CREDIT RISK MANAGEMENT AND ITS EFFECT ON FINANCIAL PERFORMANCE BETWEEN CONVENTIONAL AND ISLAMIC BANKS IN MALAYSIA

Chong Chai Hung and Sharifah Sabrina Syed Ali*
Faculty of Economics and Business, Universiti Malaysia Sarawak,
94300 Kota Samarahan, Sarawak, Malaysia.
*Corresponding E-mail: sassabrina@unimas.my

ABSTRACT

Banks are essential to a nation's economic development. In order to guarantee banks can remain in the financial sector, risks must effectively be managed in this sector. The main goal of this research is to gaze into the link between credit risk management (CRM) and the financial performance (FP) of conventional and Islamic banks in Malaysia. The sample collected for this empirical study covered twelve years of data from 2011 until 2022. The sample for this study is consist of 15 conventional and 15 Islamic banks in Malaysia. Regression analyses are used to determine the impact of CRM and its components namely non-performing loans ratio (NPLR), capital adequacy ratio (CAR), and loan-to-deposit ratio (LDR) on the banks' performance which is measured by return on assets (ROA) and return on equity (ROE). The results revealed that NPLR and CAR in conventional banks had a significant negative relationship with the profitability in terms of ROA. However, only CAR had a significant relationship with Islamic banks' performance. Furthermore, the findings showed a significant negative association between CAR and LDR on conventional banks' profitability as measured by ROE. Whereas NPLR and CAR significantly negative associated with Islamic banks' ROE. This study could provide empirical evidence for bank manager and regulators in Malaysia to help them better understand the risks of banks so that they can formulate better policies to promote prudent management and decision-making.
Keywords: Credit Risk Management, Bank Performance, Non-Performing Loans Ratio, Capital Adequacy Ratio, and Loan-to-Deposit ratio

INTRODUCTION

Credit risk management is a crucial aspect of banking and financial institutions, influencing their ability to manage potential losses arising from borrower defaults. It has a direct effect on financial performance, and its impact is particularly significant when comparing conventional banks and Islamic banks.

Commercial banks are financial institutions that play an essential role in the economic growth, development, and stability of every country (al Zaidanin & al Zaidanin, 2021). It acts as financial intermediaries by receiving customers' deposits and granting various loans to borrowers. In addition to the profits generated through investments, a bank's profitability comes from the loans it lends to its clients and the interest income earned from the loans (Muhamad Yusuf et al., 2021). However, if the borrower is unable to repay the loan partially or completely will become a bad debt, and therefore, the bank may be exposed to the credit risk brought by the borrower. This will result in the bank suffering losses in terms of funds and interest charged by the borrower (Chan et al., 2018).

In Malaysia, there are two different categories of banks, which are conventional banks and Islamic banks. This sector is supervised and regulated through the Bank Negara Malaysia (BNM). The

lending strategy used by conventional banks is interest-based lending, where the bank charges interest on the loan balance. On the other hand, Islamic banks rely on profit-and-loss-sharing, where the borrower and the bank share the risk and profit of the investment (Hidayat et al., 2021). Islamic banks handle credit risk in a manner that is very similar to that of conventional banks. To manage credit risk, they all use a variety of instruments and methods, including credit analysis, credit rating, loan documentation, security or collateral, and risk monitoring (Aldoseri & Abdulaziz, 2021). Islamic banks may also use other Shariah-compliant tools such as Mudarabah (partnership) and Musharakah (joint venture) (Gholami et al., 2021). The key difference between the two banking models is the approach to risk-sharing. Islamic banks are expected to have a more balanced approach to risk, as their financing is based on asset-backed transactions, where both the lender and the borrower share in the risks and rewards (Hasan, 2008). Conversely, conventional banks may not be as concerned with the underlying assets of their loans and may engage in speculative lending practices, which could lead to higher credit risk (Siddiqi, 2008). Banks that manage credit risk effectively are better positioned to protect their profitability, liquidity, and overall financial performance (Ariff & Can, 2008)

Credit risk management is a process that aims to identify, assess, and mitigate the potential risks arising from the credit extended to borrowers. Banks typically use various tools such as credit scoring, credit derivatives, and collateral to manage credit risk (Saunders & Allen, 2010). According to Basel II and Basel III guidelines, financial institutions are expected to maintain capital adequacy ratios and implement risk mitigation strategies to reduce potential credit losses (Basel Committee on Banking Supervision, 2004). The significant credit losses incurred by financial institutions because of excessive risk exposure were a substantial cause of the global financial crisis in 1997 and 2007. The recent COVID-19 pandemic also significantly affected overall economic trends, including the banking industry (Lew & Lau, 2022). Credit risk is more prominent among other categories of risk, especially in the aftermath of the economic crisis because it is the risk resulting from the borrowers' failure to pay the whole or portion of the principal amount offered by banks. According to Ofori-Abebrese et al. (2016), risk management is a continual process directly dependent on the internal and external environments of the bank. Therefore, effective and efficient credit risk management is a critical component in guaranteeing the sustainable development of financial institutions. It is the strategy of reducing losses by being aware of the bank's loan loss reserves and capital sufficiency at any specific period. Good credit risk management can prevent banks from suffering unexpected losses and financial difficulties (Uda et al., 2018). If banks fail to properly evaluate or manage credit risk, it can lead to banks insolvency.

A study done by Aldoseri (2021) examined the CRM and FP of four conventional and four Islamic banks in Saudi Arabia from 2009 to 2018. The finding implied that total loans to total assets (TLTS) and loan provision to non-performing loans (LP/NPL) of Islamic bank and conventional banks have a significant positive impact on ROE. Besides, there is no significant difference between the two types of banks in terms of LP/NPL, NPLR and Loan Provisions to Total Loans (LP/TL). In addition, Nasib and Faleel (2021) studied 10 commercial banks and 10 Islamic banks in Global Cash Control System (GCCs) from 2007 to 2013. The results showed NPLR ratio has an insignificant negative relationship with ROA and ROE in Islamic banks. However, Equity to Total Assets (EQTA) has a statistically significant and positive relationship with ROA and ROE. In conventional banks, NPLR has a significant negative and positive correlation with ROA and ROE, respectively. Furthermore, ROA and ROE have a significant negative relationship with EQTA. Moreover, Siddique et al. (2022) investigated the effect of CRM and bank-specific characteristics on FP among 19 commercial banks in South Asia from 2009 to 2018. The findings demonstrated NPLR and cost-effectiveness ratio (CER) are negatively and significantly related to banks' ROA and ROE. On the other hand, the lending rate and CAR are significantly and positively related to the FP of banks. Despite a growing body of literature on credit risk

management in conventional and Islamic banks, there is a lack of in-depth studies that compare the financial performance of these two types of banks in Malaysia. Furthermore, while most studies focus on individual banks, there is a need for more cross-sectional analyses to understand the broader implications of credit risk management on the financial system as a whole.

In the context of Malaysia, credit risk management plays a vital role in the financial stability and profitability of banks. However, while both conventional and Islamic banks in Malaysia are subject to similar regulatory frameworks set by Bank Negara Malaysia, their approaches to credit risk management differ due to the inherent distinctions in their operational models. Conventional banks primarily rely on interest-based financing, while Islamic banks adopt a Shariah-compliant, asset-backed approach to lending.

The effectiveness of credit risk management in these two banking systems and its subsequent impact on financial performance remains underexplored, particularly in the Malaysian context. Previous studies have not provided a comprehensive comparison between conventional and Islamic banks, especially in terms of how their unique credit risk management practices influence their financial outcomes. Given the increasing significance of both banking models in Malaysia's financial sector, understanding these dynamics is crucial for policymakers, regulators, and banking institutions themselves.

The study aims to fill this gap by providing a comparative analysis of the two banking models, evaluating their credit risk management strategies, and determining their effects on financial performance. In sum, the banking sector is an engine of growth and development in Malaysia. Hence, it is crucial to analyze how Malaysian commercial banks' performance is affected by credit risk management (CRM) to avoid bank failures. Therefore, this paper intends to expand the scope of previous studies by further clarifying this relationship and filling the existing gaps in the literature. In this study, we will discuss the extent to which credit risk management affects the FP of banks in Malaysia. The time horizon covered is more recent, specifically from 2011 to 2022. This study contributes to the literature on the effects of risk management on FP by classifying the sample bank institutions into two categories: conventional and Islamic banks.

The main objective of this study is to investigate whether credit risk indicators have an impact towards financial performance of conventional and Islamic banks in Malaysia. The financial performance of banks is measured using ROA and ROE, while the credit risk management is measured using NPLR, CAR, and LDR. By providing more empirical evidence in Malaysia, it is hoped that this study will provide guidance to bank managers, bank regulators, and public. This research may provide empirical support for bank managers to raise their attention to controlling the credit risk that banks confront and the accompanying resource allocation. Furthermore, the bank's regulators could have more evidence to demonstrate the effect of credit risk management and determine whether it is required to revoke current policies and procedures or impose new regulations. They also have enough information to make decisions that have a greater influence on banks' performance such as exploring alternatives, choices, and management techniques to reach their goals and objectives. In addition, its crucial facts and information will help the public such as investors and depositors gain better views on the effectiveness of CRM conducted by the bank. It can thus help them in making wise decisions that satisfy their future returns and avoid losses.

MATERIALS AND METHODS

Theorical Framework

The credit risk theory is the risk that a lender would delay or default on the interest or installment payments that are owing to it or to the borrower. Among this risk, the lender will face financial difficulties after failing to return deposits to their depositors or being unable to fulfill its obligations because of the capital and interest losses (Donnellan & Rutledge, 2016). As a result, lenders manage credit risk by conducting regular credit checks to determine the creditworthiness of the borrowers. In addition, lenders would require appropriate loan insurance such as mortgage insurance and may also require enhanced guarantees for mortgages such as adequate collateral, or third-party guarantees to secure the assets of borrowers. Therefore, the risk tolerance of the borrowers will have a direct impact on the cost of loans, including interest and fees (Dimitrios et al., 2012).

The commercial loans theory is the oldest fundamental principle in banking activities that states banks should only lend commercial papers and self-liquidating short-term loans to their customers. The purpose of this theory is to direct banks and logically impact both their banking lending practices and overall economic activities in general (Hosna & Manzura, 2009). The high reliance on this theoretical principle and its subsequent development serves as an engine and indicates how liquidity affects all economic operations of banks. Thus, some banks whose liquidity is primarily derived from customer deposits consider short-term loans to be most suitable because of the ease of recovery of customer deposits and the short-term nature of time. This suggests that commercial loans theory is flawed and does not benefit banks that maintain healthy reserves. This is because they develop economies by funding medium and long-term loans like real estate and industrial loans, thereby creating an economic development gap for those development sectors that rely on long-term financing (Majani, 2022).

2.2 Impact of Credit Risk Management on Financial Performance

Effective credit risk management leads to improved financial performance for both conventional and Islamic banks. For conventional banks, better risk management practices can reduce non-performing loans (NPLs), thus improving profitability and minimizing losses (Boubakri & Saffar, 2013). In Islamic banks, credit risk management is also critical for maintaining asset quality and profitability, although the tools and strategies employed are different due to the nature of Shariah-compliant financing (Haniffa & Hudaib, 2007).

2.2.1 Measuring Bank Performance

Bank performance can be defined as a reflection of the way in which a bank's resources are used to enable it to achieve its objectives. It is every banking operation's backbone and main goal. Return on assets (ROA) and return on equity (ROE) are the two most common measures used to assess bank performance worldwide. The ROA ratio determines a bank's ability to create net income by evaluating the operational activities that define the assets used to generate profits for the company (Rahayu et al., 2020). This ratio is used by management, investors, and analysts to assess the effectiveness of the bank in converting their own sources into net income. It is often shown as a percentage utilizing the net income and average assets of a company. When a commercial bank's ROA ratio is high, it indicates it is more effective at converting its assets into profits. Meanwhile, ROA is low, demonstrating that the bank is underutilizing its assets (Swandewi & Purnawati, 2021). ROE is used to determine the effectiveness of a bank utilizing various elements of shareholders' equity to generate future profits. It is calculated as a percentage of net income divided by shareholders' equity. A higher ratio of ROE means that the bank is making better use of its equity capital. It is also important for banks that want to stay competitive. However, it may also be a sign of the company has excessive debt and leverage ratio. Higher leveraged

banks may have lower ROE but higher ROA. To be competitive in terms of ROE, most banks have developed a large amount of financial leverage (Al-Eitan & Bani-Khalid, 2019).

Hypothesis Development

Non-Performing Loans Ratio (NPLR) and bank performance

Non-performing loans (NPL) refer to the proportion of uncollectible or problematic loans among all allocated loans depending on credit agreements. Failure to satisfy a credit obligation will result in deferred payment since the debtor is inability to pay back the principal and interest. According to Jolevski (2017), if the borrower is at least 90 days past due a loan is considered non-performing and 180 days for consumer loans. A lower ratio means that the bank has better asset quality and a lower risk of doubtful loans. Therefore, institutions with less credit risk will perform better financially (Isanzu, 2017). High NPL ratios may result from nowadays' highly competitive in global banking sector and overly flexible credit rationing regulations. Banks must concentrate on different aspects of CRM since this is important for the continuous operations and profitability of financial institutions.

From empirical evidence, there are wide variations in how credit risk affects the profitability of the banking industry. The negative correlation between NPLR and bank profitability has been established by several research. According to Ozili and Ndah (2022), the result revealed a detrimental and statistically significant association between the NPLR and the profitability of banks. Moreover, Ebenezer and Wan Omar (2016) also found that NPLR has a significantly negative impact on banking performance (ROA). Besides, using a sample of 22 banks in Ghana (2005–2010), Laryea et al. (2016) documented that CR negatively and significantly affects banks' profitability. This indicates that the high provisioning of the NPLR can reduce the banks' performance. Similarly, the negative affect of CR measured by NPLs ratio on ROA and ROE was supported by Ekinci and Poyraz (2019) on a sample of 26 commercial banks in Turkey (2005 and 2017). The study implied that banks with a high uncovering loan will result in a low financial performance. Also, Kaimu and Muba (2021) revealed that NPLR impacts inversely and significantly on bank performance. Based on the findings above, this research posited the hypothesis that:

H_1: There is a significant negative relationship between non-performing loans ratio (NPLR) and return on assets (ROA) for conventional and Islamic banks in Malaysia.

H_2: There is a significant negative relationship between non-performing loans ratio (NPLR) and return on equity (ROE) for conventional and Islamic banks in Malaysia.

Capital Adequacy Ratio (CAR) and bank performance

The capital adequacy ratio is calculated as a percentage of risk-weighted credit risk and is a metric for a bank's available capital. CAR estimates the health of a bank by assessing the ability of its equity capital to respond to emergency events. It indicates the bank's ability to absorb losses or face financial risks. To prevent commercial banks from taking on excessive debt and going bankrupt, central banks and bank regulators will decide to regulate CAR. A higher CAR means that the bank has a better ability to take on the risk of credit or yield assets. If the CAR is high, banks can finance their operations and contribute significantly to profitability (Anwar & Murwaningsari, 2019). Customers will consider the CAR because it is used to assess the degree of safety and the ability of a bank to return their capital.

Previous research conducted by Elshaday et al. (2018); Serwadda (2018); Paroush and Schreiber (2019) indicated that CAR has a significant positive effect on the profitability of commercial banks.

Ernest and Fredrick (2017) analyzed the impact of CRM on the FP of 6 commercial banks that operate in Ghana and provide evidence that capital adequacy ratio positively influence bank's profitability. The same positive and significant correlation between CAR and bank FP as measured by ROE and ROA was confirmed in Dhaka, which was investigated by Serwadda (2018) for a sample of commercial banks in Dhaka. Siddique et al. (2022) also mentioned that CAR and ROA in Asian commercial banks had a significantly positive association. Because CAR and bank performance are positively correlated, increasing CAR is likely to boost profitability and vice versa. Banks must have sufficient capital to weather unforeseen circumstances and stay solvent. However, few studies support a negative association between bank profitability and CAR. Muriithi et al. (2016) investigated the impact of CRM on FP of the Kenyan commercial banks (2005- 2014). The research discovered that CAR has a significant negative link with the profitability of banks. In Eritrea, Embaye et al. (2017) provided that there is a negative relationship between CAR and FP. Therefore, from these researchers' empirical findings, this study hypothesizes that:

H_3: There is a significant positive relationship between capital adequacy ratio (CAR) and return on assets (ROA) for conventional and Islamic banks in Malaysia.

H_4: There is a significant positive relationship between capital adequacy ratio (CAR) and return on equity (ROE) for conventional and Islamic banks in Malaysia.

Loan to Deposit Ratio (LDR) and bank performance

The amount of LDR is determined by dividing the total loans of bank by its total deposits. It also assesses the ability of banks to use their capital and public funds to lend to their borrowers (Sari & Septiano, 2020). Savings, fixed deposits, and certificates of deposit are included in the public funds. The banks are unlikely to have adequate liquidity to handle any unanticipated financial demand if this LDR were too high. If LDR is too low, it may be a sign that the lending opportunities of banks are fewer or that the risk offered is unwillingness accepted (Hacini et al., 2021). The greater loan amounts portend greater asset values for the bank since the interest on such loans may bring in more income for the institution. LDR often falls between the range of 50% and 75% (Fahruri, 2017).

Different studies have been conducted on the LDR and performance, although the findings vary. A chunk of studies has shown a significant inverse connection between LDR and FP. Sahyouni and Wang (2018) used the banks operating in Brazil, China, India, Russia, South Africa, G7 (excluding the USA) countries (2011–2015) to study the effect LDR to FP. They reported that LDR negatively links to the ROA and ROE. Vellanita et al. (2019) supported that LDR significant negative tie-up with the ROE as bank-channeled credit increases, the profitability of the bank declines. Similar results were found by Abbas et al. (2019) in Asian developed economies context, the LDR negatively impact the FP of commercial banks. The same results of statistical negative connection between LDR and FP was found in MENA, covering the period 2004 to 2015 (Abdelaziz et al., 2020). On the other hand, some other studies pointed out that there is a positive association between LDR and FP. Paroush and Schreiber (2019) mentioned that CAR and ROA are positively related in US banks from 1995 to 2015. In Dhaka, Serwadda (2018) concluded that CAR and LDR are found to positively affect ROE and ROA. These two variables have a positive relationship suggests that banks could sustain withdrawals of deposits and the desire to increase loan demand by lowering cash assets. An increase in this ratio may improve the performance of banks, possibly because banks tend to charge more interest than the interest charges paid to depositors. In this research, it will be assumed that:

H_5: There is a significant negative relationship between loan to deposit ratio (LDR) and return on assets (ROA) for conventional and Islamic banks in Malaysia.

H_6: There is a significant negative relationship between loan to deposit ratio (LDR) and return on equity (ROE) for conventional and Islamic banks in Malaysia.

Sampling Design

In this study, quantitative approach was used to consider the effect of CRM on the FP of conventional and Islamic banks in Malaysia. Secondary data was collected from Orbis database and annual reports of banks which can be found on the official website of banks and the website of Bursa Malaysia. The variables for credit risk management are NPLR, CAR, and LDR. ROA and ROE, which are used to assess the performance of conventional and Islamic banks, are the dependent variables in this study. In order to obtain representative values of the variables, the previous 12-year period from 2011 to 2022 was chosen by using panel data regression analysis. Banks with incomplete or unavailable data during the research period will be excluded. After the filtration process, the final sample of this study consists of top 15 conventional banks and top 15 Islamic banks in Malaysia, which have large firm size. Finally, a total of 300 observations were included in this study. Finally, the multiple regression analysis of the sampling techniques was conducted using E-views 12 software to analyze the relationship between FP and the CRM variables.

Estimation Model

In the study, the estimation model is constructed by measuring the impact of independent variables on the dependent variable. The model is updated to get a better outcome by considering NPLR, CAR, and LDR, as the independent variables which affect the dependent variables, ROA and ROE. As a result, the estimation models will be written in the following:

$$\text{Model 1: } ROA_{it} = \beta_0 + \beta_1 NPLR_{it} + \beta_2 CAR_{it} + \beta_3 LDR_{it} + \varepsilon_{it}$$
$$\text{Model 2: } ROE_{it} = \beta_0 + \beta_1 NPLR_{it} + \beta_2 CAR_{it} + \beta_3 LDR_{it} + \varepsilon_{it}$$

Where:
ROA = Return on Assets
ROE = Return on Equity
β_0, β_1, β_2, β_3= Coefficient of variables
NPRL = Non-performing Loans Ratio
CAR = Capital Adequacy Ratio
LDR = Loan to Deposit Ratio
ε = Estimation error

RESULTS & DISCUSSION

Descriptive Statistics

Table 1. Summary of Descriptive Statistics

Conventional Bank					
Variables	**ROA**	**ROE**	**NPLR**	**CAR**	**LDR**
Mean	1.044804	11.55765	1.942235	18.11547	78.28330
Median	1.060000	11.33000	1.900000	17.55000	79.23000
Maximum	2.110000	24.74000	6.960000	34.07000	96.79000
Minimum	-1.730000	-20.80000	0.000000	12.32000	33.78000
Std. Dev.	0.395085	5.074716	1.196120	3.806734	8.749036
Observations	179	179	179	179	179
Islamic Bank					
Variables	**ROA**	**ROE**	**NPLR**	**CAR**	**LDR**
Mean	0.673146	9.591124	1.989438	17.52096	80.14421
Median	0.745000	9.920000	1.310000	16.31500	80.44000
Maximum	1.490000	24.26000	10.60000	42.20000	175.0600
Minimum	-0.920000	-9.140000	0.220000	11.48000	44.16000
Std. Dev.	0.388295	5.480839	1.855869	4.817790	14.67946
Observations	178	178	178	178	178

Based on the table, the mean value of ROA for conventional and Islamic banks are 1.045 and 0.6731, respectively, with standard deviation of 0.3951 and 0.3883. Although the mean value and standard deviation in ROA of conventional bank is higher than Islamic bank, its minimum value of -1.73 is lower than the minimum value of Islamic bank at -0.92. Meanwhile, the highest ROA values of conventional bank and Islamic bank are 2.11 and 1.49, respectively. Regarding the ROE in conventional and Islamic banks has a mean value of 11.5577 and 9.5911, respectively, with a standard deviation of 5.0747 and 5.4808. Similar to ROA, conventional bank has the lowest ROE value of -20.8, which is smaller than Islamic bank -9.14, while maximum value for conventional bank is even higher. The maximum ROE values for conventional bank and Islamic bank are 24.74 and 24.26, respectively.

Moreover, the first independent variable, NPLR has an almost similar mean value in conventional and Islamic banks, at 1.9422 and 1.9894. In contrast, the standard deviation of conventional bank is 1.1961 lower compared to Islamic bank at 1.856. In conventional banks, the minimum value is 0 and maximum value is 6.96, respectively. Meanwhile, the lowest value of NPLR is 0.22 and the highest value is 10.6 in Islamic banks. In comparison to conventional bank, which has a mean value of 18.1154 and a standard deviation of 3.8067, Islamic bank's CAR has a lower mean and higher standard deviation of 17.521 and 4.8178, respectively. Conventional and Islamic banks have the minimum CAR values of 12.32 and 11.48, respectively While conventional and Islamic banks have the maximum CAR rates of 34.07 and 42.2 respectively. Despite having the lowest CAR value, Islamic bank has the highest CAR value. Lastly, the LDR in conventional and Islamic banks has the highest mean of 78.2833 and 80.1442, with standard deviations of 8.749 and 14.679, correspondingly. Among Islamic banks, the lowest LDR value is 44.16, the highest LDR is 175.06. At the same time in conventional banks, the minimum value of LDR is 33.78 and maximum value is 96.79.

Correlation Analysis

Table 2. Correlation Matrix of The Variables In Both Banks

Conventional Bank					
Correlation Probability	**ROA**	**ROE**	**NPLR**	**CAR**	**LDR**
ROA	1 -----				
ROE	0.845407 0.0000*	1 -----			
NPLR	-0.348326 0.0000*	-0.257550 0.0005*	1 -----		
CAR	-0.203846 0.0062*	-0.436583 0.0000*	0.008586 0.9092	1 -----	
LDR	-0.148520 0.0472*	-0.121884 0.1041	-0.069788 0.3533	-0.026075 0.7290	1 -----
Note: * indicate significant at 5% respectively.					
Islamic Bank					
Correlation Probability	**ROA**	**ROE**	**NPLR**	**CAR**	**LDR**
ROA	1 -----				
ROE	0.810518 0.0000*	1 -----			
NPLR	-0.241814 0.0011*	-0.442455 0.0000*	1 -----		
CAR	-0.332651 0.0000*	-0.467258 0.0000*	0.593560 0.0000*	1 -----	
LDR	-0.110261 0.1429	-0.131424 0.0804	-0.047842 0.5260	0.270951 0.0003*	1 -----
Note: * indicate significant at 5% respectively.					

The correlation matrix given in Table 2 indicates that there are several significant connections among the sets of examined variables. The three explanatory variables, NPLR, CAR, LDR are significantly correlated with ROA at 5% significance level in Malaysian conventional bank. The results suggest that ROA and all the independent variables (NPLR, CAR, LDR) have a weak negative correlation (-0.3483, -0.2038, -0.1485). Apart from ROA, ROE is statistically associated with NPLR and CAR at a 5% significance value, while LDR is insignificantly linked with ROE. According to the correlation outcome, ROE is also negatively correlated with three independent variables. The highest value of -0.4366 between ROE and CAR, followed by NPLR (-0.2576) and LDR (-0.1219).

In the context of Islamic banks in Malaysia, the correlation analysis demonstrates that NPLR and CAR are negatively connected with the ROA at a 5% level of significance. Their respective coefficients are -0.2418 and -0.3327. In contrast, with a value of -0.1103, ROA has a relatively insignificant negative connection with LDR. With correlation values of -0.4425 and -0.4673, the NPLR and CAR are both

significantly associated with ROE. The correlation between ROE and LDR was insignificant, with a coefficient of -0.1314.

Panel Data Analysis

Table 3. Redundant Fixed Effects Tests For Two Models In Both Banks

Model	Conventional Bank		Islamic Bank	
	Probability	Decision Making	Probability	Decision Making
1 (ROA)	3.024955 (0.0004)	FEM	5.240417 (0.0000)	FEM
2 (ROE)	2.143721 (0.0121)	FEM	15.682521 (0.0000)	FEM

The Redundant Fixed Effects test was applied to choose a reliable regression between the pooled OLS model and the random effects model or random effect model. The finding in Table 5 indicates that the FEM is superior in this study over the pooled OLS model as both types of hypotheses testing in conventional banks and Islamic banks have lower p-values below significant values at 5%.

Table 4. Breusch-Pagan LM test for two models in both banks

Model	Conventional Bank		Islamic Bank	
	Probability	Decision Making	Probability	Decision Making
1 (ROA)	26.02253 (0.0000)	REM	48.10014 (0.0000)	REM
2 (ROE)	61.27791 (0.0000)	REM	239.6621 (0.0000)	REM

The Breusch-Pagan LM test assesses whether the ordinary least squares model or random effects model is more suitable in this study. Table 6 shows the probability of model 1 (measured by ROA) and model 2 (measured by ROE) in conventional banks are 0.000. Both the p-values are lower than the significant value of 0.05, implying that the REM is more appropriate than the OLS model in the conventional banks. Meanwhile, both models of Islamic banks reveal the same probability results as conventional banks at 0.0000. This indicates that the REM is more appropriate compared to the pooled OLS model.

Table 5. Hausman Tests For Two Models In Both Banks

Model	Conventional Bank		Islamic Bank	
	Probability	Decision Making	Probability	Decision Making
1 (ROA)	5.16 (0.1605)	REM	3.911063 (0.2712)	REM
2 (ROE)	0.507304 (0.9173)	REM	2.369659 (0.4993)	REM

Besides, the Hausman Test is conducted to determine whether the FEM or REM is appropriate for this study. As shown by Table 5, both models' probability in conventional banks is greater than 0.05,

meaning that there are statistically insignificant at the 5% significance level. This implies that the null hypothesis will not be rejected in both models, with REM outperforming FEM. Meanwhile, in Islamic banks, the probability of Models 1 and 2 are also more than 0.05 with values of 0.2712 and 0.4993, suggesting that these two models will be suitable for use with REM in this study. As a result, the results show that all the models are preferable while employing REM for further regression analysis in this study.

Diagnostic Test

Table 6. Normality Test In Both Banks' Model

	Statistic	**Probability**	**Skewness**	**Kurtosis**
Conventional Bank				
Standardized Residual of ROA	3562.175	0.0000	-2.7057	24.1737
Standardized Residual of ROE	2859.734	0.0000	-2.4549	21.9558
Islamic Bank				
Standardized Residual of ROA	150.3922	0.0000	-1.302	6.6733
Standardized Residual of ROE	11.90849	0.0026	-0.1377	4.2368

The significant results of the Normality test for ROA and ROE in Malaysian conventional and Islamic banks indicated that the residual is not normally distributed. All of the models show a p-value lower than the significant level of 0.05 at 0.00. However, because of the large sample size in this study (N=180) for both banks, the violation of the normality assumption is not significant in this study. Therefore, the sample size of 180 observations used in this study is considered large and thus lead to insignificance in this diagnostic test.

Table 7. VIF Values of Independent Variables In Both Banks

Variables	**Conventional Bank**	**Islamic Bank**
NPLR	1.00	1.79
CAR	1.00	1.66
LDR	1.01	1.16
Mean VIF	**1.00**	**1.54**

In order to check the problem of multicollinearity amongst independent variables, Variable Inflation Factors (VIF) will be calculated to measure the degree to which the estimated regression coefficient is inflated. According to Table 7, the average VIF in conventional banks is 1. While the mean value in Islamic banks is 1.54, which is significantly higher than conventional banks. All the VIF values of independent variables in both banks are relatively lower and around 1, there is no evidence of multicollinearity problem.

Table 8. Heteroscedasticity Tests For Two Models In Both Banks

Model	FEM/ REM used	Chi-Sq. Statistic	Probability	Conclusion
Conventional Bank				
1 (ROA)	REM	0.178576	0.9108	Heteroscedasticity does not exist
2 (ROE)	REM	0.552200	0.6473	Heteroscedasticity does not exist
Islamic Bank				
1 (ROA)	REM	5.092206	0.0021	Heteroscedasticity exists
2 (ROE)	REM	2.400412	0.0695	Heteroscedasticity does not exist

The Breusch-Pagan Lagrange Multiplier Test was used to determine whether this study had a heteroskedasticity problem. Based on the test findings, the null hypothesis of homoscedasticity is not rejected in conventional banks. This is because all models in Malaysian conventional banks have the probability (0.9108 and 0.6473) higher than significant level of 5%, indicating that the models do not have heteroscedasticity problem. While the Malaysian Islamic banks for model 1 (ROA) reject the null hypothesis and model 2 (ROE) did not reject the null hypothesis. This indicates that model 1 has heteroscedasticity problems and model 2 does not have heteroscedasticity problems. To deal with the heteroscedasticity problem, this study used robust standard errors for Islamic banks' model 1, which will be analyzed and presented in the next subtopic.

Table 9. Autocorrelation Tests For Two Models In Both Banks

Model	Conventional Bank		Islamic Bank	
	Probability	Conclusion	Probability	Conclusion
1 (ROA)	21.03036 (0.0000)	Serial Correlation	12.27851 (0.0000)	Serial Correlation
2 (ROE)	22.82666 (0.0000)	Serial Correlation	51.71120 (0.0000)	Serial Correlation

Table 9 summarizes the output of autocorrelation tests for two models in conventional and Islamic banks operating in Malaysia using Serial Correlation LM Test. According to the findings, all the models which are Model 1 and 2, have probabilities 0.000 less than 0.05 significant level. This means that the null hypothesis was not rejected, and serial correlation problem is occurring in these models. This study conducted robust standard errors for all these models to deal with the autocorrelation problem, which will be analyzed and presented in the next subtopic.

Panel Regression Model

Regression Model 1

Table 10. Regression analysis model 1 in conventional bank

Regression analysis Model 1 in Conventional Bank: Random Effect Model				
Variable	**Coefficient**	**Robust Std. Err.**	**t-Statistic**	**Prob.**
NPLR	-0.108423	0.033584	-4.161744	0.0061*
CAR	-0.018528	0.004529	-2.394505	0.0011*
LDR	-0.005929	0.004420	-1.703418	0.2012
C	2.056911	0.403313	7.007900	0.0002
R-squared			0.146622	
Probability (F-statistic)			10.02248 (0.0000)	
*Denotes 5% significant level				

$$\mathrm{ROA_{it}} = 2.0569 - 0.1084\ \mathrm{NPLR_{it}} - 0.0185\ \mathrm{CAR_{it}} - 0.0059\mathrm{LDR_{it}} + \varepsilon_{it}$$

As can be seen from the above table, NPLR and CAR show a statistically significant and negative relationship with ROA of commercial banks. These two variables are significant at 0.05 level with the p-values of 0.0061 and 0.0011 respectively. LDR is found to be insignificant and inversely related to the ROA of banks. The coefficient of NPLR is observed at -0.1084, with a significant probability below 5% level. When NPLR increased by 1%, the ROA of the sampled conventional banks decreased by 0.0061%, while otherwise remaining unchanged. Chan et al. (2018) and Zaharum et al. (2022) also found similar results supporting that NPLR of banks listed in Bursa Malaysia significantly negatively impact on the performance of banks measured by ROA. According to the study by al Zaidanin and al Zaidanin (2021) also proposed that the variable of NPLR has a significant negative impact on commercial banks' profitability in the United Arab Emirates. As indicated by the studies mentioned earlier, higher NPLR reduces bank's ROA because bank did not undertake its own credit analysis and scoring properly before granting loans to the customer. Thus, the results prove that hypothesis statement H_1 is accepted, where the reduction in NPLR brings an improvement in bank performance.

According to the empirical result, a negative coefficient of CAR is at 0.0185, indicating that a 1% increase in CAR is significantly associated with a 0.0185% drop in ROA**.** Based on previous studies, these results support the research conducted by Embaye et al. (2017), Ozili and Ndah (2022), and Majani (2022), who stated a statistically significant and inverse relationship between CAR and ROA. The negative significant value between CAR and bank performance suggests that banks with a low CAR tend to benefit from the credit risk taken. However, a high bank's CAR indicates it is more likely to be exposed to credit risk. Hence, hypothesis statement H_3 is not accepted because there is a significant negative relationship between CAR and ROA.

Besides, the empirical findings of H_5 show that there is a negative and no significant relationship between LDR and ROA. The coefficient of LDR is -0.0059, which implies that a 1% increase in LDR is correlated with a 0.0059% decrease in bank performance. The results of this study are in line with previous studies by Chong et al., (2019) in ASEAN, Hunjra et al. (2022) in South Asia, and Lew and Lau (2022) in Malaysia that LDR does not significantly impact on return on assets. An increase in LDR may reduce the financial performance of banks because the LDR is the ability of banks to provide loans to their customers**.** Credit risk can be expressed as the probability of default on the total amount of loans

lent to borrowers, but this credit risk measured by LDR indicates that banks in Malaysia tend to create efficiency with the average loan amount because it is associated with higher risk. Therefore, this finding does not support hypothesis statement H_5 because there is no significant inverse relationship between variables.

Table 11. Regression Analysis Model 1 In Islamic Bank

Regression analysis Model 1 in Islamic Bank: Random Effect Model				
Variable	**Coefficient**	**Robust Std. Err.**	**t-Statistic**	**Prob.**
NPLR	-0.018264	0.013226	-1.380927	0.1889
CAR	-0.010879	0.003763	-2.891101	0.0118*
LDR	-0.001815	0.001192	-1.522668	0.1501
C	1.042189	0.166915	6.243849	0.0000
R-squared			0.038663	
Probability (F-statistic)			2.332624 (0.0758)	
*Denotes 5% significant level				

$$\mathrm{ROA_{it}} = 1.042 - 0.0183\ \mathrm{NPLR_{it}} - 0.0109\ \mathrm{CAR_{it}} - 0.0018\ \mathrm{LDR_{it}} + \varepsilon_{it}$$

The results reveal that NPLR is not related to the bank performance of Malaysian Islamic banks in terms of ROA. This finding contradicts most of the previous studies, but it is corroborated by Getahun et al. (2015) in Ethiopia, Islam and Nishiyama (2016) in South Asia, and Harb et al. (2021) in MENA region, who concluded that there is no link between NPLR and ROA. The similar finding also discovered by Nasib and Faleel (2021), NPLR had insignificant and negative relationship with the ROA in the Islamic banks in the GCCs. This means that the ability of Islamic banks in Malaysia to generate profits from their assets is not affected by the higher percentage of non-performing loans in the banks. This empirical result does not support H_1, and hence the hypothesis statement is not accepted.

Moreover, the CAR is inversely associated to the financial success of Islamic banks as evaluated by ROA. The probability is significant at 5% level of significance. The findings are consistent with studies done by Chong et al. (2019) in Malaysian domestic and foreign Islamic banks, Pervez and Bansal (2019) in India banks, and Hersugondo et al. (2021) in Indonesian banks, who pointed out that there is a significant negative correlation between CAR and bank performance that has been observed earlier. The capital ratio is an indicator that measures insolvency risk. This relationship on the ROA of Islamic bank implies that maintaining a high capital buffer may reduce the profitability of banks in the long run. As a result, the hypothesis H_3 is not accepted because the outcomes in for Islamic banking in Malaysia are found to be significant negative.

According to the findings, there is no significant negative impact of LDR on the performance of banks assessed by ROA. This result is inconsistent with the previous hypothesis H_5 that LDR has a negative significant effect on the ROA of Islamic banks in Malaysia. Thus, the H_5 is not supported. This conclusion is backed up by prior research by Saeed (2015) and Onsongo et al. (2020), who also found that LDR had a considerable impact on bank ROA in Malaysia and in Kenya respectively. This implies that the higher the LDR, the lower the performance of banks in terms of ROA. The plausible reason for the negative relationship between LDR and ROA is that banks' performance declines due to the inability to hold highly liquid assets. Meanwhile, the plausible reason for the insignificant relationship between LDR and ROA is that the increase in bank liabilities and liquidity gap reduces bank performance.

Regression Model 2

Table 12. Regression analysis model 2 in conventional bank

Regression analysis Model 2 in Conventional Bank: Random Effect Model				
Variable	**Coefficient**	**Robust Std. Err.**	**t-Statistic**	**Prob.**
NPLR	-1.053369	0.543109	-3.267688	0.0729
CAR	-0.599755	0.119873	-6.247361	0.0002*
LDR	-0.096831	0.042186	-2.245562	0.0377*
C	32.05256	5.187210	8.769811	0.0000
R-squared			0.275398	
Probability (F-statistic)			22.17064 (0.0000)	
*Denotes 5% significant level				

$$\mathrm{ROE_{it}} = 32.05256 - 1.0534\ \mathrm{NPLR_{it}} - 0.5998\ \mathrm{CAR_{it}} - 0.0968\ \mathrm{LDR_{it}} + \varepsilon_{it}$$

Based on the above table, it shows that non-significant but negative association between NPLR with the ROE in Malaysia. The negative coefficient of NPLR is -1.0534, revealing that 1% increase in NPLR is associated with a 1.0534% decrease in ROE. According to Saleh and Abu Afifa (2020) investigated the Jordanian commercial banks after the financial crisis (2010– 2018) indicated that NPLR did not have any significant impact on ROE. Hidayat et al. (2021) also found that NPLR has no effect on the ROE in 34 conventional banks operating in the Gulf Cooperation Council (GCC) region. It indicates that the ratio of NPL cannot explain the ROE of conventional institutions. The results of this study contradict the studies of Siddique et al. (2021) that discovered a significant negative relationship between NPLR and ROE of commercial banks in South Asia. The reason for the negative effect can be attributed to the high-interest rates set by banks on loans disbursed. As a result, customers are likely not to reimburse loans, and this causes banks to make higher provisions for bad loans which tend to affect their profit and financial performance negatively. The result in this study does not accept the hypothesis statement H_2.

Furthermore, the coefficient of CAR is -0.5998, which has a significant p-value at the 5% level. Other things being equal, the ROE of these commercial banks will decrease by 0.5998% when CAR increases by 1%. This finding is supported by the results of the previous study described earlier. Inegbedion et al. (2020) noted that there is a significant inverse relationship between ROE in the Nigeria context. Furthermore, the study of Rwayitare et al. (2016) revealed that CAR has a significant negative effect on ROE in Rwanda banking sector. The use of lower CAR may improve shareholders' profitability at the cost of higher risk. This could also explain the risk-taking behavior of banks. Thus, H_4 is not accepted but the CAR is still negatively correlated with ROE instead of positive correlated.

The LDR has a significant impact on the performance of conventional banks. LDR is negatively related to ROE with a significant level p-value of 0.0377. Since the significance level is below 5%, this result indicates the acceptance of H_6. For 1% increase in LDR, the profitability of ROE will decrease by 0.0968%. The empirical findings supported by Iskandar et al. (2019), who analyzed the determinants of commercial banks' profitability in Malaysia. The authors concluded that LDR has an inversely significant association with bank profitability as measured by ROE. Sahyouni and Wang (2018) also found that LDR has a negative impact on bank ROE in Brazil, China, India, Russia, South Africa, and G7 nations. Hacini et al (2021) investigated the influence of risk management on the ROE of banks in Saudi Arabia and concluded that LDR significantly negative affect FP. This suggests that banks have

higher profitability when the LTD ratio is low, and they can meet any unforeseen funding requirements. As a result, banks withhold part of their deposits to avoid credit risk and to have better financial performance.

Table 13. Regression analysis model 2 in Islamic bank

Regression analysis Model 2 in Islamic: Random Effect Model				
Variable	**Coefficient**	**Robust Std. Error**	**t-Statistic**	**Prob.**
NPLR	-0.590975	0.159893	-3.696070	0.0024*
CAR	-0.157638	0.058900	-2.676383	0.0181*
LDR	-0.041920	0.023962	-1.749443	0.1021
C	16.83080	2.678654	6.283305	0.0000
R-squared			0.123609	
Probability (F-statistic)			8.180544 (0.0000)	
*Denotes 5% significant level				

$$\mathrm{ROE_{it}} = 16.8308 - 0.5910\ \mathrm{NPLR_{it}} - 0.1576\ \mathrm{CAR_{it}} - 0.0419\ \mathrm{LDR_{it}} + \varepsilon_{it}$$

The coefficient of NPL is -0.5910 and significant at the level of 5 %. The results reveal that a 1% increase in NPL is associated with 0.59% decrease in ROA, indicating a significant inverse relationship between NPL and ROA. Such a finding is consistent with some of the past studies, such as Isanzu (2017), Al-Eitan and Bani-Khalid (2019), and Vellanita et al. (2019). The negative values indicate that if the NPLR increases, the return on assets of Islamic banks will decrease. A large or increasing NPL ratio will affect the investment and savings intentions of these investors and customers because they fear experiencing fund losses (Teshome et al., 2018). As a result, increasing NPLR may potentially lead to a lower ROE. Therefore, the hypothesis statement of H_2 is not rejected as the Islamic bank has a significant inverse impact on ROE.

The CAR was discovered to have a significant negative effect on ROE. This means that a one-unit rise in CAR will result in a 0.1576-unit loss in ROE. This is since the probability of 0.018 is statistically significant at the 5% significance level, which rejects hypothesis statement H4. The findings of CAR matched Yahaya et al. (2016) and Vellanita et al. (2019) study and pointed out that CAR and ROE have a statistically significant and negative link. The higher the CAR, the lower the ROE value. If a bank has a high CAR, it means that the bank has a large amount of capital to conduct its operational activities and to be able to take risks in case of bank liquidation.

Lastly, only LDR exhibits a non-significant and negative correlation with ROE in this model. Holding other factors constant, a one unit increase in LDR leads to a decrease in ROA ratio by 0.0419. The result of this study is consistent with Ahmed Mennawi (2020), who examined the relationship between credit risk on Sudanese banking performance. The author suggested that LDR is having insignificant relationship with banks' ROE. Moreover, in the Asian context, Siddique et al. (2021) studied the association between LDR and ROE and found it to be insignificant and negative. This result recommends that if Islamic banks in Malaysia develop more in loan and fund management in a manner that encourages innovation and growth, then ROE will improve. In a nutshell, the hypothesis statement (H6) is rejected, as the LDR is not statistically significant at 0.05 level.

CONCLUSION

The purpose of the study is to investigate the relationship between NPLR, CAR, LDR, and the financial performance of conventional and Islamic banks in Malaysia. This study provides a comprehensive examination of the credit risk management strategies employed by conventional and Islamic banks in Malaysia. By analyzing how these two banking models manage credit risk and the impact on financial outcomes, the study contributes to the understanding of the mechanisms through which banks safeguard their financial health and stability. In the context of conventional banks, the empirical results showed that the NPLR has a negative significant and negative insignificant relationship with ROA and ROE, respectively. Thus, H_1 is supported and H_2 is not supported. The results also revealed that CAR has a statistically significant and negative association with the ROA and ROE. Therefore, null hypothesis of H_3 and H_4 are not supported, and alternative hypotheses are not rejected. The current study found that LDR has insignificant negative link with ROA, while significant negative link ROE. So, H_5 is rejected and H_6 is not rejected.

In the context of Islamic banks, the finding indicated that there is no significant and inverse connection between NPLR and ROA. Meanwhile, there is a statistically significant and inverse relationship between NPLR and ROE. Hence, H_1 is not supported and H_2 is supported. On the other hand, the results implied that there is a negative significant link between CAR, ROA, and ROE. Therefore, null hypothesis of H_2 and H_3 are rejected, and alternative hypotheses are accepted. Apart from that, LDR showed an inverse and insignificant association with ROA and ROE. So, H_5 and H_6 are not supported.

In conclusion, this study is significant not only for the specific context of Malaysian banks but also for its broader implications on banking practices, financial regulations, and economic stability in both Islamic and conventional financial systems globally. The limitation of this study is the variables used. This study discusses only three independent variables of CR affecting the profitability of banks, and these include NPLR, CAR, and LDR. Besides, only ROA and ROE were chosen as dependent variables to represent the FP of conventional and Islamic banks. None of these variables can accurately describe the impact of CRM on the FP of Malaysian banks compared to other countries. However, this study could be further improved empirically by including other risk factors such as liquidity risk, operational risk, market risk, interest rate risk, and foreign exchange risk. Besides, other financial performance indicators such as market-to-book value and net profit margin should also be added as dependent variables.

REFERENCES

Abbas, F., Iqbal, S., & Aziz, B. (2019). The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia. *Cogent Economics and Finance*, 7(1), 1605683.

Abdelaziz, H., Rim, B., & Helmi, H. (2020). The Interactional Relationships Between Credit Risk, Liquidity Risk and Bank Profitability in MENA Region. *Global Business Review*, 23(3), 1-23.

Aldoseri, M. (2021). Assessment of credit risk management performance in Islamic and conventional banks in Saudi Arabia financial context. *Academy of Strategic Management Journal*, 20(6), 1-9.

al Zaidanin, J. S., & al Zaidanin, O. J. (2021). The impact of credit risk management on the financial performance of United Arab Emirates commercial banks. *International Journal of Research in Business and Social Science*, 10(3), 303–319.

Anwar, Y., & Murwaningsari, E. (2019). The effect of credit risk and capital adequacy ratio upon return on asset (A case study at banking listed in Indonesia Stock Exchange). *The Accounting Journal of Binaniaga*, 2(2), 23-38.

Ariff, M., & Can, L. (2008). Determinants of profitability in Islamic banks: A comparative analysis. Islamic Economics Studies, 16(1), 5-28.

Basel Committee on Banking Supervision. (2004). Basel II: International convergence of capital measurement and capital standards: A revised framework. Bank for International Settlements.

Boubakri, N., & Saffar, W. (2013). Credit risk management and financial performance: Evidence from the banking industry in Tunisia. Journal of Banking and Finance, 37(5), 1265-1277.

Chan, S. L., Chin, K. Y., Heah, J. T., Leow, Y. S., & Siew, L. O. (2018). The Effect of credit risk management (CRM) on the profitability of commercial banks in Malaysia. http://eprints.utar.edu.my/id/eprint/2865

Chong, V. S. W., Lam, J. M. S., & Tan S. H. (2019). The relationship of risk management and bank profitability performance between domestic and foreign Islamic banks in Malaysia. *Humanities & Social Sciences Reviews*, 7(6), 411-415.

Dimitrios, P. L., Angelos T. V., & Vasilios L. M. (2012). Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. *Journal of Banking and Finance*, 36(4), 1012-1027.

Ebenezer, O. O. & Wan Omar, W. A. (2016). The Empirical Effects of Credit Risk on Profitability of Commercial Banks: Evidence from Nigeria. *International Journal of Science and Research (IJSR)*, 5(8), 1644-1650.

Ekinci, R. & Poyraz, G. (2019). The effect of credit risk on financial performance of deposit banks in Turkey. *Procedia Computer Science*, 1581, 979–987.

Getahun, T., Lu, A., & Bari, M.S. (2015). Credit risk management and its impact on performance of commercial banks: In of case Ethiopia. *Research Journal of Finance and Accounting*, 6(24), 53-64.

Gholami, R., Abdul Rahman, A., Md Nor, N. G., & Faizah Said, F. (2021). Profit-Loss Sharing versus Interest-Based Contract: A Systematic Review. *International Journal of Economics, Management and Accounting*, 29(2), 381–407.

Hacini, I., Boulenfad, A., & Dahou, K. (2021). The impact of liquidity risk management on the financial performance of Saudi Arabian Banks. *EMAJ: Emerging Markets Journal*, 11(1), 67-75.

Haniffa, R., & Hudaib, M. (2007). Exploring the ethical identity of Islamic banks: A case study of the Bahrain Islamic Bank. Journal of Business Ethics, 76(3), 295-314.

Harb, E., Khoury, R. E., Mansour, N., & Daou, R. (2022). Risk management and bank performance: evidence from the MENA region. *Journal of Financial Reporting and Accounting*. DOI 10.1108/JFRA-07-2021-0189

Hersugondo, H., Anjani, N., & Pamungkas, I. D. (2021). The Role of Non-Performing Asset, Capital, Adequacy and Insolvency Risk on Bank Performance: A Case Study in Indonesia. *Journal of Asian Finance, Economics and Business*, 8(3), 319–329.

Hidayat, S. E., Sakti, M. R. P., & Al-Balushi, R. A. A. (2021). Risk, efficiency and financial performance in the GCC banking industry: Islamic versus conventional banks. *Journal of Islamic Accounting and Business Research*, 12(4), 564-592.

Hosna, A., & Manzura, B. (2009). Credit Risk Management and Profitability in Commercial Banks in Sweden. *University of Gothenburg, Graduate School of Business, Economics and Law,* Master of Science in Accounting. Retrieved from https://gupea.ub.gu.se/bitstream/2077/20857/1/gupea_2077_20857_1.pdf.

Hunjra, A. I., Mehmood, A., Nguyen, H. P., & Tayachi, T. (2022). Do firm-specific risks affect bank performance? *International Journal of Emerging Markets*, 17(3), 664-682.

Isanzu, J. S. (2017). The Impact of Credit Risk on the Financial Performance of Chinese Banks. *Journal of International Business Research and Marketing*, 2(3), 14–17.

Iskandar, A. S., Che-Yahya, N., & Wahid, Z. A. (2019). Determinants of Commercial Banks' Profitability in Malaysia. *Journal of Entrepreneurship and Business*, 7(1), 27-39.

Islam, K. M. Z., Alam, M. B., & Hossain, M. M. (2019). Impact of Credit Risk Management on Bank Performance: Empirical Evidence from Bangladesh. *South Asian Journal of Management*, 26(2), 32-64.

Jolevski, L. (2017). Non-performing loans and profitability indicators: The case of the Republic of Macedenia. *Journal of Contemporary Economic and Business Issues*, 4(2), 5-20

Lew, B. Y., & Lau, W. T. (2022). Credit risk and commercial bank performance: Evidence from ASEAN. *International Journal of Academic Research in Economics and Management Sciences*, 11(3), 274 - 288.

Nasib, N. & Faleel, J. (2021). The effect of credit risk management on the bank profitability: A comparative study on the Islamic and conventional banks across the GCCS. *Palarch's Journal Of Archaeology Of Egypt/Egyptology*, 18(13), 842-852.

Majani, S. I. (2022). The relationship between credit risk management and financial performance of commercial banks listed at the Nairobi Securities Exchange, Kenya. *International Journal of Managerial Studies and Research*, 10(5), 88-126.

Muhamad Yusuf, N. H., Mohamad Shamsudin, M. S., Mohd Abdoh, W. M. Y., Badri Shah, N. S., & Shekh Zain, R. (2021). Determinants of credit risk: Evidence from commercial banks in Malaysia. *Jurnal Intelek*, 16(1), 134–143.

Onsongo, S.K., Muathe, S. and Mwangi, L.W. (2020). Financial risk and financial performance: Evidence and insights from commercial and services listed companies in Nairobi securities exchange, Kenya. *International Journal of Financial Studies*, 8(3), 51- 66.

Ozili, P. K. & Ndah, H. (2022). Impact of financial development on bank profitability. *MPRA Paper No. 111337*, Available at https://mpra.ub.uni-muenchen.de/111337/

Rahayu, D. I., Ulum, B., Rusdiyanto, Syafii, M., Pramitasari, D. A., & Tuharea, F. I. (2020). Fundamental impact on share prices: Evidence from Indonesia. *Palarch's Journal of Archaeology of Egypt/Egyptology*, 17(6), 9090–9104.

Rwayitare, J. B., Shukla, J., & Ruhara, C. (2016). Credit risk and commercial bank profitability in Rwanda. *International Journal of Advanced Research*, 4(9), 294–325.

Saeed, M. H. (2015). Examining the relationship between operational risk, credit risk and liquidity risk with performance of Malaysia Banks. Masters thesis, Universiti Utara Malaysia. https://etd.uum.edu.my/id/eprint/4631

Saleh, I. & Abu Afifa, M. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. Cogent Economics and Finance, 8(1), 1-13.

Sari, L., & Septiano, R. (2020). Effects of Intervening Loan to Deposit Ratio on Profitability. *Journal of Accounting and Finance Management*, 1(2), 239-252.

Saunders, A., & Allen, L. (2010). Credit risk management in and out of the financial crisis: New approaches to value at risk and other paradigms. Wiley Finance.

Serwadda, I. (2018). Impact of credit risk management systems on the financial performance of commercial banks in Uganda. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 66(6), 1627-1635.

Siddiqi, M. N. (2008). Islamic banking and finance: A practical approach. Cengage Learning.

Siddique, A., Khan, M. A., & Khan, Z. (2022). The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks. *Asian Journal of Accounting Research*, 7(2), 182–194.

Uda, N. A. Z., Hamid, M. A., & Janor, H. binti. (2018). Determinants of credit risk in Islamic and Conventional bank: Evidence from Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 8(6), 1054–1068.

Vellanita, A., Arimbawa, I. G., & Damayanti, E. (2019). Relationship between NPL, CAR, LDR towards ROE at PT. Bank Central Asia 2014 – 2018. *Journal of World Conference*, 1(2), 211-216.

Yahaya, S. N., Mansor, N., & Okazaki, K. (2016). Financial Performance and Economic Impact on Capital Adequacy Ratio in Japan. *International Journal of Business and Management*, 11(4), 14-21.

Zaharum, Z., Latif, R. A., Isa, M. A. M., and Hanafi, M. H. (2022). The influence of liquidity management on banks' profitability. *International Journal of Academic Research in Business and Social Sciences*, 12(6), 820 – 829.