, as in Niklas Bussmann et al. (2021). Other than that, Fabio Martinelli et al. (2020) adopted data mining techniques to build a decision-making model in credit risk management.

Credit risk has received so much attention since the Global Financial Crisis (GFC) 2007/2008. The crisis, also known as the credit crisis, has brought credit risk management to the limelight. The crisis started with the American mortgage crisis, with banks taking massive write-downs due to faulty mortgages and the first bankruptcies. The situation was extensively debated on its origins and the lessons that must be learnt (Rauch, 2014). The global financial crisis of 2007-2009 caused a drop in the value of stocks, bonds, real estate, and other assets (Claessens, Kose, 2013). The impacts were contagious globally through various trade, currencies, investments, and derivatives (Stiglitz, 2010, Moshirian, 2011). Some banks went bankrupt during the crisis. Tailab, M. (2020) compares 140 failed US banks with the same number of non-failed banks from 2006 to 2008 using an importance-performance map analysis (IPMA). The IPMA indicated that failed banks were predisposed to decreasing financial performance in 2008 because of their poor performance in 2006 and 2007. This study suggests that managers who use IPMA to prioritise their financial decisions will obtain valuable conceptual insights and are unlikely to be misled. The subsequence of financial crisis show that the methods and systems used by banks and institutions should be re-evaluated, seeking to improve the current situation in credit risk management and minimise the possible losses of other turmoil or crisis (Grigor'ev & Salikhov, 2008).

Specifically, in banks, credit risk is defined as the possible loss resulting from non-performance of a financial contract or the financial components of non-performance in any contract (Global Association of Risk Professionals, GARP). Since banks main activity is credit creation, credit risk is the most dangerous risk for commercial banks. Credit risk is most commonly associated with loans. Still, it may also be found in other forms of assets such as bonds, short-term debt securities, and derivatives, as well as off-balance-sheet obligations such as unused credit lines,

guarantees, and documentary credits. Due to that, banks should be acutely aware of the need to identify, assess, monitor, and control credit risk and ensure that they have enough capital to cover these risks and are fairly paid for losses (BIS, 2000).

Many researchers have identified the credit risk associated with banks. While some of the research identifies determinants, exposures and structures of credit risk management (LE et al., 2020; Fadwa A Mohammed et al., 2020; Akoto, 2020; Sleimi, M et al., 2020; Rehman et al., 2020 and Hu, D et al., 2020), some other researchers have identified the impact of credit risk management on banks performance (Zou and Li's, 2014; Lalon, 2015; Alta'ani, et al. 2020; Joshua et al., 2020; Ephias Munangi et al., 2020; Taofeek Sola Afolabi et al., 2020).

Alta'ani et al. (2020) examine the relationship between credit risk management indicators and the financial performance of listed banks in Jordan and compare the efficiency of credit risk management between Islamic and conventional banks. The researchers found capital adequacy ratio has a positive and significant relationship with ROA and ROE, and the cost per loan ratio has a negative and significant relationship with ROA, ROE, Loan loss reserve ratio has a negative and significant relationship. Furthermore, the finding is that credit risk management in Islamic banks is better than conventional banks and Islamic banks have higher profitability.

Zou and Li (2014) analysed credit risk management of commercial banks with its impact on profitability. In the research model, ROE and ROA were defined as proxies of profitability. In contrast, the Non-Performing Loan ratio (NPLR) and the capital adequacy ratio (CAR) were defined as proxies of credit risk management. The research collects data from the largest commercial banks in Europe from 2007 to 2012. The findings revealed that credit risk management had positive effects on the profitability of commercial banks. Between the two proxies of credit risk management, NPLR had a significant impact on both ROE and ROA, while CAR had an insignificant effect on both ROE and ROA. However, from 2007 to 2012, the relationships between all the proxies are not stable but fluctuating.

Lalon (2015) uses non-performing loans, loan loss provisions and capital adequacy as credit risk indicators. The research suggests credit risk management enhancement is essential to maintain the profitability of commercial banks in Ethiopia.

According to Lalon (2020), this study attempts to reveal how several credit risk factors affect the profitability of commercial banks. This is performed by considering the econometric models estimated with Random effect, Fixed effect, Pooled OLS and GLS method followed by dynamic panel data model estimated with one-step system GMM approach. This is to incorporate the issue of endogeneity, unobserved heterogeneity and profit persistence of data set covering from the year 2010 to 2019 in Bangladesh. The loan losses to NPL ratio significantly affect the dependent variable measured with the net interest margin (NIM) ratio of banks under the fixed-effect method. The NPL to total loans ratio, NPL to Total equity ratio and provision for loan losses to total equity also significantly affect the dependent variable measured with ROE of banks. NPL to total loans ratio is statistically significant under all methods. Still, the NPL to total equity ratio is effective under the fixed effect and GLS method. Provision for loan losses to total equity is significant under the GLS method only in explaining the changes in ROA measuring banks profitability.

Joshua et al. (2020), in their research on credit Risk Management and Financial Performance of Selected Banks in the Ghana Stock Exchange, found that an increase in credit risk management increases financial performance. In this research, the independent variables are non-performing loans, loan loss provision, capital adequacy, and bank size as control variables. The dependent variable is the financial performance of commercial banks. Based on the test conducted on the data collected and the analyses of the results, this study found a significant relationship between the credit risk management variables (NPL, CAR and SIZE) and the profitability of listed banks in Ghana.

Ephias Munangi et al. (2020) examined the impact of credit risk on the financial performance of 18 South African banks for the period 2008 to 2018. The results of the study documented that credit risk was negatively related to financial performance. The findings imply that banks should observe prudent and stringent credit policies at a micro-level to limit the incidence of non-performing loans. The dependent variable in this study is Return on Equity (ROE), Return on Assets (ROA). The independent variable involves Non-Performing Loans Ratio (NPLR) and NPLs to total equity (NPLE). The control variable is size, growth, leverage and also capital adequacy ratio (CAR). At a macro-level, regulators must enhance supervision to ensure that banks

manage their credit risk according to the regulations, thereby minimising the risk of bank failure.

Other than that, Taofeek Sola Afolabi et al. (2020) examined the effect of credit risk on the financial performance of microfinance banks in Nigeria. The research recommended that microfinance banks develop credit policies to enhance proper monitoring of their loan portfolios to reduce defaults. The independent variable in this study is a non-performing loan (NPL), loss-loss provision (LLP), total loan advance rates (TLA) empirical. Hence, the returns on assets (ROA) in the dependent variable in this study. Meanwhile, the result from the panel model has revealed that non-performing loans inversely and significantly affect the financial performance of MFBs in Nigeria. This implies that a high volume of non-performing loans among the banks reduces average returns on assets and thus lowers profitability.

The previous studies also have revealed various variables used to represent the institution's credit risk management. Compared to the previous research, this research uses four ratios that indicate banks credit risk management. The four ratios are selected based on their reliability with the earlier analyses, its definition, and data availability. The four variables are (i) Net Charge-Offs/Total Loans, (ii) Loan Loss Reserve/Non-Performing Loans, (iii) Non-Performing Loan/Total Loans, (iv) Loan Loss Provision/Total Loan. These four variables are used mainly by Taofeek Sola Afolabi et al. (2020). Other than these four variables, two additional variables used as the control variable. These additional variables are (i) banks size represented by bank total size and (ii) market volatility represented by CBOE.

Previous research also has mixed results on the relationship of the variables with the performance of the banks. The results are summarised in Table 2.3 below.

**Table 2.3:** Previous Research on the Relationship of the Variables with the Performance of the Banks

No	Variable	Significant Impact	Insignificant Impact
1.	Stock Price	Y.S. Oroud, M.Islam(2017),	W.I Mundia (2016)
2.	Net Charge-Offs/Total Loans	Negative impact (Taofeek Sola Afolabi et al. 2020)	
3.	Loan Loss Reserve/Non-Performing Loans	Negative impact (Alta'ani et al., 2020; Ephias Munangi et al., 2020; Alta'ani & Dali, 2020)	Negative impact (Taofeek Sola Afolabi et al. 2020)
4..	Non-Performing Loan/Total Loans	Positive impact (Zou and Li, 2014; Taofeek Sola Afolabi et al. 2020)	Positive impact (Lalon (2020)
		Negative impact (Akomeah & Frimpong, 2020)	
5.	Loan Loss Provision/Total Loan.		Negative impact (Lalon, 2020; Taofeek Sola Afolabi et al. 2020; Akomeah & Frimpong, 2020)
6.	Total Asset (Represents bank's size)	Positive impact (Akomeah & Frimpong, 2020; Alta'ani & Dali, 2020; Kamani, 2019)	Positive impact (Ephias Munangi et al., 2020)
7.	CBOE index (Represents market volatility)	Positive impact (Białkowski, Dang & Wei, 2021; Gustafsson, 2018; Karakurt, 2018)	Positive impact (Osterrieder, Vetter & Röschli, 2019)

The first ratio is the net charge off ratio, and this ratio defined the impairment amount of debt owed to the banks that are unlikely to be recovered. By referring to the study conducted by Gunn, C., Johri, A., & Letendre, M. A. (2020), the authors uncovered that the US banks countercyclically vary the ratio of charge-offs to defaulted loans (COD). The variance of this ratio is roughly 15 times larger than that of GDP. Canonical financial accelerator models cannot explain this variance. Since the banks primarily make loans with borrowed funds, regulations require them to set aside funds for expected loan losses and charge off the value of lost funds due to defaults. In

addition, the default rates tend to increase during recessions and fall during booms. Not surprisingly, charge-offs also appear to be positively correlated with defaults and negatively correlated with GDP. The regulators expect banks to set aside resources called loan-loss provisions when making loans. As loan losses are realised, the bank takes charge-offs, equalling the value of loans removed from banks books. These are then deducted from the provisions that had been made for loan losses. These losses stem from at least two sources. First, the value of the repossessed collateral and any seized returns may not cover the principal and interest due to the bank. Second, there may be costs related to the default (and associated bankruptcy proceedings), which need to be accounted for.

The second ratio is the loan loss reserve ratio. Loan loss reserve defines as the reduced loan amount when some portion of the loan is not repaid; actually, this is recorded as an expense. The give impact on the profitability ratio is negative when it increases, then decrease the profitability ratios, and when it decreases, then the profitability ratios increase. Loan Loss Reserve (LLR) also relates between loan loss reserves on the total assets side to the entire loan. Indirectly, LLR reserves for any predicted losses from loans. The lower this ratio suggests that the loan portfolio's quality is very high and the less problematic the loans and vice versa (Al-rdaydeh et al., 2017). This ratio can be calculated as loan loss reserve and total loans (Al-Rdaydeh et al., 2017; Abdel Megeid, 2017).

Alta'ani & Dali (2020) aims to examine the relationship between credit risk management indicators and the financial performance of listed banks in Jordan and compare the efficiency of credit risk management between Islamic and conventional banks. The researchers found loan loss reserve ratio has a negative and significant relationship with Tobin's Q.

The third ratio is regarding the non-performing loan (NPL). The International Monetary Fund (IMF) defines a non-performing loan as any loan in which interest and principal payments are more than 90 days overdue; or more than 90 days' worth of interest has been refinanced, capitalised, or delayed by agreement; or payments are less than 90 days overdue but are no longer anticipated (International Monetary Fund, 2019). Again, a non-performing loan is one in which the maturity date has passed, but at least part of the loan. The specific definition is dependent upon the loan's particular terms.

The huge bad debts recorded by most Ghanaian banks in 2009 and early parts of 2010 have affected the performance of the financial intermediaries. Non-performing loans are used to measure the positive and fitness of a bank's credit risk management. Non-performing loans have a fundamental effect on how banks set rates, and the problem has been that those who pay their loans have to pay for those who do not. Healthy and sustainable profitability is essential in maintaining the stability of the banking system. Even if solvency is high, poor profitability weakens the capacity of a bank to absorb adverse shocks, which will eventually affect solvency, hence the urgent need to reduce credit risk and its associated phenomenon of non-performing loans (Akomeah & Frimpong, 2020).

The fourth ratio is Loan Loss Provision (LLP), which is a non-cash expense for banks to account for future loan defaults. Banks operate on the assumption that a certain percentage of loans will be defaulted or become slow paying. As a result, banks enter a percentage as an expense when calculating their pre-tax incomes. This guarantees banks solvency and capitalisation if the default occurs. The loan loss provision allocated each year increases with the riskiness of the loans a given bank makes. A bank making a small number of risky loans will have a low loan loss provision compared to a bank taking higher risks. Loan loss provision of the banks is of paramount importance in affecting its profitability. Well-managed banks are perceived to have lower loan loss provision, and such an advantage translates into higher profitability (Comptroller's handbook). Credit risk management in the banking industry follows risk identification, assessment and measurement, monitoring and control. It involves identifying potential risk factors, estimating their consequences and impact, monitoring activities exposed to the identified risk factors, and implementing control measures to prevent or reduce the undesirable effects. This process applies within the policies, strategies and operational framework of the bank. An effective system that ensures repayment of loans by borrowers is critical in dealing with asymmetric information problems and reducing the level of loan losses, thus the long-term success of any banking organisation (Basel Committee, 1999).

In their study, Islam, F. T. (2018) attempts to evaluate LLP's impacts on profitability for NPLs. It may help to take the LLP and NPLs to the optimum level of business success, and in many cases, borrowers become the default, and the total

amount of the loan cannot be recovered. In order to manage and safeguard the banking business from the NPLs, different credit policies are used. One of those is to increase the loan loss provisions (LLPs). It is used as a cushion to adapt to the expected loss resulting from the missed payment of an instalment on a bank's loan portfolio. It is interchangeably known as providing bad debts. The study found that the high percentage of NPLs causes high LLPs, which can reduce profitability.

The fifth and sixth ratios are the control variable ratios. Control variables influence estimates of relationships between focal independent and dependent variables. The first control variable is total assets that represent the firm's size. The control variable for the firm size is crucial as it defines the scope of the log of total assets. The scope has a positive relationship with the profitability ratio; when size increases, profitability also increases and vice versa. In this study, Kamani, E. F. (2019) analyses how the effects of non-traditional banking activities on banks exposures to systemic risk differ according to bank size. The study finds that non-traditional banking activities only increase small banks exposure to systemic risk since the bank trading activities only increase small banks exposure to systemic risk.

Meanwhile, the commissions and fees activities only increase large banks exposure to systemic risk. This study is significant because diversification and bank size were at the core of the 2007/2008 crisis. This variable also has been used by previous researchers, as mentioned in Table 2.3 above.

Alta'ani and Dali (2020) examined the relationship between credit risk management indicators and the financial performance of listed banks in Jordan. They compared the efficiency of credit risk management between Islamic and conventional banks. They found that bank size has positive and significant impacts on the financial performance of banks measured by Tobin Q (Tobin, J, 1969). Other than that, the CBOE index is also a control variable used to examine the factors affecting the relationship between market volatility and economic policy uncertainty in the United States and the United Kingdom. Analysis shows that low-quality political signals, higher opinion divergence among investors, and exceptional equity market performance consistently weaken the positive relationship between implied market volatility and policy uncertainty. A few previous papers have used this ratio as the control variable, as listed in Table 2.3 above.

In this study, Gustafsson (2018) explains the CBOE index introduced in 1993. The Chicago Board Options Exchange (CBOE) introduced the Market Volatility Index (VIX), which has become a popular way of estimating future volatility. The VIX is intended to provide investors with a snapshot of the S&P 500 index option (SPX) over the next 30 days (Implied Volatility). Thus, VIX is used as a proxy for near-term market uncertainty, which investors consider when determining trading strategies for current market environments. Osterrieder, Vetter, & Röschli (2019) found that unnecessary approximations were made, which leads to the fact that the truth is underestimated. In addition, they investigated the impact of cutting the tails after two consecutive zero bids and found out that this measure also underestimates the VIX. The study also advises CBOE to revise the theoretical formula to obtain a more accurate representation of market volatility. Potential manipulators also have a more accessible play based on the weight of the strikes.

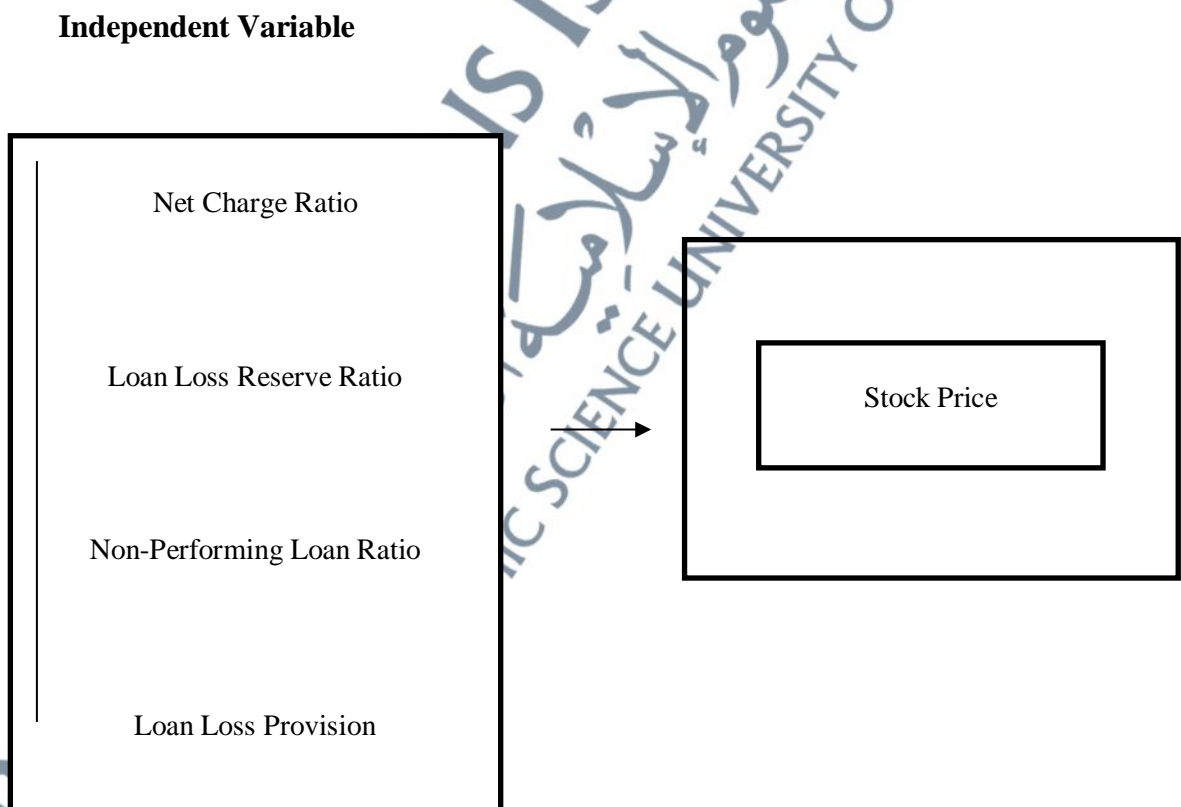
Karakurt (2018), in his study, aimed to understand all aspects of VIX and other volatility indexes. In light of this information and methods, design and construct a volatility index for the Turkish BIST 30 index. According to recent studies, there is no volatility index designed for Turkish equity indexes. The Vix and other used volatility indexes will significantly impact Turkey's economy in the future. Following these developments, the Turkish market needs to have a volatility index that can be used to benchmark the equity markets status.

## **2.4 Research Framework**

Figure 2.4 below is the conceptual framework of this research that presented the flow of the study. Firstly, to answer objective 1, the study uses five variables to represent dependent and independent variables. The dependent variable is the stock price, while the independent variables are Net Charge Off Ratio, Loan Loss Reserve Ratio, Non-Performing Loan Ratio, Loan Loss Provision. The dependent variable denotes the stock price performance of the banks, and the independent variables signify the banks' credit risk management. In addition, this study also uses two control variables to capture the variability of banks' stock performance and size. The quarterly data of the Commercial Banks listed in the Malaysian Stock Exchange. The first objective is

represented by Model 1 of the study, which verifies each variable's effect on credit risk management practice on the banks' stock performance.

The second objective of this study is to find the effect of individual credit risk management variables on stock price performance. The analysis is represented by Model 2, 3, 4 and 5 of the study. The individual model of the variables will further signify the significance of each banks' credit risk management variable to give impact to the banks' stock performance. A thorough analysis of the effects of each variable of credit risk management practice is important to determine the variable that may influence the banks' stock price performance.



**Figure 2.4:** Conceptual Framework