Effects of Non-Performing Loans & COVID-19 Pandemic on the Performance of Commercial Banks in Sri Lanka

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Abstract

The COVID-19 pandemic has significantly impacted the global economy, and the non-performing loans (NPLs) have become a pressing issue for commercial banks in Sri Lanka. It is doubtful how the NPLs and COVID-19 Pandemic have affected the performance of commercial banks in Sri Lanka. Thus, the purpose of this study is to investigate effects of non-performing loans & COVID-19 pandemic on the performance of Sri Lankan commercial banks for the period of 2011 - 2021. The panel data regression analysis was used to investigate the effects of non-performing loans & COVID-19 pandemic on the financial performance of Commercial Banks. The results of the analysis revealed that non-performing loans and the pandemic period have a negative impact on the profitability of commercial banks in Sri Lanka. Thus, this study is useful for bank management officials to protect banks from crises and create ideas to enhance the performance of banks.

Keywords: Non-Performing Loans, COVID-19, Financial Performance, Profitability, Sri Lanka

Introduction

Background of the Study

As of default or imminent default, a loan is said to be non-performing (NPL). When a loan is non-performing, the borrower is much less likely to make the full repayment. Even if the debtor does not make up all the missing payments on an NPL, it becomes a restructuring loan (RPL) if the debtor starts making payments again. A business loan is deemed delinquent in the banking industry if the borrower has not made any interest or principal payments within 90 days, or the debt is 90 days past due. For a consumer loan to be considered NPL, it must be 180 days past due. When principal or interest payments are made improperly or late, a loan becomes overdue. Nowadays, banks play an important role in the creation of new capital in a country and support the growth process through their network of branches across the country, as they mobilize small savings from people across a wide area and use them for productive purposes. A series of corporate failures and financial crises have drawn attention to corporate governance issues, particularly for financial institutions. The objective of corporate governance in the banking sector is to build and strengthen accountability, credibility, trust, transparency, and integrity without a doubt. Corporate governance has systemic financial stability implications and can shape the pattern of lending and the overall supply of financial services. Hence the need for and importance of implementing effective corporate governance in the banking sector.

From an accounting perspective, the loan should be recognized as impaired, and the necessary provision made. This is because the bank may not be able to collect the full amount of principal and interest as per the contractual terms of the loan agreement. A loan loss provision is a method used by banks to recognize a decline in the realizable value of their loans. Bank managers are expected to estimate credit losses in their loan portfolios, based on available information, a process involving great judgment and subject to counter incentives. Sometimes banks are reluctant to account for the total loss incurred due to the negative impact of provisions on profits and on shareholders' dividends. In other cases, if the provisions are tax deductible, banks have the incentive to increase their loss provisions and smooth profits over time to reduce the amount of tax liability. The immediate consequence of large amounts of non-performing loans in the banking system is bank failure. Much of the research on the cause of bank failure found that asset quality was a statistically significant predictor of bankruptcy, and that failed banking institutions always had high levels of non-performing loans prior to failure. Every non-performing loan in the financial sector is considered a reflection of a sick unprofitable enterprise. From this point of view, the elimination of non-performing loans is a necessary condition for improving the economic situation. If non-performing loans are kept and rolled over, resources are locked up in unprofitable sectors; thus, economic growth is hampered, and economic efficiency is hampered.

In a high NPL situation, banks are increasingly inclined to carry out internal consolidations to improve asset quality rather than deleveraging. Furthermore, high levels of non-performing loans require banks to add provisions for loan losses, reducing bank income and reducing funding for new lending. Deleveraging hampers the corporate sector as difficulties in expanding their working capital block opportunities to resume normal operations or growth. A company's lack of credit to finance working capital and investment can lead to a second round of business failure, which further exacerbates the quality of bank loans, resulting in the re-emergence of banking or financial failure. At worst, it triggers an endless spiral of anomalous liquidity. Commercial banks can naturally use customer deposits to hedge their operations against liquidity risk as they provide the bank with the liquidity it needs to meet

unexpected withdrawals by depositors and lenders. Commercial banks are mainly in the business of accepting deposits and issuing loans to deficit economic units. The more they lend to less risky customers, the more certain the interest income is, thereby creating profitability and shareholder wealth. Furthermore, financial institutions are more important in a country's economic growth because they facilitate easy credit flow for investment opportunities in the manufacturing sector. The dynamism of the banking industry over time ensures the financial resilience of any country. The present economy of the country is unstable due to COVID-19.

According to the OECD 2020 Economic Outlook, both the outlook on the pandemic and the path to economic recovery remains highly uncertain. Uncertainty surrounding the severity of the crisis and prospects for economic recovery raises questions about the possible consequences for the banking sector. Only a few studies have been conducted in the Sri Lankan context that strengthens the researcher's investigation of non-performing loans (NPLs) with the financial performance of commercial banks, and there is no research that explains the impact of the COVID pandemic on Sri Lankan financial factors. Therefore, the purpose of the present study was to examine the impact of non-performing loans on financial performance using recent annual reports to contribute to the literature gap. In addition, persistent structural problems are likely to further hamper the bank's prospects. Low cost-efficiency, limited income diversification, and overcapacity are weighing on the profitability prospects of many banks (ECB, 2020a). While the COVID-19 pandemic may help accelerate changes in the banking sector, it may also increase uncertainty and reduce profit prospects. Conversion plans may be delayed. In addition, new challenges will need to be addressed, for example, e-digitization and remote working solutions expose banks to new types of cyber risks, and banks will need to increasingly manage the implications of the transition to a green economy. Other parts of this paper put forward a short literature review regarding aspects of banks' performance, non-performing loans, the impact of NPL on financial performance and COVID-19 pandemic; the third part describes the research methodology uses; the fourth part presents the main findings of the study, and the last section concludes, gives some limitations and future research directions.

Research Problem

The COVID-19 pandemic has significantly impacted the global economy, and the banking sector is no exception. Non-performing loans (NPLs) have become a pressing issue for commercial banks in Sri Lanka, affecting their overall performance. It is indistinct how the pandemic has affected the NPLs and the performance of commercial banks in Sri Lanka. Thus, the research problem is to how does COVID-19 pandemic effect on the relationship between NPLs and the performance of commercial banks in Sri Lanka.

The COVID-19 pandemic has disrupted the global economy, and the banking sector in Sri Lanka is facing numerous challenges, including the issue of non-performing loans. The performance of commercial banks in Sri Lanka has been impacted by the pandemic, but the extent of this impact remains unknown. This study aims to compare the NPLs and performance of commercial banks in Sri Lanka between the pre-COVID-19 and during the COVID-19 pandemic periods. By analyzing the data, this study aims to provide insights into the impact of the pandemic on the banking sector in Sri Lanka, which can inform policymakers, regulators, and stakeholders to mitigate the impact of future crises.

Research Questions
- What is the impact of non-performing loans on the performance of commercial banks?
- What is the impact of COVID-19 on the performance of commercial banks?

Research Objectives

There is the main objective of this study,

- To identify effects of Non-Performing Loans (NPL) and COVID-19 pandemic on the performance of commercial banks in Sri Lanka.

There are other objectives as follows,

- To examine the impact of Non-Performing Loans (NPL) on the performance of commercial banks in Sri Lanka.
- To examine the impact of COVID-19 pandemic on the performance of commercial banks in Sri Lanka.

Literature Review

Non-performing Loans

According to the International Monetary Fund (IMF), Non-Performing Loans are defined as Debtors who have not paid interest and/or principal payments in at least 90 days or more. According to Alton and Hazen (2001) non-performing loans are loans that have to be repaid for ninety days or more and are no longer interest-bearing. NPLs in the loan portfolio have an impact on operational efficiency, which has an impact on the profitability, liquidity, and solvency of banks, according to Michael et al. (2006). NPL also has an impact on bankers' psychology with regard to how they allocate money for the provision of credit and credit expansion, in addition to their effects on profitability, liquidity, and competitive functioning. Ivanovic (2016) emphasizes that the predictors of financial crises should adopt NPLs which affect the nation's economic growth through credit lending. A low NPL level indicates a country's strong monetary system, whereas a higher level of NPLs suggests a poor monetary condition.

The non-performing loan ratio is one of the most important indicators of credit risk and loan quality of banks (Noman et al., 2015). It represents what proportion of banks' loans and advances are getting non-performing which measures the extent of credit default risk that the bank sustained (Gizaw et al., 2015). A lower ratio is an indication of better asset quality and lowers doubtful loans, therefore lower credit risk. The impact of NPLs on the financial performance of commercial banks has been a source of concern in emerging studies in both developed and developing countries. Abiola and Olausi (2014) used the non-performing loan ratio as a credit risk indicator. In a high NPL condition, banks increasingly tend to carry out internal consolidation to improve asset quality which minimizes granting of loans. A high level of NPLs requires banks to raise provisions for NPLs which decreases the banks' revenue and reduces the funds for new lending impairing the corporate sector as they have difficulties in expanding their working capital (Agung et al, 2001).

The main goal of each banking institution is to control profitably to take care of stability and sustainable growth. However, the existence of high levels of non-performing loans within the industry negatively affects the amount of personal investment, impairs a bank's ability to settle its liabilities once they fall due, and constrains the scope of the bank credit to borrowers. External and internal economic environments are considered critical drivers for non-performing loans (Warue, 2013). Cucinelli (2015) NPLs prevent bank failure, which negatively affects the cost structure and efficiency of a bank and its willingness to lend. Furthermore, it was revealed that NPL rates begin to rise sharply as higher levels of the NPL at some point stop credit growth (Balgova et al., 2016). Due to the healthy growth of credit and nominal GDP, it remains stable in a country without NPL problems. In an emerging

country that could be able to benefit from such measures, bank managers should also take an effort to lower the default rate and the perceived level of success of such measures. In a growing economy that could be able to lower their levels of non-performing loans, bank managers should also take steps to lower the default rate and the perceived level of success of such activities.

Bank Performance

Sohiami (2013) used secondary data to examine the relationship between liquidity risk and financial performance measurements of commercial banks in Malaysia covering 05 years from 2007 to 2012. The study used deposits, cash, liquidity gap, and NPL as independent variables. The findings of this study show that liquidity risk significantly affects banks' capital and reserves. He concluded that the NPL was an important factor in exacerbating the liquidity risk by having a negative relationship with the deposit, cash, and liquidity gap, therefore adversely affecting the financial performance, and that the NPL should be prudently monitored to maintain a good liquidity position in the bank.

Bank profitability and sustainability can only be provided by the proper flow of interest income generated through the work of bank lending. However, as banks are no longer able to generate adequate interest income through classical securities loans and need to maintain reserves in the form of provisions to cover final debt losses, bank capital is declining along with their health and the vulnerability of NPLs is increasing. Therefore, banks need to identify and understand the macroeconomic factors that contribute to the rise of rated credit in the banking system and take proactive action to deal with the phenomenon of a bad choice of borrowers (Anjom et al., 2016).

The impact of risk management on non-performing loans and the profitability of the banking sector in Pakistan were examined. It was found that an adequate risk protection mechanism was not in place. It was concluded that NPLs were growing due to a lack of adequate prevention and control (Haneef, 2012).

Commercial Banks in Sri Lanka

Licensed commercial banks are the most important group of financial institutions in the banking sector, in terms of asset base and the size of the services provided. LCBs dominate the financial system with the highest market share of total financial system assets. Therefore, the health of the Sri Lankan financial system largely depends on the health of LCBs, primarily on the performance and financial strength of the six largest LCBs known as systemically important banks (SIBs) (Central Bank of Sri Lanka, 2020). The operational efficiency of commercial banks, the relationship between capitalization and the NPL, and the results show that operational efficiency enhances the high level of the NPL.

COVID - 19 Pandemic

The COVID-19 pandemic may have been the most serious challenge facing financial institutions for nearly a century. Banks are at the forefront of the economic sabotage caused by the COVID-19 epidemic. The low-interest-rate situation, along with the significant impact of COVID-19, reduces the core banking profitability of mature markets. Financial institutions are thus shifting to commission-based revenue, like payments and technology ventures.

During the COVID-19 pandemic, banks extended NPL recognition to delay identification in profit and loss declarations and to cover up capital losses. The longer the endurance measures take, the more serious the problem, and the more necessary measures such as internal exercise or the transition to market-based solutions are prevented (Kasinger et al., 2021). In line with

our expectations based on regulatory standards, there is an impact of changing asset quality on risk weight for access based on internal ratings.

As the situation worsens in 2021, banks will face a significant increase in non-performing loans (NPLs) due to rising home and corporate defaults, forcing them to increase their loan loss provision (LLPs) and allowances. However, the continued deterioration in the quality and earnings performance of banking assets may limit banks' ability to absorb high debt losses over time, thereby hampering their ability to obtain intermediate loans and support economic recovery. (OECD, 2021)

Bank NPL rates will rise under a single-hit situation in both advanced and emerging market economies, and end under a double-hit situation. Nevertheless, comprehensive financial and financial assistance measures will reduce the severity of the impact of the COVID-19 crisis on banks' NPL rates in all regions. Significantly, projected peaks are lower than previous crisis levels in many jurisdictions. In contrast, without financial and financial assistance measures, the increase in NPL rates would be more significant in both cases, and projected peaks would exceed previous crisis levels in several jurisdictions. (OECD, 2021).

Theoretical Review

In terms of theoretical association, the Theory of Financial Distress provides insights into the underlying causes of NPLs within the banking sector (Altman, 1984). It suggests that factors such as economic downturns, excessive risk-taking, inadequate risk management practices, and external shocks (like the COVID-19 pandemic) can contribute to financial distress. By understanding these causes, the study can analyze how the pandemic has impacted the occurrence and severity of NPLs in Sri Lankan commercial banks. Also, the Theory of Financial Distress underscores the importance of maintaining financial stability and resilience in the face of economic shocks (Shleifer & Vishny, 1992). It emphasizes the need for proactive risk management, robust capital buffers, and effective regulatory frameworks to mitigate the adverse effects of financial distress. By analyzing the impact of NPLs on the financial performance of Sri Lankan commercial banks during the COVID-19 pandemic, the study can assess the resilience of the banking sector and identify areas for improvement in risk management and regulatory oversight.

Empirical Review

Non-performing loans (NPLs) were cited by NPLs as one of the main causes of the global financial crisis (2007-2009), which damaged the U.S. economy and the economies of many countries (Adebola et al., 2011). Guy (2011) agrees that non-performing loans (NPLs) are widely used as a measure of asset quality among lenders and are often associated with failures and financial crises in both developed and developing worlds. Reinhart and Rogoff (2010), point out that non-performing loans are used to mark the beginning of a banking crisis. Despite continued efforts to control bank lending activities, non-performing loans (NBLs) are still a major concern for international and domestic regulators (Boudriga et al., 2009), so there is a need to develop a mechanism to control non-performing loans. The potential for collapse of the financial system.

Arif and Anees (2012) studied Pakistan's liquidity risk and the functioning of the banking system, focusing on traditional banks. A coordinated research plan was used to obtain secondary data from annual reports for 22 banks covering a period of 6 years from 2004 to 2009 and to use non-structured interviews to gather preliminary data. The study found that NPLs have a negative impact on a bank's profitability, as the NPL shows that there are credit

risks that can quickly turn into a serious liquidity crisis. Banks should therefore monitor their long-term debtors and conclude that reducing NPLs can reduce liquidity risk. The concern of recent studies, both in developed and developing nations, has been the effect of non-performing loans on the financial performance of commercial banks. Abiola and Awoyemi (2014) showed that nonperforming loans significantly affect Nigerian commercial banks' profitability.

The research question thus became, " What is the impact of non-performing loans on financial performance? While numerous studies have concentrated on Europe and African nations, there have been relatively few studies in the context of Sri Lanka (Saeed & Zahid 2016). They encourage the researcher to look into the relationship between non-performing loans and financial performance when considering Sri Lankan commercial banks. In order to fill this vacuum in the literature, the current study uses recent annual reports to analyze how non-performing loans affect financial performance. Ozurumba (2016) examined the impact of NPLs on the performance of selected commercial banks in Nigeria covering the period 2000 - 2013. The results show that the NPLs have an inverse relationship with the banking performance measured by the ROE, and that an increase in the NPL leads to a decrease in the ROE. The study concluded that unauthorized impacts on banks could not be underestimated as they posed a fundamental threat to the very existence of banks as corporate entities.

Ebba (2016) examined the relationship between non-performing loans and the financial performance of commercial banks in Ethiopia using a detailed research planning methodology. The secondary data were used for a period of 5 years from 2011 to 2015 and the study revealed that it has a significant negative impact on the activities of unauthorized banks. At the same time, the management of commercial banks has recommended that they evaluate the creditworthiness of their customers and apply strict policies for loan advances, thereby reducing the risk of defaulting and ethical risks such as internal lending and information asymmetry, and reducing interest income Accordingly, the NPL events as the reduction in financial performance affects the financial performance and the condition of the banks.

Rathnasiri (2016) examined the impact of credit risk on the profitability of commercial banks in Sri Lanka, based on data collected from 2005 through 2015 through five local banks. The researcher independently considered non-performing loans for total loans, provisions for debt losses, total loans for total assets, total loans for total deposits, the size of banks, the annual inflation rate, and GDP growth.

Researchers studying bank profitability are now taking asset quality which includes non-performing assets into account. For the research, Kalapo (2012) employed a panel data set for five Nigerian commercial banks from 2000 to 2010. The conclusion suggested that the rate of NPLs was statistically significant and had a detrimental effect on banks' profitability. Patwar and Tasneem (2019) also noted that when banks are not aware of the significance of NPLs, efficiency and profitability may suffer.

Kozarić and Žunić (2015) examined the relationship between the risks to which banks are exposed, the percentage of non-performing loans, and the percentage of capital adequacy in the banking system of Bosnia and Herzegovina. As measures of a bank's performance, they looked at its profitability ROAA and ROAE, risk-weighted assets, the share of loans in total assets, loans-to-deposits ratio, the share of liquid assets in total assets, and liquid assets terms of long-term commitments. The rate of capital adequacy and non-performing loans, ROAA and ROAE, were found to be strongly correlated. The percentage of liquid assets in total assets and the percentage of liquid assets in long-term liabilities both show a substantial negative

association with non-performing loans. Authors suggest that Bosnia and Herzegovina's banks pay more.

Methodology

Research Design

This study adopted a correlational research design with a comparative analysis approach, which is quantitative in nature, and used panel data of 10 commercial banks in Sri Lanka for 10 years from 2011 to 2021. The quantitative research approach is used to find out the result of the study.

Conceptual Framework

Based on the literature review, the following conceptual framework is proposed in the study. It demonstrates the impact of dependent variable on independent variables in Figure 1.
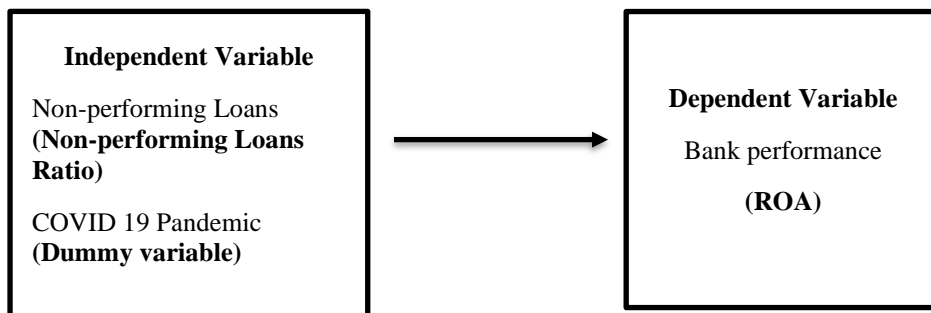

Figure I: Conceptual Framework of the Study

Measurement of Variables

Here Non-Performing Loans Ratio (NPLs ratio) is employed as the indicator of Non-Performing Loans of Banks and Return on Assets (ROA), Return on Equity (ROE) is used as a measure of Financial Performance in the study. The measurement of variables of the study is based on the prior studies and shown in the following Table1.

Table I: Measurement of Variables

Variable	Measurement
Non-performing loans ratio (NPLs Ratio) (Measures the risk of default by the bank and shows how much of the bank loan and advances are inactive)	The total amount of outstanding loans in the bank's portfolio <hr> Total non-performing loans
COVID-19 Pandemic (COVID) (Measures the presence or non-presence of COVID-19 pandemic)	If the COVID-19 pandemic was existing the study was assigned "1", otherwise "0".

Return on Assets (ROA) (Measures how efficiently a company earns returns on its assets)	Net Income Total assets

Population and Sample Selection

The population in this study is the 24 listed Licensed Commercial Banks on the Colombo Stock Exchange, as of 30th September 2022. A sample of 10 commercial banks has been selected for the study and the base for the sample selection was CSE-listed commercial banks. As per the CSE information, only 10 licensed commercial banks are listed out of the 24 licensed commercial banks, and the current study considered all the listed commercial banks for this study. The selected commercial banks can be elaborated in the following Figure 2. This research mainly focuses on COVID-19 pandemic. Therefore, the period of 2011 to 2018 has been considered as pre COVID situation, and 2019 to 2021 considered as during the COVID-19 for this study. A period of 10 years from 2011 to 2021 financial years has been considered to collect the data for this research.

1) *Commercial Banks of Ceylon PLC*
2) *DFCC Bank PLC*
3) *Hatton National Bank*
4) *Nation Trust Bank PLC*
5) *Pan Asia Banking Corporation*
6) *Sampath Bank PLC*
7) *Seylan Bank PLC*
8) *National Development Bank PLC*
9) *Bank of Ceylon*
10) *Citibank, N A*

Data Collection

This study is expected to be based mostly on secondary data because the collection of primary data is not appropriate in this pandemic situation. Therefore, I hope to use the secondary data obtained from the Bank's Annual Reports or publications of CSE. The data source is the Annual Reports and Financial Reports of Commercial Banks obtained from the Banking Website.

Development of Hypotheses

The hypothesis developed for the study is as follows.

H1: There is a significant impact of Non-Performing Loans on the Financial Performance of Commercial banks in Sri Lanka

H2: There is a significant impact of COVID-19 pandemic on the Financial Performance of Commercial Banks in Sri Lanka.

Method of Data Analysis

The data collected for this research study are analyzed using statistical tools and techniques such as correlation and regression analysis and used E-views software package also used to analyze the data. Some descriptive statistics like mean, median, standard deviation, minimum, and maximum are also used to analyze the obtained data.

And researcher used regression and correlation analysis for identifying the impact of variables. The impact of Non-Performing Loans on financial performance in this study was tested with the following model:

ROA= a0+ a1 NPL_RATIO, a2COVID…….. Model

Findings and Discussion

Normality

Traditional Presumption, it may be determined that the data in the model are normally distributed because of Jarque-Bera value is 0.332716, which is greater than the value of Sig > 0.05. It means the data set has normality. The same traditional requirements or presumptions apply to linear regression as they do to other parametric tests. Normality and non-multicollinearity tests are two traditional assumptions for multiple linear regression.

Multicollinearity Test

The level of collinearity in a multiple regression model can be identified and measured using a statistical technique known as the variance inflation factor (VIF). When the predictor variables are not linearly connected, VIF quantifies how much the variance of the estimated regression coefficients is exaggerated. A VIF of 1 indicates no correlation between the variables; a VIF between 1 and 5 indicates a moderate correlation and a VIF between 5 and 10 indicates a strong correlation between the variables. When two independent variables in a model have an exact 1:1 correlation, perfect collinearity is present. Either a correlation of +1.0 or -1.0 is possible here. Here Variance Inflation Factor is 1.001. That means non-performing loans and COVID (dummy variable) have perfect collinearity. On the other hand, non-performing loans and return on assets are moderately correlated because of the VIF is between 1 to 5. Table 2 reveals that the VIF value for this study is less than 5, thus researcher chooses to accept the null hypothesis and concludes that this study's model does not exhibit multicollinearity.

Table II: Variance inflation factor

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.010240	9.473100	NA
NPL_RATIO	0.000732	10.45483	1.001574
COVID	0.006090	1.536665	1.001574

Observations: 110

Descriptive Analysis

Based on the descriptive statistics provided in Table III, the following descriptive analysis can be made for the current study. The mean values provide us with a central tendency measure for each variable. The mean return on assets (ROA) of 1.424% suggests that, on average, commercial banks in Sri Lanka are generating a moderate return on their assets. Similarly, the mean non-performing loans (NPL) ratio of 3.714% indicates the average proportion of loans that are not being repaid, reflecting the credit risk faced by these banks. The mean COVID impact of 0.272727 highlights the varying degrees of influence the pandemic has had on bank performance, with some banks potentially more affected than others.

Examining the maximum and minimum values generated, they are specified insights into the range of variability within each variable. The maximum ROA of 2.22% and the minimum of 0.59% demonstrate the spread of return on assets across commercial banks, with some achieving higher profitability than others. Similarly, the maximum NPL ratio of 6.37% and the minimum of 1.37% reveal the diversity in loan quality and credit risk management practices among banks. The maximum COVID impact of 1.0 and the minimum of 0.0 illustrate the wide spectrum of effects experienced by banks in response to the pandemic, from minimal to significant impact. Major commercial banks in Nepal make up the study's target population, and the data used for it came from the years 2015 to 2019 (Singh et al., 2021). The secondary data used in this study was taken from the annual reports of each bank.

Furthermore, the standard deviation for both ROA and NPL ratios increased during the pandemic period, indicating higher variability in the data. According to Brown (2006), acceptable levels of skewness fall between -3 and +3 when assessing normalcy using skewness and kurtosis. The skewness value for ROA was negative, which indicates that the distribution is slightly skewed to the left. On the other hand, the skewness value for the NPL Ratio was positive, which indicates that the distribution is slightly skewed to the right. The Kurtosis value for both ROA and NPL Ratio was greater than 2, which indicates that the distributions have heavier tails than the normal distribution. Additionally, the Jarque-Bera test shows that the distribution of both ROA and NPL Ratios are not normally distributed. Also, the COVID variable, which indicates the impact of the pandemic on commercial banks in Sri Lanka, had a mean value of 0.272727, with a maximum value of 1.000000 and a minimum value of 0.000000. The Jarque-Bera test shows that the distribution of the COVID variable is also not normally distributed, with a p-value of 0.000009.

Further, these statistics underscore the diversity and challenges within the commercial banking sector in Sri Lanka. While the average performance appears moderate, there is considerable variability in return on assets, loan quality, and the impact of external factors like the COVID-19 pandemic, highlighting the importance of robust risk management and adaptive strategies for sustainable banking operations.

Table III: Descriptive Analysis

	ROA	NPL_RATIO	COVID
Mean	1.424000	3.714364	0.272727
Median	1.400000	3.400000	0.000000
Maximum	2.220000	6.370000	1.000000
Minimum	0.590000	1.370000	0.000000
Std. Dev.	0.384250	1.290910	0.447400

Skewness	-0.018106	0.397250	1.020621
Kurtosis	2.406422	2.035831	2.041667
Jarque-Bera	1.620877	7.153906	23.30657
Probability	0.444663	0.067961	0.000009
Sum	156.6400	408.5800	30.00000
Sum Sq. Dev.	16.09364	181.6429	21.81818

Observations: 110

Correlation Results

According to the results demonstrated in Table IV, it seems that there is a strong negative correlation between ROA (Return on Assets) and NPL_RATIO (Non-Performing Loan Ratio), as indicated by the correlation coefficient of -0.827807. This means that as the NPL_RATIO increases, the ROA tends to decrease, and vice versa. This finding suggests that the performance of commercial banks in Sri Lanka is negatively affected by non-performing loans, which is not surprising given that non-performing loans can signal a decline in credit quality and can reduce a bank's profitability.

Moreover, the correlation coefficient between NPL_RATIO and COVID is positive and high (0.827888), suggesting that the COVID-19 pandemic has had a significant impact on non-performing loans. This finding is consistent with the idea that economic shocks, such as a pandemic, can lead to an increase in non-performing loans as borrowers face financial difficulties and struggle to repay their loans.

Similarly, the correlation between ROA and COVID is also negative and high (-0.822782), indicating that the pandemic has had a significant impact on the profitability of commercial banks in Sri Lanka. This finding is in line with the broader literature on the impact of pandemics on the banking sector, which suggests that pandemics can lead to a decline in bank profitability due to increased credit risk and lower economic activity. Overall, the results suggest that there is a strong relationship between non-performing loans, bank performance, and the COVID-19 pandemic in Sri Lanka. The findings also highlight the importance of monitoring non-performing loans and their impact on bank profitability, especially during times of economic uncertainty and stress.

Table IV: Correlation Results

	ROA	**NPL_RATIO**	**COVID**
ROA	1.000000	-0.827807	-0.822782
NPL_RATIO	-0.827807	1.000000	0.827888
COVID	-0.822782	0.827888	1.000000

Observations: 110

Regression Analysis

The test results are presented in Appendix A, which displays the test statistic, degrees of freedom (d.f.), and probability values for two effects tests: the cross-section F- test and the cross-section chi-square test. The cross-section F- test is used to test the overall significance of the fixed effects, while the cross-section chi-square test is used to test whether each of the individual fixed effects is significant. In both cases, the probability value (Prob.) is less than 0.05, indicating that the fixed effects are statistically significant and that they should be included in the model. This means that the model cannot be simplified by removing any of the fixed effects without losing explanatory power. Overall, the analysis suggests that the fixed effects included in the model are necessary and that they play an important role in explaining the relationship among non-performing loans, COVID-19 pandemic and the performance of commercial banks in Sri Lanka

Based on the Hausman test has been performed (Appendix B) to test the consistency of the random effects' assumption in a cross-sectional model. The null hypothesis for the Hausman test is that the random effects assumption is consistent with the data, and the alternative hypothesis is that the random effects assumption is inconsistent. In this case, the output shows that the chi-square statistic for the Hausman test is 0.000000 with 2 degrees of freedom, and the associated p-value is 1.0000. This indicates that the random effects assumption is consistent with the data, and we cannot reject the null hypothesis. Therefore, we can conclude that the random effects assumption is appropriate for the given model. This test result implies that the variation in the non-performing loans, COVID-19 pandemic and the performance of commercial banks in Sri Lanka can be explained by the cross-sectional random effects, and the fixed effects model may not be necessary.

In this study, the regression analysis is conducted using the panel EGLS (Cross-section random effects) method. According to the Table V, the results show that the constant (C) has a coefficient of 1.773854 with a standard error of 0.124407, indicating that even in the absence of NPL ratio and the pandemic period, the average ROA of commercial banks in Sri Lanka is positive. The NPL ratio has a negative coefficient of -0.349157 with a standard error of 0.031013 and is statistically significant at the 5% level, indicating that there is a negative relationship between NPL ratio and ROA. This implies that an increase in the NPL ratio will lead to a decrease in the profitability of commercial banks in Sri Lanka. The dummy variable representing the pandemic period has a negative coefficient of -0.201089 with a standard error of 0.067783 and is statistically significant at the 5% level, indicating that th e pandemic period has a negative impact on the profitability of commercial banks in Sri Lanka. This implies that the pandemic has adversely affected the performance of commercial banks in Sri Lanka. The results of this study suggest that non-performing loans and the pandemic period have a negative impact on the profitability of commercial banks in Sri Lanka. Therefore, it is recommended that policymakers and bank management take steps to reduce the NPL ratio and mitigate the impact of the pandemic on the banking sector to improve the performance of commercial banks in Sri Lanka.

The study aimed to investigate effects of non-performing loans (NPLs) and COVID-19 pandemic on the financial performance of commercial banks in Sri Lanka. Two hypotheses were developed, and the regression analysis was conducted using the panel EGLS method. The results showed that both hypotheses were supported, indicating that there is a significant

impact and relationship between NPLs and the financial performance of commercial banks in Sri Lanka. The findings of the study are consistent with prior research that shows NPLs have a negative impact on the profitability of commercial banks. The negative relationship between NPLs and the financial performance of banks indicates that banks with a higher NPL ratio are less profitable than those with a lower NPL ratio. This finding highlights the importance of managing and reducing NPLs to improve the profitability of banks in Sri Lanka.

Furthermore, the study found that the COVID-19 pandemic had a negative impact on the profitability of commercial banks in Sri Lanka. Arif and Anees (2012) studied Pakistan's liquidity risk and the functioning of the banking system, focusing on traditional banks and that study found that NPLs have a negative impact on a bank's profitability, as the NPL shows that there are credit risks that can quickly turn into a serious liquidity crisis. For this study, the pandemic period was represented by a dummy variable, and the regression analysis showed a significant negative coefficient. This finding suggests that the pandemic has adversely affected the performance of commercial banks in Sri Lanka. It is consistent with prior research that shows that the COVID-19 pandemic has created economic uncertainty, leading to reduced economic activity and lower profitability of banks. Kozarić and Zunic (2015) examined the relationship between the risks to which banks are exposed, the percentage of non-performing loans, and the percentage of capital adequacy in the banking system of Bosnia and Herzegovina. The rate of capital adequacy and non-performing loans, ROAA and ROAE, were found to be strongly correlated.

The study has significant implications for policymakers and bank management in Sri Lanka. Policymakers can use the findings to develop policies that address the issue of NPLs and mitigate the impact of the COVID-19 pandemic on the banking sector. For instance, they can introduce measures such as debt restructuring programs and loan guarantee schemes to help borrowers repay their loans and reduce the NPL ratio. Additionally, bank management can use the findings to identify areas for improvement in their operations and develop strategies to mitigate the impact of the pandemic on their profitability. Briefly, the study provides evidence that NPLs and the COVID-19 pandemic have a negative impact on the financial performance of commercial banks in Sri Lanka. The study highlights the importance of managing NPLs and developing strategies to mitigate the impact of the pandemic to improve the profitability of banks.

Table V: Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773854	0.124407	14.25845	0.0000
NPL_RATIO	-0.349157	0.031013	-2.269202	**0.0253
DUMMY	-0.201089	0.067783	-2.966675	**0.0153

Effects Specification				
			S.D.	Rho
Cross-section random			0.183569	0.2839
Idiosyncratic random			0.291571	0.7161

Weighted Statistics				
R-squared	0.769897	**Mean dependent var**		0.632421
Adjusted R-squared	0.740494	**S.D. dependent var**		0.316823
S.E. of regression	0.290288	**Sum squared resid**		9.016583
F-statistic	11.41910	**Durbin-Watson stat**		1.377978
Prob(F-statistic)	0.000032			

Unweighted Statistics				
R-squared	0.158938	Mean dependent var		1.464182
Sum squared resid	12.00185	Durbin-Watson stat		1.473854

Observations: 110

**denotes the 5% significance level

Conclusion

This study aimed to determine the significance of non-performing loans' effects and COVID-19 pandemic effects on financial performance of Sri Lanka's listed commercial banks from 2011 to 2021. The study's objectives have been accomplished through the use of descriptive, regression, and correlation analysis.

After the COVID-19 outbreak, the financial performance of the banking industry has obviously declined. This is demonstrated by the financial performance of banks, which includes NPL, which fell short of expectations prior to COVID-19. The ability to extend credit has declined, the level of net profit has reduced, and the risk of default has increased. This study looked for proof that the COVID-19 case was a factor in the surge of bad credit cases

observed in Sri Lanka's traditional commercial banks. The data analysis's findings support the claim that the COVID-19 case has contributed to an increase in cases of bad credit in various Sri Lankan conventional commercial banks. Now emerging commercial banks still face problems of poor credit risk management practices. The study suggests that growing banks should refocus on effectively managing their financial risks and develop new strategies, such as reducing lending rates and fees and critically assessing customers seeking loans or credit extensions. Debt enforcement leads to improvement in financial performance.

Due to the risk of missing data, only ten listed commercial banks remain in the population, hence the sample size in the study is insufficient. Also, it would have been better if the data was generated only for ten years, and the research was limited to a longitudinal study. The credit quality of commercial banks in Sri Lanka has improved, and they have been using healthy levels of capital adequacy management for the past few years. The financial performance of commercial banks in Sri Lanka is significantly and negatively impacted by non-performing loans, and there is a considerable and negative relationship between the above two. The findings of the hypothesis revealed that non-performing loans have a statistically significant negative relationship with the performance of commercial banks in Sri Lanka and it was concluded that an increase in NPL reduces bank performance as the bank loses principal and the accompanying interest. Thus, there is a need to increase the provision for NPLs which reduces bank assets and hence restricts its investments. Furthermore, COVID is a significant variable to determine the performance of commercial banks. The period of 2019 to 2021 was considered as COVID period. According to the findings, in this period non-performing loans increased highly due to the crisis. Therefore, the return on assets decreased at a high rate.

There are some limitations to this study. The researcher used only 10 commercial banks and 10 years for the study. Therefore, data was insufficient to obtain a more accurate result. Thus, it is difficult to gain a conclusion about the whole banking industry. Another limitation is this study used two independent variables and one dependent variable. That means the study did not consider other variables which affect the return on assets. Therefore, obtained results can be changed due to another factor. Future researchers can consider these recommendations in future studies, all the commercial banks in Sri Lanka should be incorporated in it, and comparative research between Sri Lanka and other countries is also effective and useful to analyze and exploring new ideas in the techniques used to improve the performance of banks to improve their performance will be by other countries. Furthermore, future research could investigate the effectiveness of specific policies and strategies aimed at reducing NPLs and mitigating the impact of the pandemic on the banking sector in Sri Lanka.

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Appendices

Appendix A: Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.788773	(9,98)	0.0000
Cross-section Chi-square	40.094342	9	0.0000

Appendix B: Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	2	1.0000