



Evaluating the Efficacy of Risk Management Practices and Their Necessity for Enhancing the Profitability of Financial Institutions in Sri Lanka

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Aims: This study aims to assess the effectiveness of credit and liquidity risk management practices employed by banking and non-banking financial institutions in Sri Lanka prior to the economic crisis that began in 2022, and to determine whether these practices contribute to enhancing profitability.
Study Design: The investigation employed quantitative research utilizing time series data.
Place and Duration of the Study: The study collected annualised quarterly data between 2014 and 2021 from the Central Bank reports of Sri Lanka.
Methodology: The study utilised a multiple regression model using EViews software.

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Results: The findings revealed that banking and non-banking financial institutions in Sri Lanka demonstrated effective credit risk management practices, which significantly contributed to enhancing profitability. Conversely, inadequate liquidity risk management practices in both types of financial institutions significantly contributed to reducing profitability. Moreover, the financial institutions yielded very low profits relative to total assets during the study period.

Practical Implications: The findings offer practical insights for financial institutions, underscoring the importance of maintaining effective credit and liquidity risk management practices to enhance profitability.

Research Limitations: Data collection began in the first quarter of 2014, coinciding with the Central Bank's publication of comprehensive indicators for non-banking financial institutions from the fourth quarter of 2013 onwards. The data collection extended until the end of 2021. This timeframe was selected due to the adoption of more liberal credit policies by financial companies and the onset of liquidity challenges in 2022 resulting from the economic crisis in Sri Lanka.

Originality: This study is the first to compare the impact of credit and liquidity risk management practices on profitability between banking and non-banking financial institutions in Sri Lanka.

Keywords: Banking Institutions; credit risk; liquidity risk; non-banking financial institutions; profitability.

1. INTRODUCTION

The financial sector has experienced substantial growth over the past two decades as more individuals engage with financial institutions for various services. This expansion significantly contributes to the health of a country's financial system. Tektas, Ozkan-Gunny, and Gunay [1] emphasized the importance of profitability for financial institutions in maintaining the stability of the financial system. Internal and external factors influence the profitability of financial institutions, with asset-liability management being a crucial determinant [2,3,4,5-7]. Tee [8] revealed that proper asset-liability management controls various financial risks, thereby enhancing profitability.

Asset-liability management is a critical financial decision within an organization. Financial institutions, in particular, prioritize matching assets and liabilities due to their extensive involvement in borrowing and lending activities. The primary liability of a financial institution is to ensure the availability of liquid assets or money to refund customers or lenders for their deposits or loans upon request. This is known as liquidity risk, which arises when financial institutions fail to fulfill these requests promptly. Asset management in financial institutions involves collecting loans and advances from borrowers without default. This is referred to as credit risk, defined as the risk that promised cash flows from loans and advances may not be fully repaid by borrowers. Therefore, managers of financial institutions must meticulously plan and control their asset and liability structures to minimize liquidity and credit risks, thereby enhancing profitability.

The models of Diamond and Dybvig [9] and Bryant [10] revealed that a bank's asset and liability structures are closely linked, particularly concerning borrower defaults and fund withdrawals. Ghenimi, Chaibi, and Omri [11] asserted that credit and liquidity risks, among other financial risks, are not only primary financial risks but also intricately linked to the core operations of financial institutions and the causes behind institutional failures. They further elucidated that the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC) officially reported the failure of a majority of commercial banks during the recent financial crisis due to the simultaneous occurrence of liquidity and credit risks. Imbierowicz and Rauch [12] found that credit and liquidity risks collectively impact the stability of banks in the USA. They highlighted these risks as fundamental, as they directly influence the stability of a bank.

The net income, or profitability, of the financial sector is intricately linked to its interest income and interest expenses. Interest income, the primary source of revenue for the financial sector, primarily arises from loans, advances, and receivables. Conversely, interest expenses mainly result from deposits and borrowings.

Effective risk management is crucial for the survival and sustainability of the financial sector. It allows management to allocate resources efficiently to various risk units by balancing the tradeoff between risks and potential returns. This process ensures that financial institutions can maximize profitability while maintaining an acceptable level of risk. Effective risk management involves identifying, assessing, and

mitigating risks to minimize potential negative impacts on the institution's financial health. By doing so, financial institutions can enhance their decision-making processes, improve their financial stability, and ensure long-term profitability.

While numerous studies have investigated the effectiveness of liquidity and credit risk management practices and their impact on profitability in commercial banks, none have explored a comparative analysis between banking institutions and non-banking financial institutions (NBFIs) in both Sri Lanka and foreign contexts. This underscores the necessity for a comprehensive analysis to understand the effectiveness of these risk management practices and their impact on profitability and stability between banks and NBFIs. Additionally, with financial companies adopting more liberal credit policies and facing liquidity challenges during the economic crisis in Sri Lanka that began in 2022 and continues, there is a pressing need to examine the effectiveness of credit and liquidity risk management in both banking and non-banking financial institutions before the crisis and its subsequent impact on profitability. This study aims to fill this gap by providing valuable insights into the comparative risk management practices and their implications for profitability between banking institutions and NBFIs.

2. LITERATURE REVIEW

Financial institutions inherently encounter numerous risks in their operations, including liquidity risk, credit risk, market risk, interest rate risk, foreign exchange risk, operational risk, and compliance risk. These risks necessitate the implementation of robust risk management strategies to mitigate their potential impact. Effective risk management strategies are crucial for financial institutions to identify, assess, and mitigate these risks, thereby ensuring their stability, profitability, and compliance with regulatory requirements.

Weersainghe and Perera [13] conducted a study focusing on Sri Lankan commercial banks spanning from 2001 to 2011. They found that these banks exhibited lower liquidity assets to meet depositor demands, which consequently had a significantly negative impact on profitability. Notably, the study also observed that credit risk did not exert a significant influence on profitability during the same period. There is a

critical importance of maintaining adequate cash holdings, particularly for financially unstable banks, to mitigate risk and bolster profitability [13]. In a contrasting investigation, Khan and Ali [14] explored the nexus between liquidity and profitability in commercial banks within Pakistan. Utilising data extracted from Habib Bank Limited's annual accounts spanning from 2008 to 2014, they uncovered a notable positive relationship between liquidity assets and banks' profitability. Their findings suggested that higher levels of liquidity were correlated with enhanced profitability within the Pakistani banking sector. Conversely, Akter and Mahmud [15] delved into the relationship between liquidity assets and banks' profitability in Bangladesh. Their study encompassed twelve banks, including government banks, Islamic banks, multinational banks, and private commercial banks, over the period from 2006 to 2011. However, their research yielded results indicating an insignificant relationship between liquidity assets and banks' profitability in Bangladesh during the specified timeframe.

There was a negative significant impact of credit risk on the profitability of the banking industry in Sri Lanka, while liquidity risk had an insignificant impact on profitability between the first quarter of 2008 and the third quarter of 2021 [16]. Examining a panel dataset consisting of six systemically important commercial banks for the period from 2006 to 2016, Madhuwanthi and Morawakage [17] investigated the impact of liquidity risk on performance. Their study revealed a significant negative effect of liquidity risk on bottom-line return on average assets (ROAA) and return on average equity (ROAE). However, liquidity risk exhibited a positive impact on the top-line net interest margin (NIM) of commercial banks. The linear regression analysis showed a significant inverse relationship between commercial bank performance (ROA) and credit risk, measured by default rate, cost per loan asset, and capital adequacy ratio in Nepal for the period of 2001 to 2012 [18]. In a study by Li and Zou [19], the relationship between credit risk management and profitability of commercial banks was examined using data collected from the largest 47 commercial banks in Europe spanning from 2007 to 2012. The findings indicated that credit risk management had positive effects on the profitability of commercial banks. Contrastingly, ROA of commercial banks did not show a significant relationship with credit risk measures in Kenya between 2004 and 2008 [20].

In South East Asian countries between the years 2004-2016, liquidity risk has a positive significant impact on bank performance in normal conditions, while its effect on bank performance is negative during a financial crisis [21]. Furthermore, Huong et al. [21] found that credit risk had a positive significant impact on bank performance. Chenga, Nsiah, Charles, and Ayisid [22] explored the influence of credit risk, operational risk, and liquidity risk on the profitability of banks registered on the Johannesburg Stock Exchange (JSE). The study employed Smart PLS-SEM for the selected period from 2012-2018. An increase in credit risk significantly increased profitability. Similarly, an increase in liquidity assets (lower liquidity risk) supported a significant increase in profitability [22].

The study by Afriyie and Akotey [23] examining the relationship between non-performing loans (NPL) and the profitability of rural banks in Ghana during the period from 2006 to 2010 reveals a noteworthy positive correlation. Despite encountering elevated loan losses, these banks were able to sustain profitability throughout the specified timeframe. In a study conducted by Charles and Kenneth [24], the investigation into the impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria from 2004 to 2009 was explored. Their research encompassed variables such as non-performing loans (NPL), Loan Loss Provisions (LLP), Loans and Advances (LA), Capital Adequacy Ratio (CAR), and Return on Asset (ROA). Their findings indicated that robust credit risk management and capital adequacy positively influenced bank financial performance, with the exception of loans and advances, which exhibited a negative impact on profitability. Utilizing a fixed-effect model, Serwadda [25] investigated the impact of non-performing loans, loan loss provisions, and growth in interest earnings on loans and advances on banks' return on assets (ROA) in Uganda from 2006 to 2015. Their findings revealed a significant negative impact of non-performing loans on ROA, while loan loss provisions and growth in interest earnings on loans and advances positively affected profitability. Ultimately, Serwadda [25] concluded that effective credit risk management enhances the profitability of commercial banks in Uganda.

Across various contexts, the impact of credit risk management on bank profitability emerges as a crucial determinant. Bandara, Jameel, and

Haleem's [26] analysis of Sri Lankan banks from 2010 to 2017, employing random-effect panel regression, underscores the significance of good credit risk management in bolstering profitability, with the non-performing loan ratio exhibiting a significant negative impact on return on assets (ROA). Similarly, Kapilarathne and Weligamage [27] corroborate this finding, revealing that a reduction in credit risk positively affects the return on assets (ROA) of commercial banks in Sri Lanka between 2014 and 2018, as evidenced by the significant negative effect of non-performing loans on ROA. Transitioning to Indonesia, Amaliah and Hassan [28] examined the relationship between credit risk, liquidity, capital adequacy, and bank profitability among state-owned banks from 2007 to 2016. Their findings unveil a significant negative effect of the non-performing loan ratio and loan-to-deposit ratio on profitability, underlining the pivotal role of credit risk management.

Ahmadyan [29] investigated the impact of credit risk management on the profitability of Iranian banks over the period from 2006 to 2016. Utilizing metrics such as non-performing loan to total loan, loan loss reserve on total non-performing loan, net charge-off to total loans, and loan loss provision to total loan to measure credit risk, the study assessed profitability through metrics including return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The penal regression results underscored that poor credit risk management significantly reduces both profitability and bank survivability. The random-effect panel regression model revealed that capital adequacy has a positive and significant impact on banks' return on assets (ROA) in Sri Lanka, while non-performing loans and operating cost efficiency have significant and negative impacts on ROA over the period from 2006 to 2015 [30]. Furthermore, the rest of the selected variables, including bank size, liquidity, asset quality, and managerial efficiency, were found to have no significant impact on the profitability of commercial banks in Sri Lanka.

Repkova [31] observed a positive impact of loan-to-deposit ratio and loan loss provision on assets ratio on banking efficiency in the Czech banking sector between 2001 and 2012, revealing that lower riskiness leads to improved banking efficiency. Wijewardana and Wimalasiri [32] found that credit risk and liquidity risk had an insignificant impact on return on assets (ROA) and return on equity (ROE) of commercial banks in Sri Lanka between 2011 and 2016.

Additionally, Funso, Kolade, and Ojo [33] noted a reduction in banks' profitability due to non-performing loans in Nigeria between 2000 and 2010.

The existing literature predominantly focused on commercial banks, both domestically and internationally, with only a limited number of studies examining the interconnectedness of credit risk and liquidity risk within a single sample. Despite recognizing their interdependence, prior research fails to explore the impact of these risks on the profitability between banking and non-banking financial institutions. This gap underscores the necessity for a comprehensive analysis of risk management practices between banking and non-banking financial institutions. Moreover, the onset of the economic crisis in 2022 heightened the challenges facing financial institutions in Sri Lanka, including difficulties in loan collection and meeting customer demands. Economic crises exert significant pressure on financial institutions, exacerbating credit and liquidity risks, among other challenges. Therefore, this study aims to evaluate the efficacy of credit and liquidity risk management in both banking and non-banking financial institutions in Sri Lanka, analyzing their impact on profitability prior to the crisis.

3. METHODOLOGY

The investigation analysed time series data, utilising annualised quarterly data from 2014 to 2021. This data covered both banking and non-banking financial institutions regulated by the Central Bank of Sri Lanka. Data collection relied on the Financial Soundness Indicators (FSIs) published by the Central Bank of Sri Lanka. The study excluded data post-2021 due to abnormalities stemming from Sri Lanka's recent economic crisis.

The study analysed two dimensions of independent variables categorised as liquidity risk management and credit risk management. Liquidity risk management was measured by the ratio of liquid assets to deposits and borrowings, while credit risk management was assessed using the ratio of net non-performing loans and advances to total loans and advances. Return on Assets (ROA) was selected as the dependent variable to measure profitability. ROA is a key metric for evaluating the profitability of financial institutions [13,34,35].

To analyse the data, the author used EViews software and employed multiple regression to

evaluate the impact of liquidity and credit risk management on the profitability of financial institutions in Sri Lanka. The researcher formulated the following multiple regression model to examine this objective:

$$ROA_t = \beta_0 + \beta_1 (NPLA/TLA)_t + \beta_2 (TLQA/TDB)_t + \varepsilon_t \quad (1)$$

In this model:

ROA represents the Return on Assets, the dependent variable.

NPLA / TLA is the ratio of Net Non-performing Loans and Advances to Total Loans and Advances, representing credit risk management.

TLQA / TDB is the ratio of Total Liquidity Assets to Total Deposits and Borrowings, representing liquidity risk management.

β_0 is the intercept of the regression.

β_1 , and β_2 are the coefficients for the respective independent variables.

ε is the error term.

4. RESULTS AND DISCUSSION

This section covers the descriptive statistics, checks for classical assumptions of the regression model, and presents the multiple regression results.

4.1 Descriptive Statistics

Descriptive statistics of each selected variable for banking and non-banking financial institutions are shown in Table 1 and Table 2, respectively. These tables provide a summary of the basic characteristics of the selected variables, including the mean, median, minimum, maximum, and standard deviation. Additionally, skewness, kurtosis, and the Jarque-Bera test statistics along with their probabilities are presented, which will be used in the next section to check the normality of the data.

According to Table 1, the banking sector in Sri Lanka had an average Return on Assets (ROA) of 1.228 percent annually, with a standard deviation of 0.190 percent over the study period. The maximum annual profit recorded during this period was 1.434 percent. Between 2014 and 2021, the average and maximum ROA statistics indicate that the banking sector in Sri Lanka experienced relatively low profits on total assets.

This suggests a need for management to implement strategies aimed at increasing income and reducing expenses in the coming years. Despite the low profits, the minimum ROA value indicates that all banks generated profits and did not incur losses during the selected period.

The study employed the ratio of non-performing loans and advances to total loans and advances as a measure of credit risk. The findings indicate that the banking sector in Sri Lanka has demonstrated effective credit risk management, as evidenced by the average and maximum values of the non-performing loans and advances ratio. This suggests that the banking sector in Sri Lanka maintained robust credit risk management practices up to the end of 2021. Furthermore, the study utilized the ratio of liquid assets to deposits and borrowings as a measure of liquidity risk management. The data reveals that the banking sector maintained a liquidity assets ratio of 42.134 percent to satisfy the demands of depositors and lenders during the study period. However, both the mean and maximum values suggest that liquidity risk management was less effective in the banking sector in Sri Lanka from 2014 to 2021.

Table 01 highlights the key contrast between credit risk management and liquidity risk management in the banking sector in Sri Lanka

before the economic crisis of 2022. It effectively communicates that while credit risk management was effective, liquidity risk management was deemed less effective during the period from 2014 to 2021. This provides a clear understanding of the divergent risk management performances within the banking sector before the crisis.

Based on the findings in Table 2, the mean Return on Assets (ROA) for the non-banking financial sector indicates an average annual profit of 2.681 percent relative to total assets during the selected period. The standard deviation of 1.261 percent shows the variation in annual profits, suggesting that actual profits typically deviated by this amount from the mean. Furthermore, the maximum annual profit achieved by the non-banking financial sector within the study period was 4.620 percent. Similar to the banking sector, the non-banking financial sector also experienced years with low profits during the selected period. Thus, the management of the non-banking financial sector still needs to implement strategies aimed at increasing income and reducing expenses in the coming years. The minimum value reveals that non-banking financial institutions suffered losses in some years. However, overall, the non-banking financial sector demonstrated slightly higher profitability than the banking sector.

Table 1. Descriptive statistics of banking institutions

	ROA	NPLA/TLA	TLQA/TDB
Mean	1.228	2.371	42.134
Median	1.299	2.343	41.831
Maximum	1.434	4.459	48.720
Minimum	0.888	1.248	35.749
Std. Dev.	0.190	0.833	3.693
Skewness	-0.710	0.763	0.280
Kurtosis	1.945	3.217	1.933
Jarque-Bera	4.170	3.168	1.935
Probability	0.124	0.205	0.380

Note: Author's Calculation. The results of all selected variables are in percentage.

Table 2. Descriptive statistics of non -banking financial institutions

	ROA	NPLA/TLA	TLQA/TDB
Mean	2.681	2.396	11.456
Median	2.914	2.253	11.276
Maximum	4.620	5.104	14.820
Minimum	-2.310	1.114	9.299
Std. Dev.	1.261	1.021	1.463
Skewness	-1.872	0.727	0.465
Kurtosis	8.756	2.853	2.383
Jarque-Bera	62.861	2.846	1.662
Probability	0.000	0.241	0.436

Note: Author's Calculation. The results of all selected variables are in percentage.

The ratio of non-performing loans and advances to total loans and advances indicates that the non-banking financial sector has effective credit risk management, with non-performing loans and advances averaging only 2.396 percent of total loans during the selected period. Tables 1 and 2 report that both the banking and non-banking financial sectors in Sri Lanka exhibited effective credit risk management between 2014 and 2021, suggesting that the financial sector has been successful in managing and mitigating credit risk during this time.

However, the ratio of liquid assets to deposits and borrowings indicates ineffective liquidity risk management in the non-banking financial sector. The data reveals that non-banking financial institutions had only 11.456 percent liquidity assets available to meet the demands of depositors and lenders during the selected period. This low percentage suggests potential difficulties in fulfilling withdrawal and repayment requests, highlighting a significant vulnerability in the sector's liquidity position.

Based on the credit and liquidity measurements of both the banking and non-banking financial sectors, it is evident that financial institutions in Sri Lanka demonstrated effective credit risk management before the economic crisis period starting in 2022. However, these institutions exhibited ineffective liquidity risk management during the same period. While the banking sector's liquidity risk management was slightly better than that of the non-banking financial sector between 2014 and 2021, it was still not optimal.

These findings underscore the necessity for both banking and non-banking financial institutions to enhance their liquidity risk management practices to ensure greater financial stability.

4.2 Checking Classical Assumptions of the Regression Model

The study utilized time series data with two independent variables and one dependent variable. To ensure the accuracy of the selected model, the study conducted several diagnostic tests, including normality test, multicollinearity test, autocorrelation test and heteroskedasticity test. These tests were performed to validate the robustness and reliability of the model used in the study.

The first test conducted was a normality test, with Tables 1 and 2 providing skewness, kurtosis, and Jarque-Bera statistics to assess the normality of the selected data. In Table 1, the skewness and kurtosis of all selected variables for the banking sector were close to zero and three or less, respectively, indicating a near-normal distribution. Additionally, the probabilities of the Jarque-Bera test for all selected variables were greater than 0.05, supporting the normality assumption.

In Table 2, the skewness and kurtosis of two independent variables for non-banking institutions were close to zero and three or less, respectively, and the probability values of the Jarque-Bera test for both variables were greater than 0.05, indicating a normal distribution. However, the skewness and kurtosis of the ROA data for the non-banking financial sector were not near zero and three, respectively, and the probability of the Jarque-Bera test was less than 0.05, suggesting a non-normal distribution. To address this, the study applied a natural logarithm transformation to the ROA data of the non-banking financial sector. After transformation, the skewness and kurtosis were -0.714 and 2.823, respectively, and the probability of the Jarque-Bera test was 0.262, indicating a normal distribution. Therefore, the study ensured that all data sets for both the banking and non-banking financial sectors met the normality assumption required for further statistical analysis.

The second test conducted was multicollinearity testing, which is crucial in regression analysis to ensure that independent variables are not highly correlated with each other. The study used Variance Inflation Factor (VIF) values to assess multicollinearity, with VIF values less than 5 indicating no multicollinearity problem. This test helps ensure that each independent variable contributes unique information to the regression model, without redundancy or excessive correlation with other variables, which could distort the estimation of coefficients and affect the interpretation of the model.

Table 3 presents the VIF values of independent variables categorized under banking and non-banking financial institutions. Table 3 shows that the VIF values for both independent variables are below the threshold of 5. This suggests that there is no significant multicollinearity issue between the independent variables in the regression model.

Table 3. Collinearity statistic test

Independent variable	Centered VIF	
	Banking sector	Non-banking financial sector
NPLA/TLA	1.457	1.331
TLQA/TDB	1.457	1.331

Note: Author's Calculation.

The Durbin-Watson statistic is indeed a commonly used test for autocorrelation in regression analysis. Table 5 and Table 6 present the regression outcomes for the banking and non-banking financial institutions respectively, including the Durbin-Watson statistic. Since the Durbin-Watson statistic falls between 1.5 and 2.5 for both categories of financial institutions, it indicates that there is no autocorrelation problem in the selected time period for either dataset. The absence of autocorrelation is crucial for regression analysis as it ensures that the residuals (errors) from the regression model are independent of each other across time periods. With no autocorrelation detected, the study can trust that the regression model adequately captures the relationships between the variables without being affected by serial correlation in the residuals.

The Breusch-Pagan-Godfrey test is a commonly used test for heteroskedasticity in regression analysis. Heteroskedasticity occurs when the variance of the errors (residuals) is not constant across observations, which can lead to inefficient and biased estimates of the regression coefficients. Table 4 presents the results of the heteroskedasticity test using the Breusch-Pagan-Godfrey method.

If the probabilities associated with the Chi-square test statistic in Table 4 for both the banking and non-banking financial sectors are greater than 0.05, it indicates that there is no evidence of heteroskedasticity. This means that the assumption of homoskedasticity (constant variance of errors) holds for both datasets.

4.3 Multiple Regression Analysis

Confirming that all four classical assumptions for regression analysis have been met provides a solid foundation for running the regression model to examine the objectives of the study. Tables 5 and 6 present the multiple regression results for banking and non-banking financial institutions respectively. Running the regression model with the selected variables and dataset allow to explore the relationships between the variables

of interest and test the hypotheses or research questions outlined in the study. This regression analysis is provide valuable insights into the factors influencing the dependent variable and help to draw meaningful conclusions from data set.

An adjusted R-squared value of 37.65 percent for the banking sector in Sri Lanka suggests that approximately 37.65 percent of the variability in profitability (ROA) can be attributed to the credit and liquidity risk management variables included in the regression model, after accounting for the effects of sample size and the number of independent variables. The p-value of the F-statistic was less than 0.05, indicating that the regression model is statistically significant. Therefore, it can be concluded that the model is fit for examining the objectives of the study.

The coefficients for net non-performing loans and advances on total loans and advances, and liquidity assets to deposits and borrowings were significant at the 5 percent significance level. Net non-performing loans and advances on total loans and advances had a significant negative impact on the profitability of the banking sector, while liquidity assets to deposits and borrowings had a significant positive impact on the profitability of the banking sector in Sri Lanka. The findings revealed that lower credit and liquidity risks contribute to increasing the profitability in the banking sector in Sri Lanka. Therefore, it is imperative for the banking sector to maintain effective credit and liquidity risk management strategies to enhance profitability and ensure sustained financial health.

The adjusted R² value of 64.43 percent indicates that credit and liquidity risk management explain 64.43 percent of the variability in profitability (ROA) for the non-banking financial sector in Sri Lanka, after accounting for sample size and the number of independent variables. This high adjusted R² value underscores the significant impact that credit and liquidity risk management had on the financial performance of these institutions. It suggests that improvements in these areas could lead to substantial gains in profitability. The p-value of the F-statistic was

less than 0.05, indicating that the regression model is statistically significant. Thus, it can be concluded that the model is suitable for examining the impact of credit and liquidity risk management on the profitability (ROA) of the non-banking financial sector in Sri Lanka.

The study found that the coefficients for net non-performing loans and advances on total loans and advances, and liquidity assets to deposits and borrowings, were significant at the 5 percent

significance level. Specifically, net non-performing loans and advances had a significant negative impact on profitability, while liquidity assets to deposits and borrowings had a significant positive impact on profitability of non-banking financial sector in Sri Lanka. These findings indicate that lower credit and liquidity risks contribute to increasing profitability, highlighting the necessity for the sector to maintain effective credit and liquidity risk management to enhance profitability.

Table 4. Heteroskedasticity Test: Breusch-Pagan-Godfrey

	Banking sector	Non-banking financial sector
Obs*R-squared	4.926	5.810
Prob. Chi-Square (2)	0.085	0.055

Note: Author's Calculation.

Table 5. Regression results of banking institutions

Dependent Variable: ROA
 Method: Least Squares
 Date: 10/16/23 Time: 09:37
 Sample: 2014Q1 2021Q4
 Included observations: 32

Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.184	0.329	0.560	0.5799
NPLA/TLA	-0.162	0.039	-4.165	0.0003
TLQA/TDB	0.034	0.009	3.855	0.0006
R-squared	0.4167	Mean dependent var		1.2276
Adjusted R-squared	0.3765	S.D. dependent var		0.1897
S.E. of regression	0.1498	Akaike info criterion		-0.8699
Sum squared resid	0.6508	Schwarz criterion		-0.7324
Log likelihood	16.918	Hannan-Quinn criter.		-0.8243
F-statistic	10.361	Durbin-Watson stat		1.5936
Prob(F-statistic)	0.0004			

Note: Author's Calculation.

Table 6. Regression results of non- banking financial institutions

Dependent Variable: ROA
 Method: Least Squares
 Date: 10/16/23 Time: 09:47
 Sample: 2014Q1 2021Q4
 Included observations: 32

Independent variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.069	1.093	1.892	0.0685
NPLA/TLA	-1.150	0.153	-7.538	0.0000
TLQA/TDB	0.294	0.106	2.760	0.0099
R-squared	0.6672	Mean dependent var		2.6810
Adjusted R-squared	0.6443	S.D. dependent var		1.2607
S.E. of regression	0.7519	Akaike info criterion		2.3567
Sum squared resid	16.3963	Schwarz criterion		2.4942
Log likelihood	-34.707	Hannan-Quinn criter.		2.4023
F-statistic	29.072	Durbin-Watson stat		1.5246
Prob(F-statistic)	0.0000			

Note: Author's Calculation.

According to Tables 5 and 6, the impact of non-performing loans on profitability is both significant and negative, indicating that a lower level of non-performing loans, which suggests higher asset quality and lower credit risk, is associated with increasing profitability. This negative relationship underscores the detrimental effect of credit risk on the financial health of financial sector. It highlights the importance of effective credit risk management practices to maintain a healthy loan portfolio and enhance overall profitability. The liquidity assets on total deposits and borrowings had a significant and positive impact on profitability. A higher proportion of liquidity assets relative to deposits and borrowings enhances profitability by reducing liquidity risk, ensuring that financial institutions can meet short-term obligations, and enabling them to take advantage of investment opportunities. Adequate liquidity management thus plays a crucial role in sustaining the financial health and profitability of financial sector.

The findings indicate that lower credit risk (as evidenced by lower levels of non-performing loans) and lower liquidity risk (as evidenced by higher liquidity assets relative to deposits and borrowings) are crucial for increasing profitability in the financial sector in Sri Lanka. Effective management of credit and liquidity risks is essential for sustaining and enhancing the financial performance of both banking and non-banking financial institutions.

5. CONCLUSION AND RECOMMENDATIONS

Analyzing the efficacy of credit and liquidity risk management in both banking and non-banking financial institutions in Sri Lanka and its impact on profitability is a critical endeavor. The descriptive statistics revealing effective credit risk management practices but ineffective liquidity risk management practices among financial institutions, including both banking and non-banking sectors, for the sample period from 2014 to 2021. Further, it suggests that non-banking financial institutions face greater challenges or deficiencies in managing liquidity risks compared to banking institutions during the specified period.

The studies, including those by Weersainghe and Perera [13], Wijewardana and Wimalasiri [32], Madhuwanthi and Morawakage [17], Suganya and Kengatharan [30], Larojan [16], and Kapilarathne and Weligamage [27], all indicate

that the banking sector in Sri Lanka has been successful in managing credit risks. This suggests that banks in Sri Lanka have implemented robust policies and practices to assess, monitor, and mitigate credit risks associated with their lending activities. Conversely, these studies also consistently highlight the challenges or deficiencies in liquidity risk management practices within the banking sector of Sri Lanka. Bandara et al. [26] also reported an effective credit risk management in the banking sector in Sri Lanka between 2010 and 2016. Thus, based on the collective findings from current and previous studies, there is a consistent conclusion that financial institutions in Sri Lanka have demonstrated effective credit risk management practices while facing challenges or deficiencies in liquidity risk management.

Recognizing the effectiveness of credit risk management practices while acknowledging the shortcomings in liquidity risk management, policymakers and financial institutions' authorities in Sri Lanka needs to focus on implementing measures to strengthen liquidity risk management frameworks in the financial institutions. This could include enhancing liquidity risk assessment tools, establishing appropriate liquidity buffers, and ensuring access to diverse funding sources to mitigate liquidity risks effectively.

The regression results reveal that within banking institutions, both credit risk management and liquidity risk management exert a weak influence on profitability. Conversely, in non-banking financial institutions, both credit risk management and liquidity risk management demonstrate a strong influence on profitability. Furthermore, it is evident that effective credit risk management practices positively influence profitability, while ineffective liquidity risk management practices negatively impact profitability in both banking and non-banking financial institutions.

The findings suggest that when financial institutions encounter liquidity shortfalls, they may need to arrange short-term borrowings at higher interest rates to fulfill immediate demands of depositors and lenders. This scenario can lead to various financial challenges, including increased interest expenses, cash flow strain, credit rating impact, reputation risk, and late payment of earlier borrowings. As a consequence, liquidity constraints unexpectedly elevate expenses and diminish profitability. Conversely, effective credit risk management

practices ensure the timely collection of periodic payments on loans and advances, thereby minimizing delays and defaults. This contributes to increasing profitability through the consistent collection of interest income and repayment of principal on time. Moreover, the coefficients of both independent variables suggest that credit risk management has a slightly greater impact on profitability than liquidity risk management in both the banking and non-banking sectors in Sri Lanka. This finding is consistent with the observation that interest rates on loans and advances generally surpass deposit interest rates, and financial companies also maintain effective credit risk management practices. In summary, these findings underscore the importance of prioritizing both credit risk management and liquidity risk management in financial institutions. Implementing robust risk management practices can enhance financial stability, mitigate risks, and ultimately bolster profitability across the banking and non-banking sectors.

According to Wijewardana and Wimalasiri [32], commercial banks in Sri Lanka exhibited effective credit risk management, resulting in a positive impact on profitability, while ineffective liquidity risk management decreased profitability during the period from 2011 to 2016. However, it's worth noting that both risk management practices had an insignificant impact on overall profitability. The findings of the current study are consistent with those of Larojan [16] and Suganya and Kengatharan [30], who reported that effective credit risk management significantly increased profitability, whereas ineffective liquidity risk management reduced profitability, though this reduction was insignificant. Similarly, Bandara et al. [26] and Kapilarathne and Weligamage [27] found that effective credit risk management significantly supported profit increases in commercial banks in Sri Lanka. These consistent findings across multiple studies underscore the importance of credit risk management in enhancing profitability, despite the challenges posed by liquidity risk management.

Research across various countries has consistently demonstrated the critical role of credit risk and liquidity risk management in enhancing the profitability of banks and financial institutions. Studies by Al-Husainy and Jadah [36] in Iraq, Amaliah and Hassan [28] in Indonesia, and Saleh and Afifa [37] in Jordan provide robust evidence that both credit risk and

liquidity risk management significantly contribute to increasing banks' profits in their respective regions. The findings by Noman, Pervin, Chowdhury, and Banna [38] in Bangladesh, Serwadda [25] in Uganda, and Ahmadyan [29] in Iran underscore the importance of effective credit risk management in supporting banking profitability while Wani and Dar [39] reported that liquidity risk management significantly enhances the profitability of the Indian insurance industry. These findings align with the current study, highlighting the universal importance of proficient credit risk and liquidity risk management in bolstering profitability across diverse banking and financial sectors worldwide.

The study concludes that while effective credit and liquidity risk management are vital for enhancing the profitability of financial sectors, the profits of both banking and non-banking financial sectors demonstrated only minimal growth during the study period. Consequently, management should take actions to increase profitability by reducing interest expenses, increasing interest incomes, and further enhancing fee and commission income while minimizing fee and commission expenses, which are more impactful items in the financial institutions' profitability. The study advises financial institutions to adopt prudent strategies for reducing liquidity risk. This involves collecting more deposits and investing them in less risky short-term assets with higher return potential to satisfy the demands of depositors and lenders, thereby avoiding the need for sudden arrangements of high-interest finance.

Indeed, it seems the study has the potential to provide valuable insights to a wide range of stakeholders. Financial institutions could use the findings to refine their risk management practices, potentially improving their stability and profitability. Customers may benefit from a better understanding of how these institutions manage risks, which could enhance trust and confidence in the financial system. Government and regulatory bodies like the Central Bank of Sri Lanka might find the research helpful in shaping policies that promote sound risk management practices and ensure the stability of the financial sector. Economists and other interested parties could use the findings to further their understanding of the relationship between risk management and financial performance.

The study acknowledges certain limitations that influenced its findings. One such limitation is the

restricted access to data, particularly concerning non-banking financial institutions, whose financial indicator data was only available from the fourth quarter of 2013 in the central bank report. Consequently, data collection for both banking and non-banking financial institutions began from the first quarter of 2014. Additionally, the study was constrained to collect data only up to the end of 2021 due to the emergence of an economic crisis in Sri Lanka. This crisis prompted liberal credit policies and liquidity challenges for financial companies starting from 2022. As a result of these limitations in data availability, the ability to analyze the long-term effects of risk management practices on profitability is restricted.

Despite these limitations, the study offers valuable insights and implications for future research. Future researchers could explore the impact of other types of risks on the profitability of financial institutions, going beyond credit and liquidity risk. Additionally, there is potential for further investigation into the same objectives of the study by classifying financial institutions into categories such as commercial banks, specialized banks, finance companies, leasing companies, and insurance companies. By examining these aspects, future research can provide a more comprehensive understanding of the relationship between risk management practices and financial performance across various sectors of the financial industry. This could enrich the existing body of knowledge and contribute to more informed decision-making within the financial sector.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Tektas A, Ozkan-Gunny E, Gunay G. Asset and liability management in financial crisis. *The Journal of Risk Finance*. 2005;6(2):135–149.
2. Belete T. Asset liability management and commercial banks profitability in Ethiopia. *Research Journal of Finance and Accounting*. 2013;4(10):77–91.
3. Al Shubiri FN. Impact of bank asset and liability management on profitability: Empirical investigation. *Journal of Applied Research in Finance (JARF)*. 2010; 2(4): 101–109.
4. Sayeed M, Hoque MZ. Impact of asset liability management on profitability: A study on public vs private commercial banks in Bangladesh. *Jahangirnagar University Press, Dhaka, Bangladesh*; 2008.
5. Somuah Annor, Ernest, and Fredrick Somuah Obeng. Impact of Credit Risk Management on the Profitability of Selected Commercial Banks Listed on the Ghana Stock Exchange”. *Journal of Economics, Management and Trade*. 2018;20(2):1-10. Available:<https://doi.org/10.9734/JEMT/2017/36881>.
6. Lee CC, Hsieh MF. The impact of bank capital on profitability and risk in Asian banking. *Journal of international money and finance*. 2013;32:251-81.
7. Kwabena AB. Credit risk management in financial institutions: A case study of Ghana Commercial Bank Limited. *Research journal of finance and accounting*. 2014;5(23):67-85.
8. Tee E. Asset liability management and the profitability of listed banks in Ghana. *IOSR Journal of Economics and Finance (IOSR-JEF)*. 2017;8(3):9–14.
9. Diamond DW, Dybvig PH. Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*. 1983;91(3):401– 419.
10. Bryant J. A model of reserves, bank runs, and deposit insurance. *Journal of Banking and Finance*. 1980;4(4):335-344.
11. Ghenimi A, Chaibi H, Omri MAB. The effects of liquidity risk and credit risk on bank stability: Evidence from the MENA region. *Borsa Istanbul Review*. 2017;17(4): 238-248.
12. Imbierowicz B, Rauch C. The relationship between liquidity risk and credit risk in banks. *Journal of Banking and Finance*. 2014;40(1):242–256.
13. Weersainghe VEIW, Perera TR. Determinants of profitability of commercial banks in Sri Lanka. *International Journal of Arts and Commerce*. 2013;2(10):141–170.

14. Khan RA, Ali M. Impact of liquidity on profitability of commercial banks in Pakistan: An analysis on banking sector in Pakistan. *Global Journal of Management and Business Research*. 2016; 16(1): 53-58.
15. Akter A, Mahmud K. Liquidity-profitability relationship in Bangladesh banking industry. *International Journal of Empirical Finance*. 2014;2(4):143-151.
16. Larojan C. The impact of bank-internal factors on profitability of the banking industry in Sri Lanka. *The Journal of Business Studies*. 2022;6(2):1-20.
17. Madhuwanthi RMR, Morawakage PS. Impact of liquidity risk on the performances of Sri Lankan commercial banks. *Sri Lanka Journal of Social Sciences*. 2019;42(1):53–64.
18. Poudel, 2012 Poudel RPS. The impact of credit risk management on the financial performance of commercial banks in Nepal. *International Journal of Arts and Commerce*. 2012;1(5):9–15.
19. Li F, Zou Y. The impact of credit risk management on the profitability of commercial banks: A study of Europe. *Umea School of Business and Economics*; 2014.
20. Kithinji AM. Credit risk management and profitability of commercial banks in Kenya. School of Business, University of Nairobi, Nairobi; 2010.
21. Huong, Nga, Oanh, Huong TTX, Nga TTT, Oanh TTK. Liquidity risk and bank performance in Southeast Asian countries: a dynamic panel approach. *Quantitative Finance and Economics*. 2021;5(1):111–133.
22. Chenga L, Nsiah TK, Charles O, Ayisid AL. Credit risk, operational risk, liquidity risk on profitability. A study on South Africa commercial banks. A PLS-SEM Analysis. *Revista Argentina de Clínica Psicológica*. 2020;29(5):5-18. DOI: 10.24205/03276716.2020.1002
23. Afriyie HO, Akotey JO. Credit risk management and profitability of rural banks in the Brong Ahafo region of Ghana. *European Journal of Business and Management*. 2013;5(24):24–34.
24. Charles O, Kenneth O. Impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria. *Journal of Emerging Issues in Economics, Finance and Banking*. 2013; 2(3):703-717.
25. Serwadda I. Impact of credit risk management systems on the financial performance of commercial banks in Uganda. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*. 2018;66(6):1627–1635. DOI: 10.11118/actaun201866061627
26. Bandara HMKS, Jameel ALM, Haleem A. Credit risk and profitability of banking sector in Sri Lanka. *Journal of Economics, Finance and Accounting Studies (JEFAS)*. 2021;3(1):65-71.
27. Kapilarathne MYGJAC, Weligamage SS. The effect of non-performing loans on the profitability of commercial banks in Sri Lanka. *Journal of Accountancy and Finance*. 2022;9(2):59-74.
28. Amaliah R, Hassan HH. The relationship between bank's credit risk, liquidity, and capital adequacy towards its profitability in Indonesia. *International Journal of Recent Technology and Engineering (IJRTE)*. 2019;7(5s):225–237.
29. Ahmadyan A. Measuring credit risk management and its impact on bank performance in Iran. *Marketing and Branding Research*. 2018;5:168-183.
30. Suganya SJ, Kengatharan L. Impact of bank internal factors on profitability of commercial banks in Sri Lanka: A panel data analysis. *Journal of Business Studies*. 2018;5(1):61–74.
31. Repkova I. Banking efficiency determinants in the Czech banking sector. *Procedia Economics and Finance*. 2015; 23:191–196.
32. Wijewardana WP, Wimalasiri PD. Impact of risk management on the performance of commercial banks in Sri Lanka. *International Journal of Advanced Research (IJAR)*. 2017; 5(11):1441–1449.
33. Funso KT, Kolade AR, Ojo OM. Credit risk and commercial banks' performance in Nigeria: A panel model approach. *Australian Journal of Business and Management Research*. 2012;2(2): 31-38.
34. Flamini V, McDonald CA, Schumacher LB. The determinants of commercial bank profitability in Sub-Saharan Africa. 2009; IMF Working Paper No. 09/15. Available: <https://ssrn.com/abstract=1356442>.
35. Kosmidou K, Tanna S, Pasiouras F. Determinants of profitability of domestic UK commercial banks: Panel evidence from the period 1995-2002 (*Economics, Finance and Accounting Applied Research*

- Working Paper Series No. RP08-4). Coventry University; 2008.
36. Al-Husainy NHM, Jadah HM. The effect of liquidity risk and credit risk on the bank performance: Empirical evidence from Iraq. *iRASD Journal of Economics*. 2021;3(1): 58–67.
37. Saleh I, Afifa MA. The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics and Finance*. 2020;8(1):1-13.
38. Noman AHM, Pervin S, Chowdhury MM, Banna H. The effect of credit risk on the banking profitability: A case on Bangladesh. *Global Journal of Management and Business Research*. 2015;15(3):41–48.
39. Wani AA, Dar SA. Relationship between financial risk and financial performance: an insight of Indian insurance industry. *International Journal of Science and Research (IJSR)*. (2015);4 (11): 1424-1433.

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