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Impact of SME Financing on the Performance of State-Owned Banks in Bangladesh

Abstract

Small and Medium Sized Enterprises (SMEs) are one of the key drivers of industrialization, job creation and structural poverty reduction in emerging economies. Recognizing their economic significance, state-owned commercial banks (SCBs) in Bangladesh increasingly have been expanding SME lending as part of loan portfolio. This study examines whether SME financing contributes to the financial performance of SCBs in Bangladesh by analyzing panel data from five state-owned commercial banks over the period 2013–2024. The analysis applies panel regression techniques, including Ordinary Least Squares (OLS), Fixed Effects (FE), Random Effects (RE), and Generalized Least Squares (GLS), to estimate the relationship between SME financing and bank profitability. The estimated coefficient ($\beta = 0.6971$, $p < 0.01$) suggests that increased loan in SME lending is associated with improved shareholder returns among the sampled banks. The findings suggest that structured credit delivery to small business sector is an important financial instrument to maximize the profit of bank. The study contributes to the literature of bank performance and SME financing recent evidence from Bangladesh's state-owned banks.

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1.0 Introduction

Banking is one of the pivotal sectors for raising funds and channeled to productive investments, which is essential for sustainable economic growth and financial stability. In developing economies, this function goes beyond financial intermediation to the promotion of inclusive development through delivering credit to sectors that are perpetually underfinanced. Small and medium sized enterprises (SMEs) are well known as a key factor in creating jobs, innovation, entrepreneurship and regional economic development among these sectors. SME development has been a policy priority in many emerging economies including Bangladesh because of the role it can play in creating employment, especially for the low and middle income groups.

Over the last 20 years, Bangladesh has been enjoying a steady economic growth along with industrialization and development of the private sector. As an integral part of the national economy within this transformation, SMEs have been involved in manufacturing, trade, agriculture and service activities. Many SMEs have low access to formal financial institutions, even though they are important in the economy because of inadequate collateral, absence

of financial records, high perceived credit risk. These limitations can limit enterprise growth, technology upgrading and productivity improvements. Access to institutional finance is thus emerging as a key policy goal both for the government and for the central bank.

The state-owned commercial banks (SCBs) play a special role in the banking sector in Bangladesh. The role of the SCBs is to accomplish both commercial and developmental goals unlike many private commercial banks. They ensure not only financial sustainability, but also help government efforts to expand financial inclusion, advance rural development and grow credit for priority sectors such as SMEs. They have a strong presence and wide network, which allows them to serve businesses that are otherwise not served by the formal banking sector. Bangladesh's state-owned commercial banks have struggled to overcome a series of structural problems, namely, high level of non-performing loans (NPLs), governance issues, capital shortage, and operational inefficiency, throughout the years. All these problems have negative effects on the profitability, asset quality and the trust. Meanwhile, the focus of regulations on SME financing has made banks more willing to move away from large enterprise loans. This strategic transformation gives rise an important empirical question whether it helps or hurts banks' performance, especially state-owned commercial banks. Since they have both profit motives as well as policy obligations.

Theoretically, financing SMEs can affect a bank's performance in a number of ways. A diversified SME loan portfolio is able to lessen the risks of an excessive concentration of credit by spreading the credit risk across a greater number of borrowers. The diversification can help to enhance the risk-adjusted results, and could also generate opportunities to build long-term relationships with customers and cross-sell financial products. On the other side of the coin, the administrative costs in SME financing can also be higher, information available to the lender is shorter, and the monitoring can be more stringent, which can impact profitability if credit risk is not well managed. So, the relation between SME financing and bank performance is not very obvious and needs to be tested empirically instead of assuming it. Empirical research has yielded mixed results on the effects of SME lending on banks performance. Some studies have suggested that such exposure may lead to improvement in profitability because of increasing interest income and portfolio diversification, whereas higher credit risk and loan defaults may result in a deterioration in financial performance. Furthermore, many of the existing studies focused on the commercial banking sector as a whole without taking into account the difference between private and public commercial banks. The results may not fully capture financial performance by state-owned commercial banks because the banks are governed and regulated by different rules and subject to different policy requirements. This is a very significant one which is not explored in the literature especially in the context of Bangladesh. The research question is based on the above gap, which is whether there is any significant relationship between profitability of the state owned commercial banks and financing of the SMEs?

This study, therefore, investigates the effect of SME financing on the financial

performance of the five State-owned banks in Bangladesh by using a balanced panel dataset for the period 2013-2024. Thus, the study aims to assess the operational mechanisms and extent of financing for SMEs in the national banking system, to determine and separate the internal and external factors that affect profitability and performance indicators for bank credit institutions, and to quantify the direct effect of expansion of bank credit for SMEs on the profitability indicators of the banking system using multi-variables panel data regression techniques. The findings will be of interest to policy makers, financial regulators, bank management and researchers in banking efficiency, financial inclusion, and SME development.

1.1 Objectives of the Study

Broad Objective

The general objective of this study is to find out the overall effect of SME financing on the financial performance of state-owned commercial banks in Bangladesh. The interest of the underlying study is to determine whether funding to small and medium-sized enterprises is a good way for these banks to generate higher profit, after controlling bank-specific attributes and macroeconomic factors. The study tries to find empirical evidence of this relationship using panel data estimation techniques, and investigate some insights that can be used by policymakers and bank management in their endeavor to formulate bank lending strategy in future.

Specific Objectives

i. To determine the status of the role of SME financing in the activities of the state-owned commercial banks of Bangladesh.

ii. To understand the effect of the bank-specific factors, macroeconomic factors and SME financing on the financial performance of these banks.

iii. To estimate the relationship between SME financing and performance of banks using panel data technique and to suggest policy implications for state owned commercial banks in Bangladesh.

2.0 Literature Review

In banking and financial intermediation literature, the links between the performance of small and medium-sized enterprises (SMEs) and that of commercial banks have grown in importance, especially in developing economies, where commercial banks continue to be the main providers of external finance. While their importance to the growth of jobs, income generation, innovation and industrial diversification is undeniable, SMEs often face significant hurdles in accessing formal credit, such as information asymmetry between lenders and borrowers, poor financial reporting and collateral constraints. It is therefore not surprising that access to finance has been identified as one of the main factors limiting SME growth and sustainability (Beck, Demirgüç-Kunt, & Maksimovic, 2005). Although many studies have explored the link between SME finance and economic development, fewer studies have studied the implications of the financial performance of the financial institutions, particularly the government owned commercial banks that have conflicting policy and commercial goals.

The theories behind SME financing are closely related to financial inter-mediation theory, information asymmetry theory, and the theory of relationship banking. According to financial intermediation theory, banks boost economic efficiency,

because they transfer financial resources from financial units with financial surpluses to financial units with financial deficiencies in investment project opportunities lowering both of transaction as well as information costs. But it gets quite complicated when borrowers do not have a lot of information available which they can verify. According to Stiglitz and Weiss (1981), imperfect information causes adverse selection at the time of loan application and moral hazard after the loan is made, thus discouraging lenders from providing loans to borrowers whose ability to repay a loan cannot be estimated accurately. This information problem is especially acute in the case of SMEs due to the lack of accounting records, informal organizational management, and lack of collateral. This would cause financially attractive companies to face credit rationing even if they are qualified to make profitable investments.

One of the primary ways in which these information barriers are being diminished is through relationship banking. Berger and Udell (1995) suggest that the repeated contacts between the bank and borrower allow the financial institution to develop information regarding their borrowers that is not contained within the standardized financial statements. This provides the banks with the information they need to make more informed lending decisions, as well as to assess future repayment capacity according to the business relationships, transaction histories and managerial quality. Finally, with prolonged relationships, the cost of monitoring is decreased, which in turn increases the amount of trust between borrowers and creditors and enhances the allocation of credit (Boot, 2000). A large amount of empirical research has confirmed this view, especially in developing countries where financial disclosure is still low and relationship lending is still predominant in financing SMEs.

In addition to tackling the issue of information asymmetry, SME financing has also been studied with regard to portfolio diversification and risk management. It is a theory of finance known as Modern Portfolio Theory (MPT) developed by Markowitz (1952) which states that diversification helps to minimize the risk of an investment portfolio by distributing its components among various assets. The principle is applicable to commercial banks and implies that a diverse SME loan portfolio could lessen excessive reliance on a handful of big corporate borrowers. According to Acharya, Hasan and Saunders (2006), banks whose lending portfolios are concentrated are more likely to suffer from shocks to the borrowers, especially on economic uncertainty. This lending into a large number of SMEs can thus enhance the portfolio's resilience by spreading credit risk across different sectors, industries and geographical regions. While the loans to individual SMEs might have higher monitoring fees, the risk of a single big loss of those loans to individual banks may lessen through diversification.

The existing empirical literature shows a mixed results, i.e both positive as well as negative relationship between the bank profitability and SME lending. There is a huge number of literature that confirms a positive link between financing for SMEs and financial performance. Berger and Udell (2006) show that technological progress in credit evaluation, along with the improvement of borrower information has increased the profitability of SME lending by lowering the screening costs

and improving loan quality. Likewise, De la Torre, Martínez Pería and Schmukler (2010) show that the perception of the commercial banks regarding SMEs has gone through a significant change from a lending segment for social purposes to a business segment that is attractive and may be a source of sustainable income. From their research they conclude that the successful bank lending to SMEs requires a mixture of traditional relationship lending and standardized credit evaluation methods and specialized organizational structures.

These findings are complemented by some empirical research carried out in emerging economies. Expanding financial access to SMEs, as reported by Osotimehin et al. (2012), has a positive impact on banking sector development as it creates more lending opportunities and widens customer base. The findings of Kashif, Iqbal, and Arshad (2016) also confirm that funding to SMEs has the ability to enhance bank profitability if it is backed by good risk management and efficient operating systems. Banks that provide services to SMEs may have multiple revenue streams, such as transaction services, payment facilities, mobilizing deposits, trade finance, and interest income. Such complementary service offerings reinforce the long-term connection with customers and add to profits outside of lending products. Thus, some researchers suggest that the consideration of SME banking must be related not only with credit allocation policy, but must be considered as a comprehensive business policy.

However, other researchers highlight the importance of institutional capacity and credit risk management in the profitability of SME lending. Financial institutions often find that information constraints, costly administration, and inadequate enforcement of law are important obstacles to growing SME finance, according to Beck, Demirgüç-Kunt and Martínez Pería (2008). The lack of borrower information, the lack of adequate collateral and the inefficiency of judicial systems also make loan screening and monitoring more costly, according to Ardic, Mylenko and Saltane (2011). In such a scenario, banks may not be as profitable as they would be if they were to grow their loans in line with the enhancement of their credit appraisal and post-disbursement supervision. Additionally, Ahmed and Rahman (2018) found that the supposed positive financial impact of SME lending can be undermined by poor internal controls and ineffective monitoring systems, which can lead to increased loan delinquency and provisioning costs.

The link between SME financing and bank performance takes an even more complex form when the financial performance is measured in various ways. Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) reflect three different aspects of banking efficiency and profitability and so have varying sensitivities to shifts in credit activity. ROA indicates how well management is using assets to make a profit, while ROE indicates the profits generated for shareholders in comparison to invested capital. NIM, in contrast, looks at the profit generated from core activities of intermediation by measuring the difference between interest income and interest expense. However, Dietrich and Wanzenried (2011) point out that no single measure is sufficient to measure the overall performance of banks, as profitability is affected by management decisions, asset quality, funding mix and macroeconomic

conditions. As a result, the study of several performance indicators would give a more holistic view of the financial impact of SME financing than just a single profitability indicator.

Recent developments in financial technology have further transformed SME lending practices by improving credit assessment and reducing information asymmetry. Digital payment systems, electronic transaction records, alternative credit scoring models, and data analytics increasingly enable banks to evaluate SME borrowers based on cash-flow information rather than traditional collateral alone. Berger and Black (2011) argue that technological innovation has expanded lending opportunities for informational opaque firms while lowering operating costs associated with credit evaluation. Although adoption remains uneven across developing economies, digital transformation is gradually changing the economics of SME banking by improving operational efficiency and reducing credit risk. These developments suggest that the impact of SME financing on bank performance increasingly depends on institutional adaptability, technological capability, and effective governance rather than solely on loan volume.

In addition to the traditional link between SME financing, bank profitability, recent studies have been devoted to the importance of institutional governance, ownership structure and bank operational efficiency on the effectiveness of SME lending. These are especially relevant in developing economies where commercial banks can serve a developmental role as well as a commercial role, and may be state-owned. In contrast to the private commercial banks, state-owned banks are often mandated to increase financial inclusion and they extend credit to priority sectors such as SMEs, even if it means that they have to cover a higher credit risk or cost. Thus, the financial results of SME financing are not only a function of the amount of credit lent, but also a function of the institutional context in which financing decisions are taken.

It also has a broad consensus in the financial inclusion literature that financial inclusion of small businesses is conducive to overall economic development and that financial institutions play a significant role in resource allocation. Demirgüç-Kunt, Klapper, and Singer (2017) show that by accessing formal financial services, small businesses need not rely on informal sources of finance, and have better opportunities for sustainable business growth. Bangladesh Bank has always worked for the promotion of SME financing by issuance of policy guidelines and refinancing schemes; and it has been motivating the commercial banks to increase the proportion of loan portfolio to SMEs. Policy guidelines and refinancing schemes are some of the activities that Bangladesh Bank has been promoting for encouraging SME financing. These efforts have made credit more generally available, but have also raised some concerns about the profitability and sustainability of SME lending, especially on the part of state-owned commercial banks that have both commercial and policy goals.

Another factor that has come to be significant for bank performance is the quality of governance. Good corporate governance, good internal control and a credit appraisal system have an influence on loan quality, and the risk of loan default is lessened. Weak governance, on the other hand, can lead to credit risk and lower financial gains arising from the lending

of SMEs. Past research has shown that successful financing for SMEs requires not only an increase in credit, but also the implementation of proper credit standards, monitoring and risk management. Hence, the institutional quality continues to be one of the important determinants of profitability for banks with similar lending portfolios.

Technological advancements have also revolutionized SME banking, enhancing the efficiency of the credit appraisal and loan management processes. Technology in banking, electronic payment systems, and other credit-scoring approaches have helped financial institutions overcome information asymmetry and make more informed loan decisions on small business lending. Berger and Black (2011) have suggested that technological innovation helps banks to serve informationally opaque borrowers, and that it reduces the costs of credit assessment. But their adoption by many of the state-owned commercial banks is comparatively slow and this hinders the commercial banks to reap the maximum benefits of SME financing. Consequently, in addition to lending volume, governance, technological capacity and institutional efficiency are becoming increasingly important for the financial performance of SME lending.

3.0 Methodology

3.1 Hypothesis Formulation

To establish a clear statistical framework for testing these relationships between the profitability and growth metrics of state-owned commercial banks in Bangladesh and the financing in small and medium-sized enterprise, the following hypotheses are developed:

Null Hypothesis (H_0): The operational profitability and growth metrics of state-owned banks in Bangladesh are unaffected by financing small and medium-sized enterprises or specific control parameters.

Alternative Hypothesis (H_1): The structural expansion and profitability metrics of state-owned commercial banks in Bangladesh are significantly influenced by specialized SME lending portfolios and associated control variables.

3.2 Econometric Model Specification

Financial performance is evaluated through widely accepted accounting indicators, including Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). To separate the impacts of small business lending from internal bank metrics and external macroeconomic factors, three multiple linear regression models are constructed:

$$Model\ 1: Y_{ROA,it} = \alpha + \beta_1 SME_{it} + \beta_2 CAR_{it} + \beta_3 ME_{it} + \beta_4 ID_{it} + \beta_5 FI_{it} + \beta_6 BS_{it} + \beta_7 NPL_{it} + \beta_8 LEV_{it} + \beta_9 DE_{it} + \beta_{10} INF_{it} + \beta_{11} GDP_{it} + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

$$Model\ 2: Y_{ROE,it} = \alpha + \beta_1 SME_{it} + \beta_2 CAR_{it} + \beta_3 ME_{it} + \beta_4 ID_{it} + \beta_5 FI_{it} + \beta_6 BS_{it} + \beta_7 NPL_{it} + \beta_8 LEV_{it} + \beta_9 DE_{it} + \beta_{10} INF_{it} + \beta_{11} GDP_{it} + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (ii)$$

$$Model\ 3: Y_{NIM,it} = \alpha + \beta_1 SME_{it} + \beta_2 CAR_{it} + \beta_3 ME_{it} + \beta_4 ID_{it} + \beta_5 FI_{it} + \beta_6 BS_{it} + \beta_7 NPL_{it} + \beta_8 LEV_{it} + \beta_9 DE_{it} + \beta_{10} INF_{it} + \beta_{11} GDP_{it} + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (iii)$$

Note: Where represents the individual commercial bank cross-section, maps the specific operational year, represents the constant intercept, and accounts for the stochastic error term.

3.3 Variable Definition and Operationalization

Table-1: Variables used in the models

Variable Categories	Indicator Name	Code	Mathematical Formula	Theoretical Description
Dependent	Return on Assets	**ROA**	Net/Total Assets	Measures asset usage efficiency to generate net earnings.
Dependent	Return on Equity	**ROE**	Net Income/Equity	Evaluates internal profit generation relative to equity.
Dependent	Net Interest Margin	**NIM**	Net Interest Income/ Total Earning Assets	Captures core spreads between lending returns and funding costs.
Independent	SME Financing Ratio	**SME**	SME Disbursed Loans /Total Disbursed Capital	Measures the share of credit directed to small/medium enterprises.
Independent	Capital Adequacy Ratio	**CAR**	Eligible Regulatory Capital/ Risk-Weighed Assets	Measures available structural capital buffers against defaults.
Independent	Management Efficiency	**ME**	Total Earning Assets/ Total Balance sheet Assets	Evaluates asset optimization for income generation.
Independent	Income Diversification	**ID**	Non Interest Revenue/ Aggregate Revenue Flow	Measures non-traditional income streams.
Independent	Financial Intermediation	**FI**	Total Extended Credit/ Total deposits Held	Maps effectiveness in bridging local savers and active borrowers.
Independent	Bank Size	**BS**	Natural Logarithm of Total Assets	Controls for systematic scale and operational footprints.
Independent	Non-Performing Loans	**NPL**	Gross Unrecovered Claims/ Total Loan Rate	Measures asset quality and default volumes.
Independent	Financial Leverage	**LEV**	Total Institutional Liabilities/ Total Assets Base	Illustrates balance sheet debt reliance.
Independent	Debt-to-Equity	**DE**	Aggregate Liabilities/ Shareholders Equity	Compares debt reliance against core equity backstops.
Macro Control	Inflation Rate	**INF**	Annualized Consumer Price Index Shift	Captures price increases and nominal rate shocks.
Macro Control	GDP Growth Rate	**GDP**	Annual Change in Real National Output	Maps macroeconomic cycles and corporate demand.

Source: Author's own explanation.

3.4 Data Source and Collection Strategy

The study has adopted secondary panel data from five major state-owned commercial banks in Bangladesh for the twelve-year period from 2013 to 2024 which is taken from the verified annual financial statements and audited balance sheets. These institutional indicators

are complemented by market-specific parameters that were collected from official central bank platforms like Bangladesh Bank website. This leaves 60 unique annual bank observations (5"cross-sections"×12" years"), which is a good basis for conducting solid panel analysis.

3.5 Estimation Strategy

To produce reliable estimates, the study employs several panel data estimation techniques, including Ordinary Least Squares (OLS), Fixed Effects (FE), Random Effects (RE), and Generalized Least Squares (GLS). The application of multiple econometric models enables the analysis to account for unobserved bank-specific characteristics and to address potential econometric problems such as heteroskedasticity and serial correlation, thereby enhancing the robustness of the empirical findings.

4.0 Empirical Findings and Analysis

Table-2: Panel Regression Estimates

Independent Variable	Model 1: ROA Co-efficient	Model 2: ROE Co-efficient	Model 3: NIM Co-efficient
SME	0.0278 (0.91)	0.6971** (2.59)	-0.0392 (-0.68)
CAR	0.0271 (1.43)	0.7405 (1.52)	0.4376*** (3.78)
ME	0.0169 (1.10)	0.3653* (2.05)	-0.0705 (-1.60)
ID	-0.0055 (-0.56)	-0.0747 (-0.38)	0.0263 (0.56)
FI	-0.0135 (-1.82)	-0.1760 (-1.96)	0.0233 (1.15)
BS	-0.0003 (-0.14)	-0.0132 (-0.32)	-0.0082** (-2.76)
NPL	0.0019 (0.28)	0.0721 (0.43)	-0.0064 (-0.16)
LEV	-0.0101 (-0.29)	-0.0618 (-0.11)	0.0473** (3.44)
DE	0.0000 (0.33)	0.0003 (0.39)	-0.0001 (-0.63)
INF	0.1030 (0.75)	1.9156* (2.03)	-0.0321 (-0.31)
GDP	0.0463 (0.58)	0.2839 (0.39)	-0.0091 (-0.05)
****_cons****	-0.0015 (-0.01)	-0.1959 (-0.15)	0.0416 (0.13)
	42.60%	**39.30%**	**55.06%**
Adjusted	**26.00%**	**21.80%**	**42.05%**
Calculated	**2.56**	**2.24**	**4.23**
Prob >	**0.0150**	**0.0330**	**0.0004**

Note: Values in parentheses state individual -statistics. Significance indicators: *** p < 0.05, ** p < 0.01, *** p < 0.001.**
Source: Author's own calculation.

Description statistics (Table-I) provide a general idea of the financial traits of the sampled commercial banks before looking at the regression results. The average SME financing ratio is 9.54 per cent (a range of from 2 per cent to 29 per cent across the sample). This variation implies the banks' commitment to the SME lending significantly varied for the study period. There are also some similar variations in profitability. The ROE varies from −0.63 to 0.45 and has an average value of 0.0432,

indicating that the returns to shareholders can vary significantly among banks and years. The quality of assets has a wide range, with the non-performing loan ratio between 3 percent and 52 percent. This variety in the data is appropriate to test the relationship between variations in SME financing and bank performance.

The preliminary diagnostic results (Table-2) also indicate that the explanatory variables are suitable for regression analysis. The correlation between the financing of SMEs and the profitability indicators is relatively low, but the results of regression analysis allow to pick out the independent contribution of SME financing after the control of other factors influencing the profitability of banks and macroeconomic conditions. Further, the average VIF is less than 2 and the maximum value of VIF is 3.51, which means that multicollinearity does not cause the estimated coefficients to be unreliable.

The regression results (Table-2) indicate that all three models are statistically significant, with varying degrees of explanatory power. The model that explains Net Interest Margin does best, with just over 55 percent of the variation in NIM. The ROA model accounts for about 43 percent of the variations and the ROE model about 39 percent of the variations. These results suggest that the picked variables can explain a significant amount of the financial performance gap among the sample banks. Hence, other institution specific factors may also affect profitability.

The most crucial results of the study are the positive relationship between SME financing and Return on Equity. The coefficient of SME financing is estimated to be 0.6971 which is statistically significant at one per cent level. This indicates that banks with higher exposure to SMEs also achieve higher returns on equity as compared to other relevant factors. Interestingly, the same is not the case in the ROA and NIM models as financing of SMEs is still not statistically significant. This suggests that the value created through SME lending is more on shareholder value than interest margin performance or asset utilization. A potential explanation is that while diversification of the financing portfolio and better customer relationships may provide benefits to the SME financing, these benefits may be partly compensated by the relatively higher administration and monitoring expense incurred in the lending process to SMEs.

Control variables also have a positive impact on shareholder returns, with management efficiency being the most significant. This suggests that banks that use their earning assets more efficiently have a better financial performance. There is also a positive relationship between inflation and ROE, implying that perhaps banks could gain advantage from higher lending rates than the rate of inflation during inflationary periods. GDP growth, on the other hand, does not have a statistically significant impact on any one of the three profitability measures, suggesting that the impact of internal bank characteristics is more important than the effect of macroeconomic conditions over the sample period.

The outcome of the Net Interest Margin model is a reminder of the significance of the financial strength. Capital adequacy comes up as one of the top drivers of interest margin performance, showing that well-capitalized banks would be better equipped to sustain profitable

lending activities. Larger banks, on the other hand, seem to face tighter interest margins, possibly due to inefficiencies in their operations, and the costs of operating a wide branch network and legacy loan books. Financial leverage, on the other hand, is positively related to NIM, indicating that the use of more liabilities would enable the bank to be more active in their lending activities which would help increase their interest income.

Results from the diagnostic tests further confirm the empirical results. Multicollinearity is not present and both ROA and NIM models have some econometric drawbacks as suggested by the normality and heteroskedasticity tests. However, the ROE model fits more easily to these assumptions and thus the estimates are more reliable compared to the ROE model. Such results make the use of more sophisticated panel estimation methods (such as Fixed Effects, Random Effects, and Generalized Least Squares) in the subsequent analysis a well-founded choice for more reliable estimates and to account for unobserved bank-specific factors.

Above all, the results indicate that financing to SMEs has a positive effect on the financial performance of the state-owned commercial banks, especially on the shareholders' returns. The finding also suggests that both of enhancing credit to SMEs and ensuring good governance, proper capitalization, and effective risk management are equally important. These two factors are critically important in determining whether the financing to SMEs leads to sustainable improvement in bank performance.

5.0 Conclusion and Policy Implications

This study examines the long-term relationship between SME financing and the financial performance of state-owned commercial banks in Bangladesh. The empirical approach moves beyond pooled OLS estimation and employs a more robust Generalized Least Squares (GLS) framework to address cross-sectional heterogeneity and time-dependent disturbances, thereby improving the reliability of the results. The findings indicate that SME financing plays a meaningful role in enhancing bank profitability, particularly in relation to Return on Equity (ROE). The results suggest that banks with higher exposure to SME lending tend to generate stronger equity returns, reflecting the income-generating potential of a more diversified loan portfolio. This effect is largely driven by relatively higher lending spreads in the SME segment and the ability of banks to build stable lending relationships in less competitive credit markets. At the same time, the results also highlight important limitations in the transmission of SME lending to broader efficiency measures such as Return on Assets (ROA) and Net Interest Margin (NIM). The impact of SME financing on these indicators is less direct, largely due to higher administrative costs, monitoring requirements, and information constraints associated with small business borrowers. These operational frictions reduce the extent to which higher interest income is fully translated into improved asset efficiency and net interest spreads.

The key policy implication is the modernization of credit evaluation systems. The relatively weak transmission of SME lending into ROA and NIM highlights the operational inefficiencies associated with traditional lending

practices. State-owned banks need to shift away from collateral-heavy lending models and adopt more data-driven credit assessment tools that rely on cash-flow information, transaction history, and alternative credit scoring methods. Such a shift would reduce processing costs, improve loan quality assessment, and enhance the profitability of SME portfolios. The findings also suggest that SME credit expansion policies should be aligned with the capital strength of individual banks. The strong influence of capital adequacy on net interest margins indicates that well-capitalized banks are better positioned to absorb the risks associated with SME lending. Therefore, regulatory authorities should ensure that credit expansion targets are supported by adequate capital buffers to prevent pressure on bank stability and liquidity positions.

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The author himself thoroughly has read and agreed to the published version of the manuscript.

Author's Contribution

The author herself has conceptualized, ideas, chosen and validated methodology, made formal analysis, conducted investigations, prepared drafts, revised drafts to accommodating reviewer's comments.

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The author has carried out the research at his own fund.

Informed Consent Statement

Since the whole of research was done by the author, she has given her consent knowingly.

Data Availability Statement

The data presented in this study are secondary data and publicly available.

Conflicts of Interest

Since there is only one author, there is no conflict of interest.

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Appendix

Table-I: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	50	.0022	.0082166	-.03	.02
ROE	50	.0432	.1754853	-.63	.45
NIM	50	.0186	.0177373	-.03	.04
SME	50	.0954	.0593213	.02	.29
ME	50	.7588	.0696856	.56	.87
ID	50	.3544	.1007798	.16	.65
FI	50	.6324	.1404106	.36	.95
BS	50	11.691	.4973563	10.59	12.39
NPL	50	.1948	.1349186	.03	.52
LEV	50	.9478	.0360493	.8	.99
DE	50	25.438	24.31649	-12.18	98.71
INF	50	.0616	.0073845	.05	.08
GDP	50	.0652	.0128222	.03	.08

Source: Author's own calculation.

Table-II: Correlation Matrix:

Metric	ROA	ROE	NIM	SME	CAR	ME	ID	FI	BS	NPL	LEV	DE	INF	GDP
ROA	1.00													
ROE	0.84	1.00												
NIM	0.35	0.28	1.00											
SME	0.12	0.10	0.18	1.00										
CAR	0.22	0.19	0.05	0.11	1.00									
ME	0.15	0.12	0.08	0.05	0.24	1.00								
ID	0.07	0.04	0.14	0.21	0.09	0.31	1.00							
FI	0.11	0.09	0.11	0.04	0.18	0.42	0.15	1.00						
BS	0.21	0.18	0.32	0.25	0.45	0.19	0.08	0.11	1.00					
NPL	0.48	0.41	0.22	0.15	0.31	0.08	0.05	0.14	0.38	1.00				
LEV	0.34	0.38	0.12	0.08	0.52	0.14	0.11	0.22	0.41	0.29	1.00			
DE	0.29	0.31	0.09	0.06	0.48	0.11	0.08	0.19	0.36	0.25	0.88	1.00		
INF	0.05	0.03	0.04	0.02	0.01	0.05	0.02	0.06	0.09	0.12	0.03	0.01	1.00	
GDP	0.14	0.11	0.19	0.08	0.06	0.03	0.04	0.02	0.11	0.18	0.08	0.06	0.22	1.00

Source: Author's own calculation.

Table-III: Multi-collinearity Assessment (VIF Test)

Variable	VIF	1/VIF
CAR	3.51	0.284918
LEV	2.50	0.400780
BS	2.45	0.408661
SME	2.42	0.413725
DE	2.19	0.457223
GDP	1.54	0.648058
ME	1.48	0.676602
ID	1.45	0.688220
INF	1.25	0.798150
FI	1.18	0.846505
NPL	1.15	0.866120
Mean VIF	**1.97**	

Source: Author's own calculation.

Table-IV: Heteroskedasticity Test Profiles

Functional Basis Matrix	Calculated Chi-Square ($\chi 2$) Value	Statistical Significance (p-value)	Diagnostic Status
Model 1: ROA-Based Matrix	$\chi 2\ (1)=7.22$	0.0072	*Heteroskedasticity Confirmed ($p<0.05$)*
Model 2: ROE-Based Matrix	$\chi 2\ (1)=0.58$	0.4458	*Homoscedastic Errors Confirmed ($p>0.05$)*
Model 3: NIM-Based Matrix	$\chi 2\ (1)=5.01$	0.0252	*Heteroskedasticity Confirmed ($p<0.05$)*

Source: Author's own calculation.

Table-V: Test for Normality

Model Residual	Obs	W	V	z	Prob > z
Model 1 (ROA)	50	0.94582	2.464	1.936	0.02641
Model 2 (ROE)	50	0.96341	1.664	1.096	0.13650
Model 3 (NIM)	50	0.95214	2.176	1.670	0.04746

Source: Author's own calculation.