Factors Influencing Non-Performing Loans: Empirical Evidence From Commercial Banks In Malaysia

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Abstract
The banking structure is a vital component of every country's financial machinery and is crucial for economic progress. The purpose of this study is to analyse the factors influencing Non-Performing Loans among conventional banks in Malaysia which are CIMB, Malayan Banking Berhad, Affin Bank Berhad, Hong Leong Bank and RHB Bank Berhad. The factors that influence Non-Performing Loans among these banks are Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LTDR), Bank Size and Net Interest Margin (NIM). The study spans a period of 10 years, encompassing data from 2010 to 2020. This study is a quantitative study. Our findings revealed a significant relationship between CAR and NIM for NPLs. The problem revolves around the significant threat posed by Non-Performing Loans (NPLs) to the banking sector, particularly among young Malaysians. This threat is driven by a complex mix of factors, including escalating credit card debt, societal pressures, and financial illiteracy, ultimately risking financial stability and reducing banks' lending capacity within the banking system. Strong capital reserves and healthy profitability serve as crucial buffers against credit default, highlighting the importance of these factors for mitigating future NPLs challenges. While BSIZE and LTDR did not exhibit a direct impact on NPLs in this study, understanding how these factors interact with other market or bank-specific variables remains an important area for further research.
Keywords: Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LTDR), Bank Size (BSIZE), Net Interest Margin (NIM), Non-Performing Loan (NPLs)

Introduction
        The banking structure serves as a fundamental aspect of every nation's financial system, playing a crucial role in its economic advancement. As global banking markets continue to

liberalize, different countries are witnessing increased integration in their banking sectors. In Malaysia, there are two primary banking systems: the conventional system, which aligns with Western financial practices, and the Islamic system, based on Sharia law principles.

The Malaysian government provides extensive support to both types of banks, creating a conducive financial environment, establishing efficient financial and legal infrastructures, and offering human capital and resources. Conventional banks typically provide loans to businesses or individuals by gathering funds from depositors and earning profits through the interest rate differential between borrowing and lending rates. In contrast, Islamic banks strictly adhere to Shariah-based principles, avoiding interest, ambiguity, and prohibited activities in their operations and product offerings. Islamic banking transactions must be backed by real economic activities.

A bank's performance hinges on its ability to satisfy customers while minimizing risks and maximizing profitability. Non-performing loans (NPLs) represent a significant risk factor, referring to loans that deviate from agreed terms and become overdue for a specified period. Despite stability in size over recent years, NPLs levels fluctuate across time and different banks, causing concern among regulators. NPLs, reflecting credit risk, can impact a bank's performance and contribute to financial distress.

Credit risk, particularly concerning Non-Performing Loans, is a critical issue for commercial banks, influencing their liquidity, profitability, and overall stability. The quality of a bank's loan portfolio, measured by its NPLs ratio, is significantly affected by credit risk. Therefore, the examination of factors influencing NPLs is crucial for both regulators and banks.

Non-performing loans (NPLs) represent a significant risk to the stability and functionality of the banking sector. When loans transition into non-performing status, banks encounter diminished income and capital, constraining their capacity to extend credit to other borrowers and potentially necessitating additional resources to cover potential losses. Moreover, elevated levels of Non-Performing Loans (NPLs) heighten the risk of insolvency and contagion within the banking system. Should a bank suffer substantial losses attributable to Non-Performing Loans (NPLs), it could trigger a domino effect impacting other banks, thereby precipitating a broader financial crisis.

Background of Study

Non-Performing Loans (NPLs) arise when payments are overdue by over 90 days, or when renegotiated interest or instalments are delayed for the same period. They also include partially repaid loans with remaining balances. High NPL ratios negatively affect banks by reducing credit supply, distorting credit allocation, and diminishing market confidence, which in turn impacts bank performance and can destabilize the financial system, potentially harming Malaysia's economy.

Empirical studies identify various factors influencing NPL levels, such as financial, regulatory, and economic issues. While specific research on Malaysia post-September 2021 is not reviewed, common determinants impacting NPLs in banking are known. These factors' significance varies over time and by country. NPLs, also known as bad loans or non-performing assets, are loans unlikely to be fully repaid, as determined by the lender.

Banks and financial authorities have serious concerns about controlling and minimising Non-Performing Loans. Strategies include improved risk management, legislative changes, debt restructuring, asset sales, and maintaining strict regulatory oversight to prevent an excessive accumulation of NPLs. Effective management of NPLs involves enhancing risk

assessment, implementing efficient recovery processes, and ensuring rigorous regulatory supervision. This is essential to safeguard the banking sector from the adverse effects of NPLs and maintain economic stability.
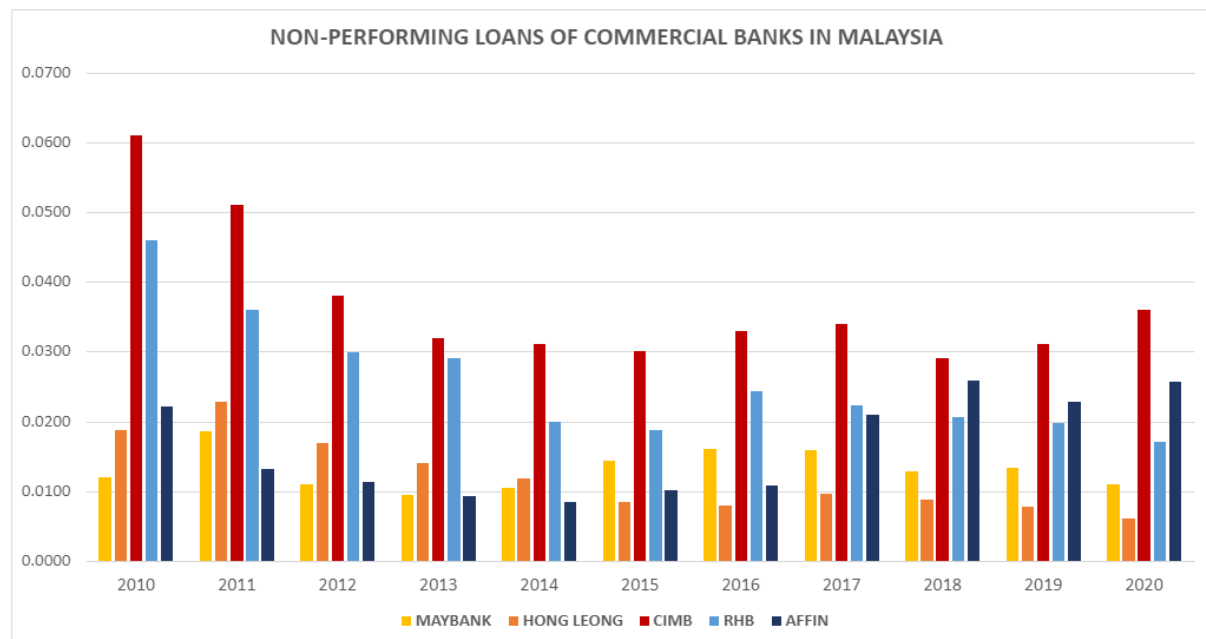

Figure 1: Non-performing loans of commercial banks in Malaysia
Adapted from: Annual Report of Maybank, Hong Leong Bank, CIMB Bank, RHB Bank, and Affin Bank from 2010 until 2020

Non-Performing Loans & Capital Adequacy Ratio

Banks, as public trust organizations, are subject to strict regulations and are required to adhere to a new index introduced in 1988. The Capital Adequacy Ratio (CAR) is the ratio of a bank's core capital to its assets and off-balance liabilities, weighted by risk. The CAR is designed to cover losses arising from banking operations risks, with a value of at least 8%. The method of computing the ratio has evolved over time, and under Peter Cook's direction, the Basel Committee on Banking Supervision released initial guidelines for the CAR estimate in 1988. The CAR serves as a "cushion" to shield banks from losses associated with credit risk, and it is not less than 8%. The CAR has become the global standard for assessing banks' solvency.

Non-Performing Loans & Loan to Deposit Ratio

The importance of supervision in the banking sector for a nation's economy to function properly. Banks, as defined by Surya Artha, facilitate the flow of money in an economy, promoting economic growth and development. The Loan to Deposit Ratio (LTDR) is a financial metric that compares a bank's total collected money with its issued credit. A low LTDR negatively impacts a bank's profitability, while a higher LTDR increases its profitability. The Basel Committee on Banking Supervision released guidelines for the Capital Adequacy Ratio (CAR) in 1988, which is the ratio of a bank's core capital to its assets and off-balance liabilities, weighted by risk.

Non-Performing Loans & Bank Size

The financial stability of 50 Malaysian banks, both Islamic and conventional, between 1999 and 2015. A researcher used Z-score and CAMELS variables to rank variables. The results showed favourable stability scores, sensitivity to market risk, asset quality, earnings, and profitability for both banks. Conventional banks scored higher in liquidity, sensitivity to market risk, earnings, and profitability. The modified Net Stable Funding Ratio (NSFR) of 136 Islamic banks from 30 countries between 2000 and 2013. They found that NSFR generally benefits Islamic institutions' financial soundness, but its influence decreases as banks grow. They concluded that stability remains when various stability metrics are applied, and an instrumental variable approach is used.

Non-Performing Loans & Net Interest Margin

The importance of controlling Net Interest Margin (NIM) is crucial in assessing bank profitability, especially in MENA banks, particularly those in North Africa. NIM is a key indicator as fluctuations can directly impact a bank's financial health. Non-Performing Loans (NPLs), often leading to loss of principal and interest, pose a significant risk to a bank's stability. By managing and stabilizing NIM, banks can exercise control over their interest income, minimizing the potential impact of NPLs. NFSR has a beneficial effect on the financial soundness of Islamic banks, but its influence decreases as banks grow.

Purpose of The Study

The purpose of this study is to understand the relationship between Non-Performing Loans (NPLs) and independent variables of the Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LTDR), Bank Size (BSIZE) and Net Interest Margin (NIM). There are several studies done on this topic however, not many past researchers combine these four variables in one study. Previous research conducted has focused on the factors affecting Non-Performing Loans in the Malaysian banking sector.

This research aims to uncover the key factors driving the rise of Non-Performing Loans (NPLs) in the Malaysian banking system. Non-performing loans (NPLs) are loans that are in default for more than 90 days. High levels of Non-Performing Loans (NPLs) can weaken the banking system and make it more difficult for banks to lend money to businesses and consumers. In addition, the non-performing property loans and its origination in the real estate finance system. The researcher mentions that the relationship between Non-Performing Loans (NPLs) and real estate finance in Malaysia is that property loans are the largest component of total Non-Performing Loans (NPLs) in the country. Property loan defaults contribute significantly to Non-Performing Loans (NPLs) in Malaysia, reflecting a complex interplay of economic and market conditions.

Literature Review

The definition of a Non-Performing Loans (NPLs), that is most widely accepted internationally, was actually created by the IMF and include\d in the Financial Soundness Indicators (FSIs) framework, which was approved by the IMF Executive Board. According to the Financial Compilation Indicators, which were published in March 2006, a loan would be classified as non-performing if its principal and interest payments were past due by three months or more, or by ninety days or more. An interest payment, sometimes known as three months' or ninety days' interest that has been capitalised, refinanced, or rolled over, is

another term for a non-performing debt. The time period that is most frequently used by the governments to assess whether or not a loan is non-performing is three months or 90 days.

Non-Performing Loans (NPLs) might not have seemed to have a serious negative outcome at first. Depositors' faith in the system is sustained, and banks continue to be liquid. But as time goes on, the issue becomes more significant, particularly if banks are permitted to charge interest on their Non-Performing Loans (NPLs). In Malaysia, studies have been introduced about the factors influencing Non-Performing Loans (NPLs). The results have shown that macroeconomics factors have influence in Non-Performing Loans (NPLs). High likelihood of the number of credit defaults has been expected in the expansion of non-performing advances.

The researchers had to analyse a few theories that relate to the topic of factors influencing Non-Performing Loans (NPLs) in Malaysia's commercial bank. The theory that most suitable to examine the factors influencing Non-Performing Loans was credit default. Credit default theory was chosen by the researchers because some researchers reveals that the concept of delinquency immediately gives knowledge of the period of credit defaults, which could affect Non-Performing Loans (NPLs). The link between delinquency and non-performing advances is undeniable, with increasing misbehaviour by borrowers with insufficient means to pay the advance influencing the rise of non-performing credit.

The study's findings highlight the substantial influence of the capital adequacy ratio on the levels of Non-Performing Loans (NPLs) in the sampled banks. The theoretical alignment of these results with is noted, emphasising CAR as a performance metric assessing the adequacy of owned capital to support assets, including those with inherent risks such as loans. The empirical support for these findings comes from studies by a few reserachers, indicating a positive impact of CAR. A high Capital Adequacy Ratio (CAR) is generally associated with stronger risk management, more conservative lending practices, and the ability to withstand financial shocks. These factors can help mitigate the risk of Non-Performing Loans (NPLs) and their impact on a bank's financial stability.

A bank's profitability or return on assets is not significantly impacted by its loan to deposit ratio (LDR). Non-Performing Loans (NPLs) are credit risks that result from a debtor's inability to repay the money they have borrowed, plus interest, to the bank. The Loan to Deposit Ratio (LTDR) is a comparison of the total loans to Third Party Funds (DPK) that banks have collected. This ratio will demonstrate the degree to which banks are able to disburse public monies. The researchers emphasise that deposits are the primary source of funding for their investments, the highest deposits can be transformed into credit with the potential for large profits. Since money is placed in the form of granted credits, interest revenue will rise in proportion to the Loan to Deposit Ratio (LTDR), which in turn determines corporate profit levels.

There is a substantial correlation between Non-Performing Loans (NPLs) and the size of bank Size (BSIZE) positively correlates with Non-Performing Loans (NPLs), suggesting that Vietnam is a good fit for the "too-big-to-fail" theory. The listed banking system has a moral hazard, albeit a very small one, and larger banks typically take on riskier operations. The size of the bank significantly and negatively affected NPLs. Stated differently, a company's total assets, total sales, average sales rate, and total assets can all be used to calculate a Bank Size (BSIZE). Consequently, troublesome as the assets of a public company's bank rise, loans can become less of a problem.

The intricate relationship between Non-Performing Loans (NPLs) and the profitability of banks has become a focal point in recent financial studies. Akter and Roy (2017) delved into

this phenomenon, revealing a notable negative impact of Non-Performing Loans (NPLs) on profitability, specifically on Net Interest Margin (NIM). Furthermore, a deeper exploration into the data from 30 banks in Bangladesh spanning the years 2008 to 2013 reveals that Net Profit Margin (NIM) is also negatively influenced by the presence of Non-Performing Loans (NPLs). As we embark on this exploration, the connection between Non-Performing Loans (NPLs) and key profitability metrics becomes apparent, offering insights into the broader implications for the banking sector.

Methodology

This study adopts a correlational approach to explore the factors influencing non-performing loans (NPLs) in Malaysia. By employing pre-existing data, it avoids interfering with the loan environment and focuses on identifying potential relationships between NPLs and various factors such as capital adequacy ratio (CAR), loan-to-deposit ratio (LTDR), bank size (BSIZE), and net interest margin (NIM). While this design allows for uncovering significant associations and patterns, it inherently limits the ability to establish direct causal links. Nevertheless, by analysing these correlations, the study aims to glean valuable insights into potential contributors to NPLs in the Malaysian context. This knowledge can serve as a foundation for further research, potentially employing more detailed analyses or even controlled experiments to delve deeper into specific relationships and establish stronger causal inferences.

Data Collection Method

This study utilizes quantitative secondary data, with Non-Performing Loans as the dependent variable and independent variables including Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LTDR), Bank Size (BSIZE), and Net Interest Margin (NIM). Spanning from 2010 to 2020, it employs a time-series methodology to discern trends and relationships with Non-Performing Loans (NPLs). The data are directly sourced from annual reports of each bank, accessible through Bursa Malaysia. Bursa Malaysia serves as a comprehensive platform for trading securities and derivatives, offering insights into market activities. Annual reports, available on Bursa Malaysia, summarize financial and operational performance, aiding stakeholders' comprehension of company activities, governance, and financial health. Additionally, third-party websites provide access to annual reports and corporate governance reports for banks throughout 2010 to 2020.

Theoretical Framework

Figure 2 illustrates the relationship between inflation and the independent variables that influence the inflation rate in Malaysia, namely, government expenditure, unemployment rate, economic growth, and exchange rate.
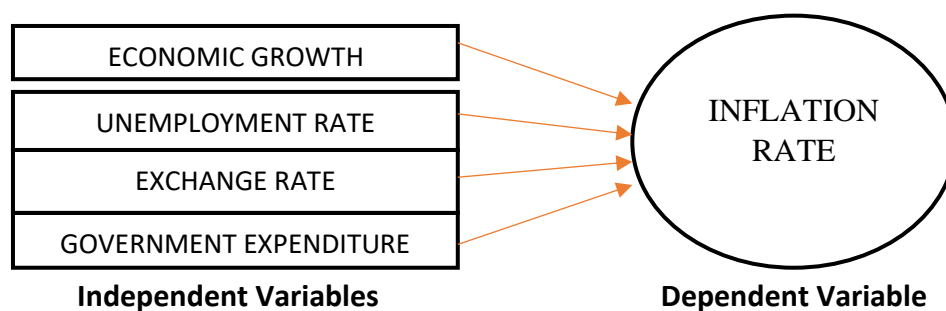

Figure 2

Results of The Study
Table 1: Ordinary Least Squares (OLS) results.
R-squared: 0.836761
Adjusted R-squared: 0.810643
F-statistic: 4.184389
Prob (F-statistic): 0.000000

Regression Equation
LnCPI= 0.170861CAR - 1.62E-08*BS* + 0.012511*LDR* + 1.162913NIM

Table above shows the results of a multiple regression analysis. The dependent variable is NPLs, which is likely a measure of Non-Performing Loans. The independent variables are CAR (capital adequacy ratio), BSIZE (bank size), LTDR (loan-to-deposit ratio), and NIM (net interest margin).

- **F-STATISTIC**

H0: There is a significant relationship between NPLs and all variables.
H1: There is no significant relationship between NPLs and all variables.
The value obtained for F-test is 4.184389 and the value of the p-value is 0.005327 . The results show that it is below the 5 percent significance level. As a result, the null hypothesis needs to be rejected.

- **R-SQUARE**

The R-squared value of 0.250797 means that the model explains 25.08% of the variation in NPLsS. The adjusted R-squared value of 0.190860 is a better measure of the model's fit, as it takes into account the number of independent variables in the model. The F-statistic of 4.184389 with a p-value of 0.005327 indicates that the model is statistically significant overall.

- **T-STATISTIC**

Capital Adequacy Ratio (CAR)
H0: Capital adequacy ratio has no significant relationship with Non-Performing Loans of commercial banks.
H1: Capital adequacy ratio has significant relationship with Non-Performing Loans of commercial banks.
The p-value for CAR is 0.0358, which is less than 0.05. The data contradicts the null hypothesis, indicating that there is a statistically significant association between capital adequacy ratio (CAR) and Non-Performing Loans (NPLs) of commercial banks. In other words, CAR has a noticeable impact on NPLs.

Loan To Deposit Ratio (LTDR)
H0: Loan-deposit ratio has no significant relationship with Non-Performing Loans of commercial banks.
H1: Loan-deposit ratio has significant relationship with Non-Performing Loans of commercial banks.
The p-value for LTDR is 0.1451, which is greater than 0.05. As a result, the null hypothesis (H0) must be accepted. It can be concluded that LTDR has an insignificant relationship with the NPLs of commercial banks.

Bank Size (BSIZE)

H0: Bank size has no significant relationship with Non-Performing Loans of commercial banks.
H1: Bank size has significant relationship with Non-Performing Loans of commercial banks
Based on the data, the null hypothesis cannot be rejected. The p-value for BSIZE is 0.0671, which is greater than 0.05. Therefore, there is not enough evidence to conclude that there is a significant relationship between bank size (BSIZE) and Non-Performing Loans (NPLs) of commercial banks.

Net Interest Margin (NIM)

H0: Net Interest Margin has no significant relationship with Non-Performing Loan of commercial banks.
H1: Net Interest Margin has a significant relationship with Non-Performing Loan of commercial banks.
The p-value for NIM is 0.0002, which is much less than 0.05. The data provides sufficient evidence to reject the null hypothesis, indicating that there is a statistically significant relationship between net interest margin (NIM) and Non-Performing Loans (NPLs) of commercial banks.

Conclusion

In conclusion, the stability and long-term viability of the Malaysian banking system hinge on effectively managing Non-Performing Loans (NPLs). This study shed light on the complex factors influencing NPLs by examining their relationship with capital adequacy ratio (CAR), net interest margin (NIM), bank size (BSIZE), and loan-to-deposit ratio (LTDR) over a ten-year period.

As expected, our findings revealed a significant relationship between CAR and NIM and NPLs. A strong capital reserves and healthy profitability serve as crucial buffers against credit default, highlighting the importance of these factors for mitigating future NPLs challenges. While Bank SIZE and LTDR did not exhibit a direct impact on NPLs in this study, understanding how these factors interact with other market or bank-specific variables remains an important area for further research.

Moving forward, this study serves as a springboard for continued exploration of NPLs dynamics in the Malaysian context. A deeper investigation into industry-specific risk factors, the influence of economic conditions, and individual bank practices can further refine understanding of NPLs drivers and provide targeted insights for both banks and regulatory bodies. Furthermore, we can protect the financial performance of Malaysian banks and contribute to a strong and resilient economy in the future by aggressively addressing these issues and putting data-driven strategies into practice.

Furthermore, the research explores the literature on the research model, focusing on the relationship between Non-Performing Loans (NPLs) and variables like capital adequacy ratio, loan-to-deposit ratio, bank size, and net interest margin. A delves into the definition of NPLs, credit default theory, and the significance of the capital adequacy ratio. The impact of loan-to-deposit ratio on profitability, the influence of bank size on services and risk, and the intricate relationship between NPLs and net interest margin are discussed. Referencing various studies, the chapter offers empirical insights, emphasising the complex dynamics within the banking industry and the crucial role of effective NPLs management.

Besides, the research work focuses on the research methodology. The introduction in 3.1 sets the stage for the entire chapter, providing an overview of the methodology employed

in the study. The research design is detailed, encompassing the purpose of the study, types of investigation, researcher interference, unit of analysis, and time horizon. The section on sampling discusses the methods employed to select units for the study. Following this, the chapter delves into data collection methods, shedding light on the strategies and techniques used to gather relevant information for the research. In essence, Chapter 3 serves as a comprehensive guide to the research methodology, offering insights into the design, sampling, and data collection processes employed in the study.

In addition, the researchers used four research analyses, which are descriptive analysis, correlation analysis, regression analysis, and the normality test, to determine the relationship between dependent and independent variables. Based on the results of the regression analysis, there are two independent variables, which are the capital adequacy ratio and the net interest margin, that have a significant relationship with Non-Performing Loans. Therefore, only the bank size has a negative correlation coefficient towards Non-Performing Loans, while the capital adequacy ratio, loan-to-deposit ratio, and net interest margin have a positive correlation coefficient towards Non-Performing Loans.

To conclude our research by summarising key findings, acknowledging study limitations, and offering suggestions for future research. Using data from different sources and Eview software, we explored how factors like capital adequacy ratio, loan-to-deposit ratio, bank size, and net interest margin relate to Non-Performing Loans in the Malaysian banking system. We also recognized challenges for new researchers, such as difficulty in evaluating sources and analysing complex data. Looking ahead, we recommend exploring factors affecting commercial banks' Non-Performing Loans, reassessing macroeconomic variables, and considering different measures for evaluating profitability.

Recommendations
- **Reevaluate Other Independent Variables Associated with Macroeconomic Conditions**

Several improvements are necessary for conducting quality research and updating information in the future. The exploration of the factors that explain the NPLs of Islamic banks in Malaysia for the period from 2007 to 2009. The research utilised the Auto-Regressive Distributed Lag (ARDL) approach to scrutinise the influence of specific macroeconomic factors, encompassing the industrial production index, interest rate, and the index of producer prices. The findings reveal enduring relationships among the variables, highlighting a substantial positive long-term effect of the interest rate on bad loans. Conversely, producer prices appear to exert a negative impact on the occurrence of bad loans. Additionally, considering the inclusion of other variables in the research model, such as macro variables like inflation and interest rates, is recommended. Expanding upon this suggestion, the research can reevaluate other independent variables associated with macroeconomic conditions for Non-Performing Loans (NPLs).

- **Substitute Net Interest Margin (NIM) With Return on Equity (ROE) And Return on Assets (ROA)**

Based on the research published in the International Journal of Financial Studies by two researchers, they propose that for future studies, dividing the entire sample into two sub-samples could enhance the outcomes of their paper. Furthermore, they suggest replacing Net Interest Margin (NIM) with broader measures of profitability like Return on Equity (ROE) and Return on Assets (ROA), which appear more suitable for assessing profitability in alignment

with the research questions. Embracing their suggestion, it is prudent to consider the initiative of substituting NIM with ROE and ROA for a more comprehensive evaluation of profitability.

- **Consideration of the International Competitiveness of The National Economy**

The findings suggest that when granting loans, banks should consider multiple variables to reduce the incidence of Non-Performing Loans. Primarily, banks should consider the international competitiveness of the national economy. If this competitiveness is at a low level, it could impact the ability of borrowers in various export sectors to repay debt. Additionally, banks should take into account the profitability of the real economy when extending loans, particularly as impaired loans are expected to become more significant during periods of economic recession. It is advisable for commercial banks to expand their range of macroeconomic surveillance, including prudential indicators like GDP, to evaluate the robustness and stability of the banking system.

Contribution

Non-performing loans have the potential to undermine financial stability and limit economic expansion. When the society have a better knowledge about the non-performing loans such as the effect and factors of the non-performing loans, it may lead to policy recommendations and methods for reducing the non-performing loans incidence. This consequently aids in fostering economic stability and growth through the efficient allocation of financial resources. Then, by examining non-performing loans, borrowers can learn more about the causes of defaults. This includes enhanced procedures for credit evaluation, improved loan monitoring systems, and better loan recovery tactics. Moreover, initiatives to increase financial literacy and inclusiveness, assist people and companies in making more educated financial decisions, and lower the risk of default can gain benefit from this understanding. Furthermore, gaining a thorough grasp of non-performing loans helps boost investor trust in the financial markets. Investors are more likely to allocate capital to areas or industries where non-performing loans are well-understood and efficiently handled, resulting in higher investment and economic growth.

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