IMPACT OF CREDIT RISK AND BANK-SPECIFIC FACTORS ON THE FINANCIAL PERFORMANCE OF LICENSED BANKS IN SRI LANKA

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ABSTRACT

The objective of the study is to examine the impact of credit risk and bank-specific factors on the financial performance of licensed banks in Sri Lanka during the period of seven years (2015 - 2021). In the empirical investigation, return on assets and return on equity are used to measure financial performance while non-performing loans and capital adequacy are proxies for credit risk. Cost efficiency, average lending, loan-to-deposit ratio, and bank size are considered bank-specific factors. Seventeen licensed commercial banks and five licensed specialized banks are taken as samples of this study, and data is collected from annual reports of licensed banks in Sri Lanka during the period from 2015 to 2021. Panel data regression analysis is employed to examine the hypotheses. Results of the study revealed that non-performing loans have a negative impact on banks' financial performance in terms of return on assets of licensed banks whereas average lending has a positive impact on banks' financial performance in terms of return on assets. Other variables such as capital adequacy, cost efficiency, loan-to-deposit ratio, and bank size have not shown any significant impact on the financial performance of licensed banks. The output of the study may be useful to the bank lending unit's decision-makers, investors, and economic policymakers of the country. The Banks should seek mechanisms to improve their risk management capacity efficiency and quality lending to remain competitive in the market.

Keywords: *Bank-specific factors, credit risk, financial performance, non-performing loan.*

1. INTRODUCTION

The banking sector is an important industry that needs to be safeguarded, as its failure is bound to have negative knock-on effects on the economy at large (Munangi, 2020). Commercial banks play an essential role in ensuring a nation's fiscal health and contributing to the nation's overall economic expansion all over the world. Lending has remained their primary source of revenue throughout this time. However, those banks are becoming increasingly concerned about the possibility that borrowers will not honor their loan commitments, and this concern is especially prevalent when it comes to unsecured bank loans. This risk may belong in the category of credit risk. As the global economic and financial crises of 2008 have

shown, the risk poses a significant threat not only to the economy as a whole but also to financial institutions like banks (Reserve Bank of Australia).

Credit risk management is the practice of minimizing losses by determining the adequacy of a bank's capital and loan loss reserves at any given time. It is a process that has long been difficult for financial institutions (SAS Institute – Risk Management Insights). The capital adequacy ratio is a measure of a bank's available capital, expressed as a percentage of its risk-weighted credit exposures. The goal is to ensure that banks have enough capital on hand to handle a certain amount of losses before becoming insolvent.

The global financial crisis and the subsequent credit crunch brought credit risk management into the regulatory spotlight. As a result, regulators began to call for greater transparency. They wanted to know that a bank has a thorough understanding of its customers and the credit risk associated with them. Furthermore, new Basel III regulations are imposing an even greater regulatory burden on banks. Effective risk management enables the ability to allocate resources to risk units based on a trade-off between risk and return potential, which is critical for a bank's survival (Charles, Kenneth & Okaro, 2013). The need for Sri Lankan banks to implement risk management procedures has been heightened by the country's current economic situation. When the borrower breaches the repayment agreement, the loan becomes non-performing. Non-performing loans are classified as bad credit. According to the International Monetary Fund guidelines, a non-performing asset (NPA) is a loan with a principal/interest payment that is 90 days late (IMF, 2019). The bank's performance will suffer as a result of this NPA portfolio. Raising NPAs discourages banks from making new loans.

The financial performance of banks is a response to many internal and external factors. The main dominators of banking performance are the bank-specific factors. This paper attempts to identify the bank-specific factors that significantly influence the financial performance of licensed banks in Sri Lanka. The specific factors such as cost efficiency, average lending, loan to deposit and bank size are the point of concentration that affects the performance of the licensed banks in Sri Lanka. This study demonstrates that bank-specific factors are crucial catalysts in ensuring financial institutions' continuity and stable performance. Understanding the determinants is very important for key stakeholders of Sri Lankan banks such as shareholders, creditors, competitors, regulatory bodies, and the government to understand the market sentiments.

In the decade since the onset of the global financial crisis, the banking industry has experienced substantial structural changes. The crisis highlighted severe vulnerabilities in the banking system and the regulatory environment, leading to excessive lending and risk-taking in the absence of an appropriate crisis; authorities overhauled the global prudential framework and enhanced oversight. The fundamental aim of these reforms has been to boost banks' resilience via higher capital and liquidity buffers, as well as to decrease the economic and fiscal effect of bank failures through stronger recovery and resolution procedures. At the same

time, constant monitoring is required due to the system's dynamic adaptability and the appearance of new hazards.

Many banks are reconsidering their credit risk strategies to meet increasingly stringent regulatory requirements and absorb higher credit risk capital costs. Banks that only see this as a compliance exercise, on the other hand, are being shortsighted. Better credit risk management allows for significant improvements in overall performance and competitive advantage.

Few studies have been conducted in developing countries and their findings are inconclusive. The relationship between credit risk, bank-specific factors, and financial performance should have clear differences. Furthermore, there have been only a few research done in the Sri Lankan context to investigate the relationship between credit risk, bank-specific factors, and bank profitability over time. To fulfill the research gap, it is necessary to further investigate the effect of credit risk and bank-specific factors on bank financial performance. Therefore, this study investigates the impact of credit risk and bank-specific factors on the financial performance of licensed banks in Sri Lanka during the period of 2015 to 2021.

The following objectives are developed in this study.

- To investigate the impact of credit risk on the financial performance of Licensed banks in Sri Lanka
- To examine the impact of bank-specific factors on the financial performance of licensed banks in Sri Lanka.

2.   LITERATURE REVIEW

2.1 Theoretical Review

Modern Portfolio Theory

The term "Modern Portfolio Theory" (MPT) refers to an investment theory that enables investors to put together an asset portfolio that optimizes anticipated return while maintaining a predetermined level of risk. The risk-averse nature of investors is assumed by this theory, which states that investors will always choose the portfolio with the lower level of risk, given two portfolios with equal levels of anticipated return. According to MPT, an investor must be compensated for a higher degree of risk through higher expected returns for the investment to be beneficial. According to MPT, the primary tenet of diversification is that it is preferable to hold a portfolio consisting of assets from a variety of categories, as this reduces overall risk, as opposed to holding a portfolio consisting of all the same assets.

Loan Pricing Theory

The word "loan pricing" is used to describe the method used to establish the interest rate that will be applied when financing is provided. Book-runners are responsible for determining the interest rate, which is typically presented as a spread (margin) above a benchmark rate. To determine a fair price for a syndicated loan, arrangers must first assess the credit risk implicit in the loans and the lenders' appetite for taking on that risk.

2.2 Empirical Review and Hypothesis Development

Oyango and Olando (2020) revealed that there is a positive significant influence on non-performing loans by interest rate spread and bank operating efficiency. Further, the study showed that the loan-to-deposit ratio and return on assets have a negative impact on non-performing loans. The study suggested setting up a strategy to control the interest rate spread and suggesting a threshold for the operating efficiency ratio.

Cheng, Nsiah, Charles and Ayisi (2020) found a positive correlation between credit risk (non-performing loan ratio, cost per loan, total loans to total assets, and capital adequacy ratio) and profitability (ROA, ROE, and net interest margin). Similarly, liquidity risk (current ratio, acid-test ratio, cash ratio) shows a positive and significant connection with bank profitability. However, operational risk (portfolio concentration, bank leverage, lawsuit, resignation of key directors) indicated a negative affiliation with bank profitability. The bank-specific risk shows a positive and significant nexus with credit risk, operational risk, and liquidity risk

More recently again, Jackson and Tamuke (2022) carried out a study to assess the nexus between credit risk management and financial performance of Domiciled Banks in Sierra Leone. It was found that an increase in credit risk has the power to reduce the ROA substantially which means, that the entire banking system in Sierra Leone was inclined to be granting more loans than it is collecting deposits from its customers.

Al Zaidanin and Al Zaidanin (2021) identified that the non-performing loans ratio and cost-income ratio have significant negative impacts on commercial banks' profitability. On the other hand, capital adequacy ratio, loan-to-deposit ratio, and loans-to-deposit ratio all have a very weak positive relationship with ROA. Mwanzia (2021) investigated the effect of risk management on the financial performance of commercial banks among Kenyan Banks. It revealed that there was a positive relationship between the variables of liquidity management, credit risk management, operating risk management, and financial performance. However, equity risk management and bank size had a positive relationship on financial performances, and the relationship was found as significant.

Ndum (2021) showed that the loan-to-deposit ratio did not influence the financial performance of banks though it was found positive. The research recommended finally, that the banks should be able to anticipate inflation rate periodically to adjust their interest rate to get the maximized profit. Siddique, Asif and Zeeshan (2021) surveyed the effect of credit risk management and bank-specific factors on the financial performance of commercial banks. The findings revealed a positive relationship between capital adequacy and the financial performance (ROA and ROE) of Asian commercial banks, while non-performing loans, cost efficiency ratio, and loan-to-deposit ratio all had negative effects on financial performance.

Wondimu (2018) tested the effect of credit risk and liquidity risk on the financial performance of banks. It revealed that the impact of credit risk on profitability was statistically significant and negative, whereas the effect of liquidity risk on profitability was statistically significant and positive. Both of these risks had a significant effect on the performance of the banks. Another study was conducted by Zeleke (2019) to examine the effect of credit risk on the profitability of commercial banks. The results reveal that credit risk management has a significant impact on the profitability of Ethiopia's commercial banks.

Based on the previous studies and the problem statement, the following hypotheses are developed for credit risk and financial performance:

H_1: There is a significant impact of credit risk on financial performance.

H_{1a}: There is a significant impact of non-performing loans on financial performance.

H_{2a}: There is a significant impact of capital adequacy on financial performance.

The following hypotheses are developed for the bank-specific factors such as cost efficiency, average lending, loan-to-deposit and bank size, and financial performance.

H_2: There is a significant impact of bank-specific factors on financial performance.

H_{2a}: There is a significant impact of cost efficiency on Financial Performance.

H_{2b}: There is a significant impact of average lending on Financial Performance.

H_{2c}: There is a significant impact of loan to deposit on Financial Performance.

H_{2d}: There is a significant impact of Bank size on Financial Performance

3. RESEARCH METHODOLOGY

The conceptualization represents the association between credit risk, bank-specific factors, and financial performance of this study.
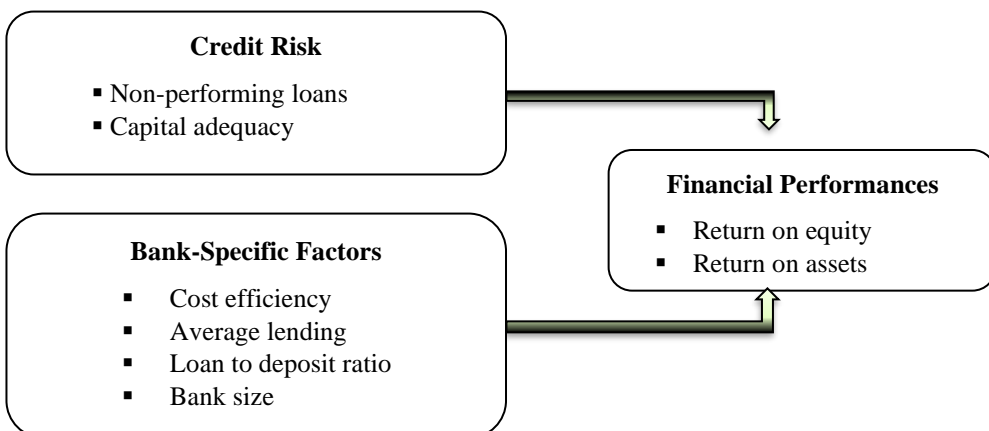

Figure 01: Conceptual model

3.1 Data and Sample

Secondary data needed for the research were gathered from the annual reports of the licensed banks, journals, magazines, etc. This data was utilized for the present study from 2015 to 2021 to measure credit risk, bank-specific factors, and financial performance of licensed banks. The population comprised domestic licensed commercial banks and licensed specialized banks listed in Sri Lanka. Currently, there are 24 licensed commercial banks and 06 licensed specialized banks operating in Sri Lanka as of the end of December 2022. The targeted population of this study is domestic commercial banks and specialized banks which have more than five years of experience. Therefore, 12 domestic licensed commercial banks and 05 licensed specialized banks constituted the sample.

Licensed commercial banks are the single most significant type of financial institution within the banking industry both in terms of the size of their asset bases and the scope of the services that they provide their customers. Licensed commercial banks have the largest market share of all of the assets in the whole financial system, making them the dominant force in the system. Therefore, the health of Sri Lanka's financial system is dependent on the soundness of the local commercial banks, and more specifically on the performance and financial strength of the six major licensed commercial banks, which are collectively referred to as the Systemically Important Banks in the industry. Licensed specialized banks are financial institutions that have been granted permission by the Central Bank to engage in specialized banking activities in accordance with the provisions of the Banking Act. Specialized banks refer to banking institutions that cater to a specific economic sector, such as industrial, agricultural, or real estate, in accordance with the regulations governing their establishment. One of the primary activities of a specialized bank is not necessarily the acceptance of demand deposits. Therefore, this study mainly focuses on domestic licensed commercial banks and licensed specialized banks as the population of this study.

3.2 Measurement

The following measurements are utilized for the variables of credit risk, bank-specific factors, and financial performance.

Table 1: Measurement

Concept	Variable	Measurement
Financial Performance	Return on Asset	Net Income / Total Assets
	Return on Equity	Net Income / Total Common Equity
Credit Risk	Non-Performing Loans	Total Nonperforming Loans /Total Loans
	Capital adequacy ratio	Risk-weighted assets / Total Equity
Bank-specific factors	Cost efficiency ratio	Total operating cost / Total revenue
	Average lending Rate	Net Interest Income / Total assets
	Loan to Deposit Ratio	Total Loans / Total deposits
	Bank Size	Log (total assets)

3.3 Regression Models

The following regression models are constructed to examine the impact of credit risk and bank-specific factors on financial performance,

$$ROA_{it}= \beta_0+ \beta_1 NPL_{it} + \beta_2 CAD_{it} + \beta_3 CE_{it} + \beta_4 LDR_{it} + \beta_5 AL_{it} + \beta_6 BS_{it} + \varepsilon_{it.} \rightarrow \quad \textbf{(01)}$$

$$ROE_{it} = \beta_0+ \beta_1 NPL_{it} + \beta_2 CAD_{it} + \beta_3 CE_{it} + \beta_4 LDR_{it} + \beta_5 AL_{it} + \beta_6 BS_{it} + \varepsilon_{it} \rightarrow \quad \textbf{(02)}$$

Where, ROA_{it} - Return on Assets of bank i at time t; NPL_{it} - Non-Performing Loans of bank i at time t; CAD_{it} - Capital Adequacy of bank i at time t; CE_{it} - Cost Efficiency of bank i at time t; LDR_{it} - Loan to Deposit of bank i at time t; ALR_{it} - Annual Lending of bank i at time t; BS_{it} - Bank Size i at time t.

4. DATA ANALYSIS AND DISCUSSION

4.1 Correlation Analysis

In the study, correlation analysis explains the direction and strength of the relationship between the variables of credit risk and bank-specific factors and financial performance.

Table 2: Correlation Matrix

Variable	ROE	ROA	NPL	CAD	CE	LDR	AL
ROA	0.296						
	0.00						
NPL	-0.179	-0.1					
	0.05	0.28					
CAD	-0.214	-0.491	0.227				
	0.02	0.00	0.01				
CE	-0.019	-0.119	-0.366	0.035			
	0.84	0.20	0.00	0.71			
LDR	-0.286	-0.355	0.017	-0.226	-0.266		
	0.00	0.00	0.85	0.40	0.30		
AL	-0.136	0.152	0.335	0.078	-0.273	0.201	
	0.14	0.10	0.00	0.40	0.00	0.03	
BS	0.34	0.384	-0.547	-0.477	0.084	-0.561	-0.498
	0.00	0.00	0.00	0.00	0.36	0.00	0.00

Source: Survey Data

Table 2 represents the correlation matrix for the variables of credit risk, bank-specific factors, and financial performance for the period from 2015 to 2021. Non-performing loans (r=-0.179, p<0.05), capital adequacy (r=-0.214, p<0.05), and loan to deposit (r=-0.286, p<0.01) have a negative association with return on equity while bank size (r=0.34, p<0.01) is positively correlated with return on equity of licensed banks. Furthermore, capital adequacy (r=-0.491, p<0.01), and loan to deposit (r=-0.355, p<0.01) have a negative association with return on assets while bank size (r=0.384, p<0.01) is positively correlated with return on assets of licensed banks.

4.2 Variance Inflation Factor (VIF)

The VIF is a statistical technique utilized to assess the presence of multicollinearity among variables in a multiple-regression analysis. Multicollinearity is a

phenomenon that arises when there is a significant correlation between two or more independent variables.

Table 3: Variance Inflation Factor

Variable	Coefficient	Centered
	Variance	VIF
C	0.000673	NA
NPL	0.000159	2.043984
CAD	0.000139	1.534033
CE	0.000017	1.414692
LDR	0.000016	1.821832
AL	0.004813	1.569044
BS	0.000003	3.595243

Source: Survey Data

Table 3 depicts the variance inflation factor of the regression. The coefficient values of VIF for all variables are below 10. Therefore, it can be concluded there is no multicollinearity problem exists in the regression model.

4.3 Unit Root Test

Table 4: Results of Unit Root Test

Variables	Zero level		1st Difference	
	t statistics	Prob.	t statistics	Prob.
AL	-4.4855	0.0004		
BS	-2.4651	0.1267	-11.3609	0.0000
CAD	-3.5918	0.0073		
CE	-4.5867	0.0002		
LDR	-4.9206	0.0001		
NPL	-2.6052	0.0948	-9.0235	0.0000
ROA	-6.1991	0.0000		
ROE	-9.0212	0.0000		

Source: Survey Data

As seen in Table 4, bank size and non-performing loans have stationery at first difference whereas other variables such as average lending, capital adequacy, cost efficiency, loan to deposit; return on assets, and return on equity have stationery at zero level.

4.4 Panel Data Regression Analysis

Table 5: Regression Coefficient for Return on Assets

Variable	Fixed Model			Random Model		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
C	0.0757	1.4530	0.1495	0.0045	0.1646	0.8696
NPL	-0.0657	-2.7400	0.0073	-0.0488	-3.4524	0.0008
CAD	-0.0288	-1.7290	0.0871	-0.0379	-2.9370	0.0040
CE	-0.0067	-1.3100	0.1933	-0.0094	-2.1757	0.0317
LDR	-0.0053	-1.0150	0.3125	-0.0043	-0.9985	0.3202
AL	0.4033	6.0380	0.0000	0.3564	5.7656	0.0000
BS	-0.0054	-1.2070	0.2303	0.0011	0.5268	0.5993
R –squared	0.7500					0.3289
Adjusted R- squared	0.6927					0.2929

F-statistic	13.0925(0.000)			9.1474 (0.000)	
Chi-Sq. Statistic				23.8591(0.0006)	

Source: Survey Data

Table 5 represents the results of panel data regression analysis to examine the impact of credit risk and bank-specific factors on the return on assets of licensed commercial banks in Sri Lanka. Based on the Hausman test, the fixed effect model is better than the random effect model.

As seen in Table 5, the results of the fixed effect model show that the adjusted R-squared value is 0.6927 indicating that 69.27% of the observed variation on return on assets can be explained by the variables such as non-performing loans, capital adequacy, cost efficiency, loan to deposit, average lending and bank size. The remaining 30.73% is not explained in this model. Moreover, table 5 shows that non-performing loan has a negative impact on return on assets (ß=-0.0657, $p<0.05$) whereas average lending has a positive impact on return on assets (ß= 0.4033, $p<0.01$) of licensed banks. Therefore, H_{1a} and H_{2b} are supported with findings in terms of return on assets. There is a significant impact of non-performing loans on financial performance. Other variables such as capital adequacy, cost efficiency, loan to deposit and bank size have no significant impact on return on assets of licensed banks.

Table 6 represents the results of panel data regression analysis to examine the impact of credit risk and bank-specific factors on the return on equity of licensed commercial banks in Sri Lanka. Based on the results of the Hausman test, the random effects model is better than the fixed effects model.

Table 6: Regression Coefficient for Return on Equity

Variable	Fixed Model			Random Model		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
C	3.2695	1.456	0.1487	-0.1291	-0.1517	0.8797
NPL	-0.8656	-0.8378	0.4042	-0.4302	-1.0237	0.3082
CAD	-0.1003	-0.1398	0.8891	-0.2357	-0.602	0.5484
CE	-0.0386	-0.1751	0.8613	-0.1066	-0.7784	0.438
LDR	-0.2003	-0.8989	0.371	-0.1735	-1.2876	0.2005
AL	2.6913	0.9351	0.3521	0.2722	0.1223	0.9029
BS	-0.2571	-1.3437	0.1822	0.0466	0.7883	0.4322
R –squared	0.3111					0.1051
Adjusted R- squared	0.1532					0.0572
F-statistic	1.9702 (0.0130)				2.1924 (0.0488)	
Chi-Sq. Statistic					9.4857 (0.148)	

Source: Survey Data

As seen in Table 6, the results of the random effect model show that the adjusted R-squared value is 0.0572 indicating that 5.72% of the observed variation on return on equity can be explained by the variables such as non-performing loans, capital adequacy, cost efficiency, loan to deposit, average lending and bank size. The remaining 94.28% is not explained in this model. Furthermore, non-performing loan (ß=-0.4302, $p<0.05$), capital adequacy (ß=-0.2357, $p<0.05$), cost efficiency (ß=-0.1066, $p<0.05$), loan to deposit (ß=-0.1735, $p<0.05$), average lending (ß=0.2722,

p<0.05) and bank size (ß=0.0466, p<0.05) have not shown any significant impact on return on equity. Therefore, other hypotheses are not supported by findings.

5.   CONCLUSION

The present study investigated the impact of credit management and bank-specific factors on licensed bank's financial performance during the period from 2015 to 2021. It is concluded that non-performing loan has a significant negative impact on banks' financial performance in terms of return on assets. The study findings are consistent with the previous studies conducted by Siddique, Asif and Zeeshan (2021), Liyanage, Dewa and Ismail (2021), and Jackson and Tamuke (2022). Whilst considering the bank-specific factors, average lending has a significant positive impact on a bank's financial performance in terms of return on equity. Other variables have not shown any significant impact on the financial performance of licensed banks.

It is recommended that banks prioritize risk management efforts. To mitigate loan risk and optimize performance, banks must allocate additional funds toward managing default rates and strive to maintain an optimal level of asset quality. Every credit function should be held accountable for reporting the complete collection of data on credit risk into an independent risk system. The responsibility should be delegated to the credit risk management committee or the credit control committee. Furthermore, this committee should formulate clear credit policies described by the regulator, and it needs to be responsible for the setting up of a credit risk management department, which should lay down risk assessment systems, monitor the quality of the loan portfolio, and identify problems and correct deficiencies, develop management Information System, and undertake loan review or audit.

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