

A Comparative Study on Financial Performance Analysis Among Selected State-Owned Banks, Private Commercial Banks, and Islamic Banks of Bangladesh

Shuvo Saha^{1*}, Md Rizaur Rahman², Ratan Kumar Saha³

¹ Dhaka School of Bank Management, Dhaka 1216, Bangladesh

² Gopalganj Science and Technology University, Gopalganj 8100, Bangladesh

³ University of Dhaka, Dhaka 1000, Bangladesh

*Corresponding author email: shuvo.saha1636@gmail.com

ARTICLE HISTORY

Received: 27th February 2025

Revised: 14th November 2025

Accepted: 30th January 2026

Published: 14th April 2026

KEYWORDS

Financial Performance Analysis

State-Owned Bank

Private Commercial Bank

Islamic Bank

Decent Work and Economic

Growth

ABSTRACT - This study investigates the comparative financial performance of selected banks in Bangladesh by employing two regression models with Return on Assets and Earnings per Share as dependent variables. Drawing on the Efficient Structure Hypothesis, the analysis evaluates whether efficiency-related factors better explain variations in performance compared to ownership structure. Using a balanced panel dataset of 30 bank-year, the study examines the impact of Return on Equity, Non-Performing Loans, Capital Adequacy Ratio, and Earnings per Share, while controlling for ownership categories State-Owned Commercial Banks, Private Commercial Banks, and Islamic Banks. The results reveal that Earnings per Share is the most significant determinant of Return on Assets, with a one-unit increase in Earnings per Share leading to a 0.067 rise in Return on Assets ($p < 0.001$). In contrast, Return on Equity, Non-Performing Loans, and Capital Adequacy Ratio show no statistically significant effect on Return on Assets. For the Earnings per Share model, only Return on Assets emerges as a strong predictor, while other variables remain insignificant. Ownership structure, though positive for Private Commercial Banks and Islamic Banks, is not statistically significant once efficiency indicators are included. These findings provide strong empirical support for the Efficient Structure Hypothesis, highlighting that efficiency rather than institutional form drives bank profitability in Bangladesh. The results suggest that policymakers and regulators should prioritize reforms aimed at enhancing operational efficiency and earnings capacity. For practitioners, strategies such as cost optimization, revenue diversification, and digital transformation are essential for sustaining profitability in a competitive financial landscape.

INTRODUCTION

A bank is an institution primarily engaged in borrowing and lending, playing a critical role in monetary policy, liquidity provision, and financial stability. Banks mobilize deposits, provide credit, and facilitate economic development by financing both individuals and businesses (Gordon & Natarajan, 2024). In Bangladesh, its banking system is a diverse financial network regulated by Bangladesh Bank, comprising state-owned commercial banks (SOCBs), private commercial banks (PCBs), foreign banks, specialized banks, and non-bank financial institutions (NBFIs), each contributing uniquely to growth and inclusion.

Comparative analyses in emerging markets often highlight that efficiency and technological adoption are the primary differentiators between state and private entities (Srairi, 2009). On the demand side, survey evidence from Bangladesh shows service quality and perceived reliability drive bank choice, consistent with PCBs' competitive edge in technology and delivery (Rahman & Chowdhury, 2022). In addition, Islamic banks operate under Shariah principles, offering interest-free, risk-sharing products to meet ethical and religious preferences.

This study is anchored in the Efficient Structure Hypothesis (ESH), which posits that banks with superior operational efficiency achieve higher profitability through better cost management and asset utilization (Berger & Mester, 1997). Within this framework, financial indicators such as Earnings Per Share (EPS), Return on Equity (ROE), Non-Performing Loans (NPL), and Capital Adequacy Ratio (CAR) are examined to determine their impact on Return on Assets (ROA). By incorporating regression analysis, this research tests whether efficiency-related metrics explain profitability differences across bank types, providing empirical insights for strengthening performance in Bangladesh's evolving financial landscape.

Therefore, the objective of this study is to investigate the determinants of bank profitability in Bangladesh, focusing on ROA and EPS as the key performance indicators. Guided by the Efficient Structure Hypothesis (ESH), the study seeks to determine whether profitability is primarily driven by efficiency-related factors such as EPS, or by traditional indicators including ROE, NPL, CAR, and ownership structure (SOCBs, PCBs, and Islamic banks). Specifically, the study aims to:

1. Compare the financial performance of SOCBs, PCBs, and Islamic banks in Bangladesh.
2. Identify which financial indicators significantly influence ROA and EPS.
3. Assess whether ownership structure remains a critical determinant of profitability once efficiency-related indicators are considered, as posited by ESH.

By fulfilling these objectives, the study contributes both to the empirical validation of ESH in an emerging economy and to practical insights for policymakers, regulators, and banking practitioners.

LITERATURE REVIEW

2.1 Theoretical Foundation: Efficient Structure Hypothesis

The Efficient Structure Hypothesis (ESH) provides the theoretical lens for this study. More efficient banks can operate at lower costs, generate higher profits, and ultimately achieve superior financial performance compared to less efficient peers (Berger, 1995). In this framework, profitability is not driven by market concentration or ownership alone but by managerial efficiency and earnings quality. Applied to the Bangladeshi context, ESH suggests that banks with stronger internal efficiency reflected through indicators such as ROA and EPS will outperform others, regardless of whether they are state-owned, private, or Islamic. This study employs ESH as the underlying theory to explain variations in profitability and to test whether bank type independently contributes to performance once core financial indicators are considered.

2.2 Profitability Ratios

Profitability ratios are the most widely used indicators of bank performance, with ROA and ROE serving as traditional measures of financial efficiency (Athanasoglou et al., 2008). ROA reflects a bank's ability to generate income from assets, while ROE indicates returns delivered to shareholders. More recently, EPS has gained attention as a market-driven measure of earnings quality, linking profitability to investor value. Under the ESH framework, higher EPS and ROA signal managerial efficiency, aligning with prior studies on emerging markets, such as Malaysia, where economic and business freedom were found to positively influence bank performance (Sufian & Habibullah, 2010).

2.3 Credit Risk Performance

Credit risk, typically captured by NPL, is a persistent challenge in Bangladesh's banking sector. This vulnerability mirrors the financial distress observed in the non-bank financial sector of Bangladesh, where liquidity and asset quality remain primary drivers of institutional stability. Factors like leverage and growth are key determinants of systematic risk for Shariah-compliant firms, indicating that risk exposures systematically shape their performance (Jaafar et al., 2020).

Similarly, identifying early signs of financial distress through models like Altman's Z-score is crucial for maintaining the stability of financial institutions in Bangladesh (Rahman et al., 2020). However, from an ESH perspective, simply lowering NPLs does not guarantee improved profitability unless accompanied by efficiency in earnings generation and cost management. Thus, while NPLs remain a critical risk indicator, their effect on ROA or EPS may be secondary compared to efficiency-driven factors. This aligns with evidence suggesting that while credit risk negatively impacts performance, its influence varies significantly depending on a firm's specific financial structure (Mushafiq et al., 2023).

2.4 Capital Adequacy and Ownership Structure

The Capital Adequacy Ratio (CAR) is another regulatory measure linked to bank resilience. Prior studies suggest that higher CAR improves solvency but may not directly enhance profitability (Tahir, et al., 2020). Similarly, bank concentration and fragility studies often control for bank characteristics, as ownership structure (SOCBs, PCBs, or Islamic Banks) is widely recognized to influence governance and strategy (Beck et al., 2025). Yet, ESH implies that institutional form is less decisive than efficiency. This perspective motivates the present study's empirical test of whether bank type remains significant once financial indicators such as EPS, ROA, and NPL are controlled for.

Existing literature has extensively analyzed profitability ratios, credit risk, and capital adequacy in Bangladesh's banking sector, but few studies integrate these variables under a unifying theoretical framework. Moreover, while ROA and ROE have been commonly studied, EPS remains underexplored as a determinant of profitability and market performance. By employing regression analysis grounded in ESH, this study contributes by testing whether efficiency-related measures (EPS, ROA) outweigh traditional indicators (NPL, CAR, ownership type) in explaining bank performance in Bangladesh. In doing so, this research not only strengthens the theoretical application of ESH within developing financial markets but also provides nuanced empirical insights into the relative importance of internal efficiency versus structural and regulatory factors in explaining banking performance in Bangladesh (Malik, 2024).

METHODS AND MATERIALS

3.1 Return on Asset Ratio (ROA):

ROA in the banking sector indicates how effectively a bank utilizes its total This study employs a quantitative research design to examine the determinants of bank profitability in Bangladesh, focusing on the relationship between financial indicators and ROA. The analysis is guided by the ESH, which argues that banks with stronger efficiency in operations and earnings management demonstrate superior profitability. Accordingly, the model incorporates key financial variables that reflect efficiency, stability, and performance.

3.2 Data and Sample

The dataset consists of 30 bank-year observations from SOCBs, PCBs, and Islamic banks, collected from annual reports and Bangladesh Bank publications. These banks represent the core structure of Bangladesh's financial sector and provide sufficient variation in ownership, operational strategy, and profitability indicators.

3.3 Variables and Model

ROA serves as the dependent variable, measuring the efficiency of banks in generating profits relative to assets. Independent variables include Return on Equity (ROE), Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Earnings Per Share (EPS). Two variables (Islamic banks and PCBs, with SOCBs as the baseline group) capture ownership effects.

3.4 Conceptual Model & Hypotheses

Drawing on the ESH, the study assumes that higher efficiency reflected through strong earnings (EPS), prudent credit management (NPL), and sound capitalization (CAR) is associated with higher ROA. The hypotheses are as follows:

- H1: EPS has a positive and significant effect on ROA.
- H2: ROE positively influences ROA.
- H3: NPL has a negative effect on ROA.
- H4: CAR positively affects ROA.
- H5: Bank type (Islamic vs. SOCB, PCB vs. SOCB) significantly influences ROA.

3.5 Estimation Method

This study applies Ordinary Least Squares (OLS) regression in Microsoft Excel to estimate the specified models. Prior to estimation, all series were checked for stationarity to ensure valid inference. Additionally, we inspected variance inflation factors (VIF) to confirm the absence of multicollinearity among explanatory variables. Given the balanced panel of 30 observations (10 years × 3 bank types), OLS was chosen because it provides unbiased and efficient coefficient estimates under the standard Gauss–Markov assumptions. This approach enables clear interpretation of the marginal effects of each indicator (NPL, CAR, ROE, EPS, and bank type) on bank profitability and market performance.

3.6 Variable Description

To examine the determinants of bank profitability and market performance, the study employs both accounting-based and market-based indicators, along with control variables for ownership type. Table X summarizes the variables used in the regression analysis.

Table 1. Description of Variables

Variable	Definition
ROA	Return on Assets – measures profitability relative to total assets.
EPS	Earnings per Share – reflects market performance and shareholder value.
ROE	Return on Equity – captures profitability relative to shareholder equity.
NPL	Non-Performing Loan Ratio – proportion of loans in default, representing credit risk.
CAR	Capital Adequacy Ratio – indicator of bank solvency and ability to absorb losses.
Islamic	Variable: 1 if bank is Islamic, 0 otherwise.
PCB	Variable: 1 if bank is a Private Commercial Bank, 0 otherwise.
SOCB	Baseline category for ownership structure.

3.7 General Regression Framework

To empirically test the hypotheses, two regression models were estimated. The first model identifies the determinants of profitability using Return on Assets (ROA) as the dependent variable:

$$ROA_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 NPL_{it} + \beta_3 CAR_{it} + \beta_4 EPS_{it} + \beta_5 Islamic_i + \beta_6 PCB_i$$

The second model evaluates factors affecting market performance, measured by Earnings Per Share (EPS):

$$EPS_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 NPL_{it} + \beta_4 CAR_{it} + \beta_5 Islamic_i + \beta_6 PCB_i$$

Both models were estimated using Ordinary Least Squares (OLS), consistent with prior studies assessing bank performance in emerging economies. The OLS approach allows for the estimation of linear relationships between the dependent and independent variables in a straightforward and interpretable manner. It is widely used in empirical financial research due to its efficiency and reliability under standard regression assumptions. Furthermore, this method facilitates comparison with findings from previous studies that have employed similar estimation techniques. Several diagnostic tests were conducted to ensure that the assumptions underlying the OLS estimation were not violated. These tests help to confirm the robustness and validity of the regression results.

RESULTS AND DISCUSSION

This section presents the findings of the study and discusses their implications in relation to the study objectives.

4.1 Profitability Ratios: ROA of Selected Banks

Table 2. Ratio Analysis for Selected Islamic Banks (ROA)

Banks Name (Islamic)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Al-Arafah Islami Bank Ltd	1995	1.21	1.12	1.33	1.07	0.75	0.64	0.61	0.46	0.39	0.41
EXIM Bank Ltd	1999	1.15	0.84	1.09	1.06	0.66	0.61	0.61	0.37	0.66	0.58
First Security Islami Bank Ltd	1999	0.38	0.37	0.51	0.43	0.45	0.51	0.6	0.64	0.51	0.51
Social Islami Bank Ltd	1995	1.38	1.23	1.12	0.58	0.55	0.45	0.47	0.49	0.56	0.53
Islami Bank Bangladesh Ltd	1983	0.66	0.46	0.59	0.58	0.67	0.5	0.35	0.3	0.34	0.32
Shahjalal Islami Bank Ltd	2001	0.59	0.98	1.07	0.72	0.55	0.67	0.68	0.85	1.08	1.05
Average		0.90	0.83	0.95	0.74	0.61	0.56	0.55	0.52	0.59	0.57

Note: All the values are taken in percentages (%).

Table 3. Ratio Analysis for Selected PCBs (ROA)

Bank Name (PCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AB Bank Ltd	1982	0.66	0.54	0.43	0.01	0.01	0.05	0.1	0.16	0.17	0.17
Bank Asia Ltd	1999	1.15	1.24	0.68	0.77	0.74	0.59	0.53	0.64	0.67	0.51
BRAC Bank Ltd	2001	1.03	1.06	1.62	1.87	1.67	1.64	1.19	1.31	1.14	1.13
Standard Bank Ltd	1999	1.06	1.27	0.76	0.75	0.67	0.72	0.49	0.35	0.49	0.57
Dutch-Bangla Bank Ltd	1996	1.1	1.31	0.68	0.83	1.28	1.2	1.3	1.1	1.1	1.4
Southeast Bank Ltd	1995	1.68	1.23	0.88	0.37	0.69	0.62	0.47	0.37	0.35	0.42
Average		1.11	1.11	0.84	0.77	0.84	0.80	0.68	0.66	0.65	0.70

Note: All the values are taken in percentages (%).

Table 4. Ratio Analysis for Selected SOCBs (ROA)

Bank Name (SOCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agrani Bank Ltd	1972	0.44	0.13	-1.16	1.07	0.15	0.13	-0.01	0.12	0.1	0.06
BDBL	2010	2.33	1.02	0.74	1.16	1.34	0.11	0.08	0.1	0.17	0.16
BASIC Bank Ltd	1989	-0.67	-1.72	-7.49	-3.39	-1.81	-1.69	-1.9	-2.03	-0.72	-2.47
Janata Bank Ltd	1972	0.63	0.71	0.36	0.34	0.02	0.03	0.01	0.24	0.09	0.04
Rupali Bank Ltd	1972	0.2	0.08	-0.38	0.17	0.1	0.12	0.03	0.06	0.03	0.07
Sonali Bank Ltd	1972	0.67	0.06	0.13	0.59	0.18	0.2	0.21	0.21	0.21	0.35
Average		0.60	0.05	-1.30	-0.01	0.00	-0.18	-0.26	-0.22	-0.02	-0.30

Note: All the values are taken in percentages (%).

Comparative analysis among selected Islamic Banks vs PCBs vs SOCBs

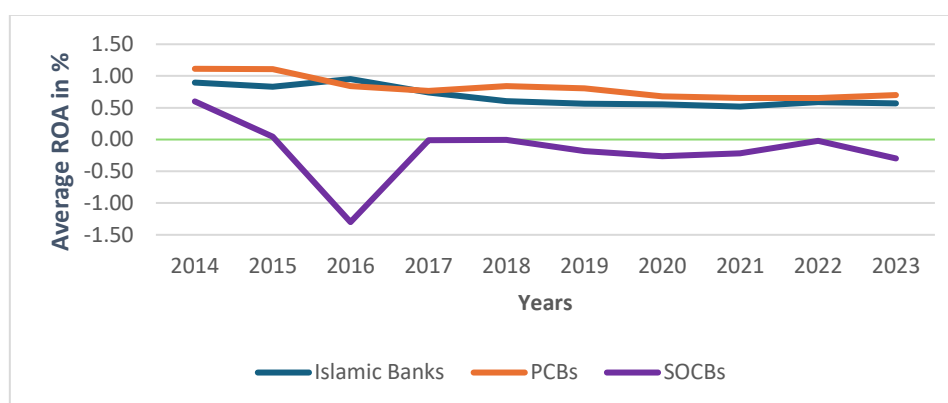


Figure 1. Comparative graph presentation of the average value of ROA for selected Islamic Banks vs PCBs vs SOCBs in Bangladesh (2014-2023).

Banks in Bangladesh have consistently fallen short of the generally accepted profitability benchmark for ROA. Islamic Banks and Private Commercial Banks outperform State-Owned Commercial Banks in terms of profitability, managerial efficiency, and financial performance. Since 2015, their ROA has shown moderate fluctuations, indicating gradual but inconsistent improvements in overall financial health. These trends suggest that while some segments of the banking sector are adopting more effective management and operational practices, systemic challenges still limit consistent performance across all institutions.

4.2 Profitability Ratios: ROE of Selected Banks

Table 5. Ratio Analysis for Selected Islamic Banks (ROE)

Banks Name (Islamic)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AIBL	1995	13.58	13.19	16.51	14.45	10.68	9.02	7.5	6	6.46	7.28
EXIM Bank Ltd	1999	11.34	8.68	11.78	12.19	8.35	8.48	9.33	6.17	11.41	10.08
FSIBL	1999	9.1	9.16	13.4	12.18	12.69	13.78	15.56	16.54	13.27	13.24
Social Islami Bank Ltd	1995	16.58	16.29	16.88	10.32	10.69	8.21	8.78	8.91	12.15	11.59
IBBL	1983	8.81	6.71	9.32	9.89	11.89	9.39	7.38	7.19	8.93	8.77
SJIBL	2001	6.47	10.8	12.95	10.09	8.62	10.98	11.08	13.7	16.92	15.89
Average		10.98	10.81	13.47	11.52	10.49	9.98	9.94	9.75	11.52	11.14

Note: All the values are taken in percentages (%).

Table 6. Ratio Analysis for Selected PCBs (ROE)

Bank Name (PCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AB Bank Ltd	1982	8.07	6.7	5.45	0.17	0.18	0.74	1.65	2.63	2.78	2.95
Bank Asia Ltd	1999	12.92	14.45	8.75	10.61	10.12	8.16	7.81	9.89	10.88	8.24
BRAC Bank Ltd	2001	11.84	11.11	17.96	21.85	16.6	15.6	10.69	11	10.22	11.95
Standard Bank Ltd	1999	12.66	14.95	9.05	9.53	8.9	9.26	6.45	4.51	6.34	7.49
Dutch-Bangla Bank Ltd	1996	16.25	19.32	10.24	13.22	19.74	17.2	18.4	16.1	14.4	17.9
Southeast Bank Ltd	1995	16.51	11.86	9.06	4.46	9.17	8.56	6.91	5.98	5.77	6.8
Average		13.04	13.07	10.09	9.97	10.79	9.92	8.65	8.35	8.40	9.22

Note: All the values are taken in percentages (%).

Table 7. Ratio Analysis for Selected SOCBs (ROE)

Bank Name (SOCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agrani Bank Ltd	1972	5.51	1.66	-16.99	-17.91	2.67	2.53	-0.34	3.39	2.71	1.66
BDBL	2010	6.63	2.9	2.16	3.54	3.98	0.34	0.24	0.34	0.53	0.53
BASIC Bank Ltd	1989	-11.55	-16.12	-81.24	-55.38	-34.08	-20.57	-28.09	-49.01	-53.73	-270.97
Janata Bank Ltd	1972	10.02	11.51	5.68	5.4	0.34	0.49	0.28	6.33	2.47	1.2
Rupali Bank Ltd	1972	3.69	1.71	-9.82	4.78	2.68	0.8	0.92	2.05	1.26	3.27
Sonali Bank Ltd	1972	10.94	0.93	2.38	10.77	3.42	3.92	4.21	4.26	4.7	7.77
Average		4.21	0.43	-16.31	-8.13	-3.50	-2.08	-3.80	-5.44	-7.01	-42.76

Note: All the values are taken in percentages (%).

Comparative analysis among selected Islamic Banks vs PCBs vs SOCBs

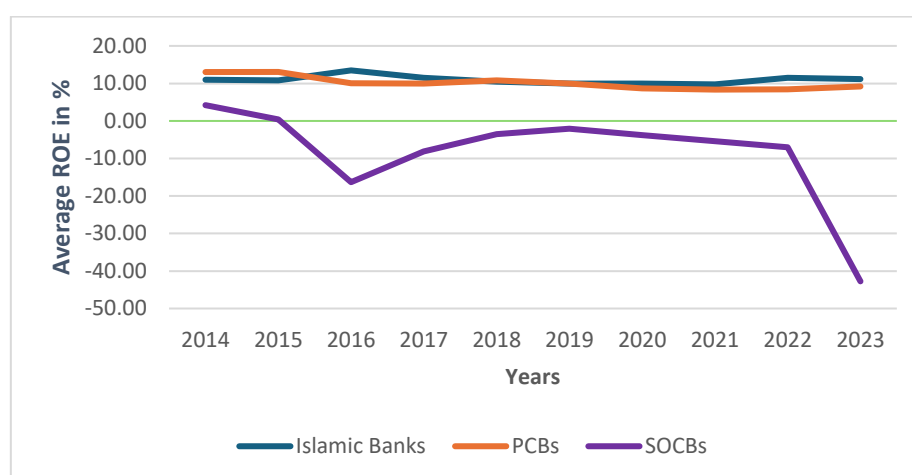


Figure 2. Comparative graph presentation of the average value of ROE for selected Islamic Banks vs PCBs vs SOCBs in Bangladesh (2014-2023).

A higher ratio indicates stronger managerial performance. Islamic Banks and Private Commercial Banks consistently outperform SOCBs. SOCBs' ROE dropped sharply in 2016, partially recovered, but fell dramatically in 2023 due to Basic Bank's poor performance, highlighting major challenges in the SOCB sector.

4.3 Profitability Ratios: EPS of Selected Banks

Table 8. Ratio Analysis for Selected Islamic Banks (EPS)

Banks Name (Islamic)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Al-Arafah Islami Bank Ltd	1995	2.2	2.25	3.07	3.15	2.35	2.28	2.41	1.96	1.95	2.14
EXIM Bank Ltd	1999	1.92	1.48	2.15	2.34	1.65	1.72	1.92	1.32	2.47	2.23
First Security Islami Bank Ltd	1999	1.02	1.26	2.08	1.89	2.03	2.19	2.79	3.2	2.56	2.85
Social Islami Bank Ltd	1995	2.71	2.82	3.1	1.79	1.95	1.62	1.57	1.6	1.88	1.98
Islami Bank Bangladesh Ltd	1983	2.48	1.88	2.77	2.91	3.77	3.31	2.81	2.88	3.68	3.8
Shahjalal Islami Bank Ltd	2001	1.02	1.79	2.26	1.58	1.47	1.75	1.85	2.51	3.17	3.26
Average		1.89	1.91	2.57	2.28	2.20	2.15	2.23	2.25	2.62	2.71

Note: All the values are taken in taka (₳).

Table 9. Ratio Analysis for Selected PCBs (EPS)

Bank Name (PCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AB Bank Ltd	1982	2.81	0.18	0.37	0.04	0.02	0.19	0.45	0.73	0.77	0.82
Bank Asia Ltd	1999	2.64	2.92	1.57	1.84	2.04	1.68	1.75	2.32	2.61	1.72
BRAC Bank Ltd	2001	3.19	3.43	5.23	4.91	5.17	4.26	3.26	3.71	3.58	4.54
Standard Bank Ltd	1999	1.85	2.12	1.44	1.42	1.44	1.5	1.05	0.73	1.03	1.27
Dutch-Bangla Bank Ltd	1996	11	15.1	8.9	12.3	21	8.7	10	8.8	8.14	10.72
Southeast Bank Ltd	1995	4.18	3.35	2.66	1.11	2.35	2.16	1.81	1.5	1.42	1.66
Average		4.28	4.52	3.36	3.60	5.34	3.08	3.05	2.97	2.93	3.46

Note: All the values are taken in taka (₳).

Table 10. Ratio Analysis for Selected SOCBs (EPS)

Bank Name (SOCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agrani Bank Ltd	1972	9.58	3.15	-33.63	32.62	5	5.17	-0.68	6.63	5.34	3.33
BDBL	2010	12.01	8.01	9.56	14.08	18.72	1.64	1.12	1.06	1.69	1.7
BASIC Bank Ltd	1989	-37.37	-2.9	-13.75	-6.31	-3.26	-3.01	-3.43	-3.36	-1.2	-3.84
Janata Bank Ltd	1972	19.92	25.12	13.61	14.04	1.17	1.06	0.62	12.98	4.9	2.39
Rupali Bank Ltd	1972	1.75	0.98	-4.14	1.33	1.01	1.32	0.35	0.77	0.45	1.17
Sonali Bank Ltd	1972	32.12	1.53	3.96	18.68	5.61	5.98	7.14	7.63	8.19	14.38
Average		6.34	5.98	-4.07	12.41	4.71	2.03	0.85	4.29	3.23	3.19

Note: All the values are taken in taka (₳).

Comparative analysis among selected Islamic Banks vs PCBs vs SOCBs

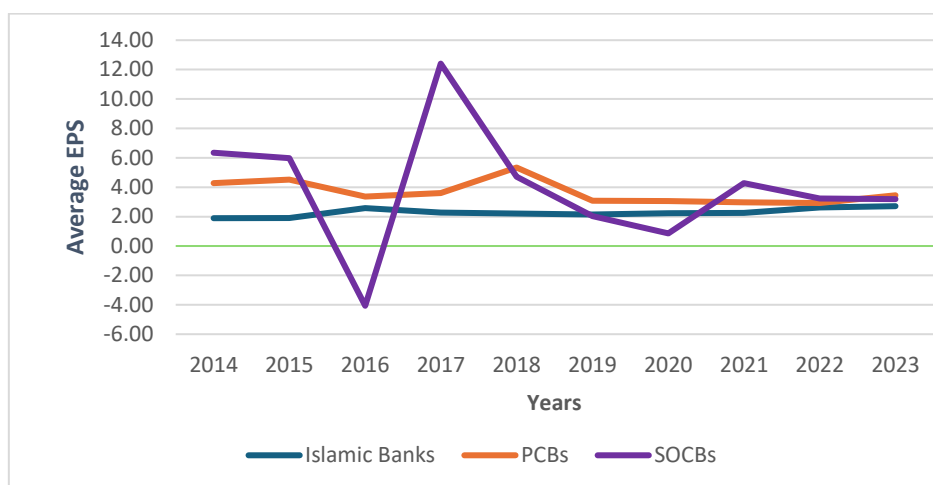


Figure 3. Comparative graph presentation of the average value of EPS for selected Islamic Banks vs PCBs vs SOCBs in Bangladesh (2014-2023).

Higher earnings per share (EPS) reflects greater net profitability. Analysis indicates that Islamic Banks and Private Commercial Banks show steady, linear EPS performance, while State-Owned Commercial Banks exhibit more volatile fluctuations. This suggests that Islamic Banks and Private Commercial Banks maintain more consistent profitability, whereas SOCBs experience irregular earnings patterns, reflecting weaker financial stability and managerial efficiency.

4.4 Credit Risk Performance: NPL of Selected Banks

Table 11. Ratio Analysis for Selected Islamic Banks (NPL)

Banks Name (Islamic)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Al-Arafah Islami Bank Ltd	1995	4.76	4.75	4.58	4.21	4.85	4.82	3.8	4.81	5.41	6.76
EXIM Bank Ltd	1999	3.21	4.66	5.2	5.29	5.09	4.89	3.81	3.98	3.86	3.64
First Security Islami Bank Ltd	1999	2.23	2.77	2.58	3.07	3.35	4.59	3.13	2.63	3.56	2.96
Social Islami Bank Ltd	1995	4.56	3.85	4.42	8.2	7.69	6.63	6.05	5.18	4.8	4.79
Islami Bank Bangladesh Ltd	1983	4.95	4.29	3.86	3.62	4.14	3.82	3.41	3.31	3.7	4.32
Shahjalal Islami Bank Ltd	2001	7.65	6.31	4.59	3.9	6.76	4.91	4.57	4.42	4.78	4.42
Average		4.56	4.44	4.21	4.72	5.31	4.94	4.13	4.06	4.35	4.48

Note: All the values are taken in percentages (%).

Table 12. Ratio Analysis for Selected PCBs (NPL)

Bank Name (PCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AB Bank Ltd	1982	3.66	3.01	4.96	6.84	32	18.28	16.79	14.15	20.23	30
Bank Asia Ltd	1999	5.17	4.18	5.31	4.31	4.05	4.61	3.24	5.14	4.87	6.7
BRAC Bank Ltd	2001	5.62	5.9	1.92	4.15	3.61	3.99	2.93	3.9	3.72	3.38
Standard Bank Ltd	1999	3.55	3.23	3.62	7.3	7.77	5.75	4.78	6.06	7.77	7.12
Dutch-Bangla Bank Ltd	1996	4.4	3.69	5.19	4.65	4.14	4.4	2.2	3.7	4.3	4.1
Southeast Bank Ltd	1995	3.66	4.26	4.83	5.92	5.81	4.87	3.1	4.81	6.54	9.65
Average		4.34	4.05	4.31	5.53	9.56	6.98	5.51	6.29	7.91	10.16

Note: All the values are taken in percentages (%).

Table 13. Ratio Analysis for Selected SOCBs (NPL)

Bank Name (SOCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agrani Bank Ltd	1972	16.96	19.08	25.74	17.48	18.05	14.26	12.48	16.7	21.11	28.37
BDBL	2010	31.98	38.66	41.09	19.98	32.29	38.34	28.01	30.77	41.37	37.39
BASIC Bank Ltd	1989	51.15	51.09	54.13	54.63	56.85	52.02	51.72	59.8	57.85	63.35
Janata Bank Ltd	1972	11.65	12.32	14.62	16.44	33.57	26.63	22.69	17.61	17.84	25.42
Rupali Bank Ltd	1972	12.13	16.41	19.87	22.14	17.88	15.05	11.79	17.5	21.19	21.03
Sonali Bank Ltd	1972	25.44	24.93	28.22	35.09	26.14	20.32	18.37	17.32	14.83	13.25
Average		24.89	27.08	30.61	27.63	30.80	27.77	24.18	26.62	29.03	31.47

Note: All the values are taken in percentages (%).

Comparative analysis among selected Islamic Banks vs PCBs vs SOCBs

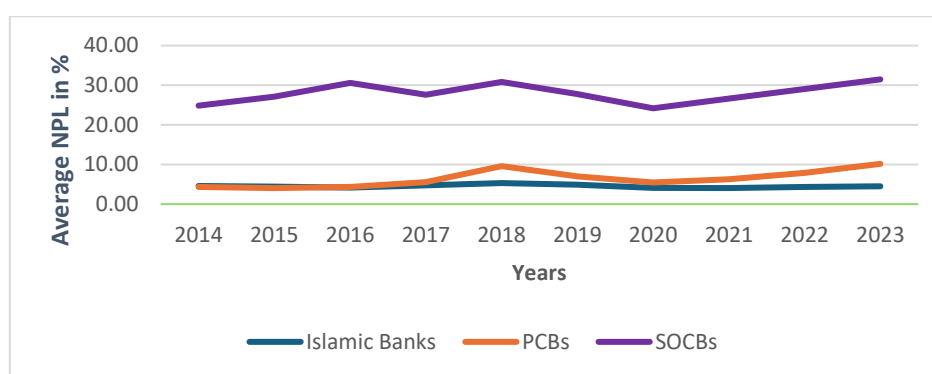


Figure 4. Comparative graph presentation of the average value of NPL for selected Islamic Banks vs PCBs vs SOCBs in Bangladesh (2014-2023).

NPL profile ratio indices:

Very healthy = NPL < 2%

Healthy = 2% < NPL < 5% is considered healthy.

Analysis indicates that the average non-performing loans (NPL) of Islamic Banks remain at a healthy level. In contrast, the average NPL of Private Commercial Banks has been rising steadily in recent years. Alarmingly, State-Owned Commercial Banks exhibit extremely high NPLs, approaching nearly half of their total loans and advances, highlighting severe credit risk and weak financial management in the SOCB sector.

4.5 Credit Risk Performance: CAR of Selected Banks

Table 14. Ratio Analysis for Selected Islamic Banks (CAR)

Banks Name (Islamic)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Al-Arafah Islami Bank Ltd	1995	13.53	15.3	14.41	12.28	14.38	14.58	15.74	15.46	14.17	14.05
EXIM Bank Ltd	1999	11.8	12.15	11.83	10.44	9.46	12.62	13.24	14.22	13.76	14.48
First Security Islami Bank Ltd	1999	11.92	10.42	10.73	12.21	10.34	11.41	12.12	12.09	12.07	11.84
Social Islami Bank Ltd	1995	11.41	12.32	11.57	11.59	14.37	13.78	13.5	11.6	11.89	12.66
Islami Bank Bangladesh Ltd	1983	12.83	11.72	10.84	11.5	12.17	12.95	13.55	13.54	12.54	12.62
Shahjalal Islami Bank Ltd	2001	13.75	13.28	11.54	12.44	14.31	15.58	14.43	15.04	14.38	15.06
Average		12.54	12.53	11.82	11.74	12.51	13.49	13.76	13.66	13.14	13.45

Note: All the values are taken in percentages (%).

Table 15. Ratio Analysis for Selected PCBs (CAR)

Bank Name (PCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AB Bank Ltd	1982	10.32	11.09	11.1	11.25	10.48	10.12	10.84	10.74	10.31	10.26
Bank Asia Ltd	1999	11.05	12.34	12.28	14.75	14.76	17.93	17.16	15.72	17.7	16.45
BRAC Bank Ltd	2001	15.12	12.29	12.06	11.97	15.7	15.07	14.55	14.36	14.04	14
Standard Bank Ltd	1999	11.05	12.18	11.38	13.96	13.1	11.32	12.86	12.97	13.96	13.74
Dutch-Bangla Bank Ltd	1996	13.83	13.68	13.1	14.49	15.62	15.5	17.2	16.4	15.6	16.2
Southeast Bank Ltd	1995	12.49	11.6	12.18	10.84	12.38	11.52	14.35	13.86	12.75	13.41
Average		12.31	12.20	12.02	12.88	13.67	13.58	14.49	14.01	14.06	14.01

Note: All the values are taken in percentages (%).

Table 16. Ratio Analysis for Selected SOCBs (CAR)

Bank Name (SOCBs)	EST. Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agrani Bank Ltd	1972	10.32	9.39	9.89	10.14	10.14	10.02	9.74	7.55	6.28	4.57
BDBL	2010	24.58	25.49	25.64	26.63	26.67	22.18	22.88	23.38	23.13	22.56
BASIC Bank Ltd	1989	-28.07	-7.55	-15.59	-13.22	8.25	6.53	3.08	0.18	-1.36	-3.35
Janata Bank Ltd	1972	10.23	10.25	10.03	10.63	10.07	10.03	10.05	8.98	7.83	6.75
Rupali Bank Ltd	1972	5.34	10.23	8.49	6.69	6.53	10.34	8	5.56	4.92	5.28
Sonali Bank Ltd	1972	12.24	10.03	10.25	10.24	10.01	10.09	10.02	10.04	10.05	10.07
Average		5.77	9.64	8.12	8.52	11.95	11.53	10.63	9.28	8.48	7.65

Note: All the values are taken in percentages (%).

Comparative analysis among selected Islamic Banks vs PCBs vs SOCBs

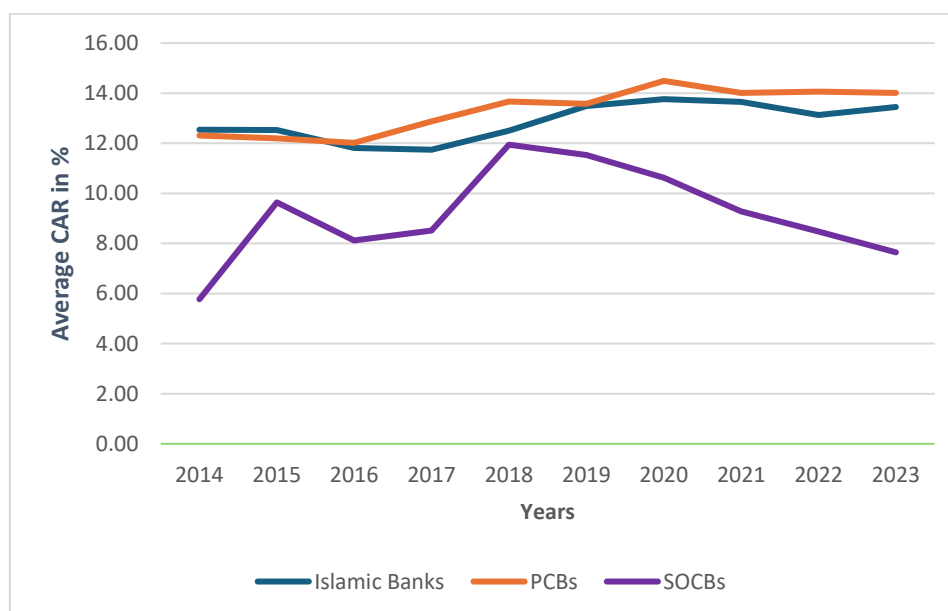


Figure 5. Comparative graph presentation of the average value of CAR for selected Islamic Banks vs PCBs vs SOCBs in Bangladesh (2014-2023).

Under Basel III, the minimum capital adequacy ratio (CAR) is 8%, while in Bangladesh, banks are required to maintain at least 10% of risk-weighted assets. Analysis shows that Islamic Banks and Private Commercial Banks meet the required CAR, whereas State-Owned Commercial Banks fall short, primarily due to the inadequate capital adequacy of Basic Bank, reflecting weak capital management in the SOCB sector.

4.6 Profitability Analysis: Using Ordinary Least Squares (OLS) Regression

4.6.1 Model Specification

To examine bank profitability, we estimate the following OLS regression model for ROA; where, for bank i in year t :

$$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CAR_{it} + \beta_3 EPS_{it} + \beta_4 Islamic_i + \beta_5 PCB_i$$

4.6.2 Regression Results

Table 17. Data of Profitability Analysis Extracted from OLS Regression Model Result

ROA = $f(NPL, CAR, EPS, Islamic, PCB)$					
Predictor	Coef. (β)	Std. Error	t-Stat	p-Value	Significance
Intercept	1.190	0.647	1.840	0.078	
NPL	-0.0479	0.0219	-2.186	0.039	$p < 0.05$
CAR	-0.0330	0.0328	-1.007	0.324	
EPS	0.0740	0.0166	4.457	< 0.001	$p < 0.001$
Islamic	-0.0365	0.5630	-0.065	0.949	
PCB	0.1045	0.5254	0.199	0.844	

Model Fit: $R^2 = 0.870$, Adjusted $R^2 = 0.843$ and Standard Error = 0.210.

Table 18. ANOVA Table of Profitability Analysis Using OLS Regression Model

	df	SS	MS	F	Significance F
Regression	5	7.1084	1.4217	32.1184	6.9856×10^{-10}
Residual	24	1.0623	0.0443		
Total	29	8.1708			

The regression shows that credit risk, measured by non-performing loans, significantly reduces profitability, confirming the adverse role of impaired loans. Capital adequacy, while negative, has no meaningful impact, indicating that capital buffers alone do not improve asset returns. Earnings per share emerges as the strongest driver of profitability, highlighting that higher earnings efficiency translates into stronger performance. Ownership structure, whether Islamic or private commercial, shows no significant influence once financial indicators are considered.

4.7 Market Performance: Using Ordinary Least Squares (OLS) Regression

4.7.1 Model Specification

To examine bank financial performance, we estimate the following OLS regression model for EPS; where, for bank i in year t :

$$EPS_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 NPL_{it} + \beta_4 CAR_{it} + \beta_5 Islamic_i + \beta_6 PCB_i$$

4.7.2 Regression Results

Table 19. Data of Market Performance Extracted from OLS Regression Model Result

EPS = f (ROA, ROE, NPL, CAR, Islamic, PCB)					
Predictor	Coef. (β)	Std. Error	t-Stat	p-Value	Significance
Intercept	-0.7552	6.5965	-0.1145	0.9098	
ROA	6.2667	1.5267	4.1047	0.0004	p < 0.01
ROE	-0.0163	0.0659	-0.2478	0.8065	
NPL	0.1583	0.2492	0.6354	0.5315	
CAR	0.1214	0.3404	0.3565	0.7247	
Islamic Bank	-3.3343	5.7847	-0.5764	0.5699	
PCBs	-3.1782	5.4636	-0.5817	0.5664	

Model Fit: R² = 0.520, Adjusted R² = 0.395 and Standard Error = 1.950.

Table 20. ANOVA Table of Market Performance Using OLS Regression Model

	df	SS	MS	F	Significance F
Regression	6	94.7974	15.7996	4.1524	0.0057
Residual	23	87.5120	3.8049		
Total	29	182.3094			

The findings reveal that asset efficiency, captured by return on assets, is the key determinant of earnings per share, underscoring the importance of effective asset use for market performance. In contrast, return on equity and capital adequacy do not significantly shape market outcomes, suggesting that investors prioritize short-term asset efficiency over equity-driven returns or capital strength. Similarly, ownership structure does not explain differences in earnings per share, indicating that institutional form carries little weight once financial fundamentals are accounted for.

4.8 Comparative Performance by Bank Type: Using Ordinary Least Squares (OLS) Regression

4.8.1 Model Specification

To examine how bank type affects profitability, we estimate the following OLS regression model for ROA_i; where, for bank i in year t:

$$ROA_{it} = \beta_0 + \beta_1 Islamic_i + \beta_2 PCB_i$$

4.8.2 Regression Results

Table 21. Data of Comparative Performance by Bank Type Extracted from OLS Regression Model Result

ROA = f (Islamic, PCB)					
Variable	Coefficient	Std. Error	t-Stat	p-Value	Significance
Intercept (SOCBs)	-0.1648	0.0964	-1.709	0.0989	
Islamic Banks	0.8465	0.1364	6.206	<0.001	p < 0.01
PCBs	0.9813	0.1364	7.195	<0.001	p < 0.01

Model Fit: R² = 0.6926, Adjusted R² = 0.6698 and Standard Error = 0.3050.

Table 22. ANOVA Table of Comparative Performance by Bank Type Using OLS Regression Model

	df	SS	MS	F	Significance F
Regression	2	5.6591	2.8296	30.4190	1.2126×10 ⁻⁷
Residual	27	2.5116	0.0930		
Total	29	8.1708			

The results highlight clear performance differences across bank types. State-owned commercial banks demonstrate weak but inconclusive profitability, while Islamic banks consistently outperform with a strong advantage in asset returns. Private commercial banks also show superior profitability, reflecting higher efficiency and innovation compared to their state-owned counterparts. These outcomes underscore that governance quality and operational effectiveness, rather than state ownership, are the primary drivers of profitability in Bangladesh's banking sector.

4.9 Financial Indicators Which Significantly Affect ROA: Using Ordinary Least Squares (OLS) Regression

4.9.1 Model Specification

To identify which financial indicators most strongly influence banks' ROA, we estimate the following multiple-regression model for each bank (2014–2023) where for bank *i* in year *t*:

$$ROA_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 NPL_{it} + \beta_3 CAR_{it} + \beta_4 EPS_{it} + \beta_5 Islamic_i + \beta_6 PCB_i$$

4.9.2 Regression Results

Table 23. Data of Financial Indicators Which Significantly Affect ROA Extracted from OLS Regression Model Result

ROA = <i>f</i> (ROE, NPL, CAR, EPS, Islamic, PCB)					
Predictor	Coefficient (β)	Std. Error	t-Statistic	P-Value	Significance
Intercept	0.7927	0.6644	1.1931	0.2450	
ROE	0.0110	0.0064	1.7126	0.1002	
NPL	-0.0229	0.0256	-0.8927	0.3813	
CAR	-0.0531	0.0336	-1.5778	0.1283	
EPS	0.0675	0.0164	4.1047	0.0004	p < 0.01
Islamic	0.4005	0.5988	0.6689	0.5102	
PCB	0.5202	0.5607	0.9278	0.3631	

Model Fit: R² = 0.8847, Adjusted R² = 0.8546 and Standard Error = 0.2024.

Table 24. ANOVA Table of Financial Indicators Which Significantly Affect ROA Using OLS Regression Model

	df	SS	MS	F	Significance F
Regression	6	7.2286	1.2048	29.4097	1.2126×10 ⁻⁷ 1.09752 E-09
Residual	23	0.9422	0.0470		
Total	29	8.1708			

The model explains a large share of profitability variation, confirming its strong explanatory power. Among financial indicators, earnings per share stands out as the dominant factor, reinforcing that profitability is closely tied to earnings efficiency. In contrast, return on equity, credit risk, and capital adequacy show no significant effect, suggesting limited influence when efficiency measures are

considered. Bank-type comparisons further confirm that ownership structure does not determine profitability once financial fundamentals are controlled, underscoring that efficiency, not institutional form, drives asset returns.

The findings of this study provide important insights into the determinants of bank profitability in Bangladesh and their broader theoretical and practical implications. The regression results demonstrate that EPS is the most significant predictor of ROA, while other indicators ROE, NPL, and CAR do not exert a statistically significant effect once EPS is controlled for. This outcome directly supports the ESH, which posits that profitability is primarily driven by efficiency-related factors rather than institutional form. In the Bangladeshi context, banks that can generate higher-quality earnings are better positioned to utilize their assets productively, irrespective of ownership type.

The insignificant coefficients of ROE, NPL, and CAR suggest that traditional measures of profitability, credit risk, and capital strength, while important for financial stability and regulatory monitoring, do not directly explain variations in asset profitability once earnings efficiency is accounted for. This finding underscores that a bank's ability to translate earnings into asset returns is more critical than maintaining high capital buffers or reducing loan defaults in isolation. Furthermore, the positive but statistically insignificant effect of ownership categories (Islamic and Private Commercial Banks compared to SOCBs) implies that institutional form alone is not a determinant of superior performance. Instead, it is operational efficiency reflected through EPS that explains performance differences across banks.

Previous research findings on Islamic banking show evolving profitability trends during 2010–2019 (Rahman et al., 2021), which aligns with our observed temporal dynamics among Bangladeshi banks. These findings carry clear implications for policymakers, regulators, and practitioners. For policymakers, the results indicate that reform strategies should move beyond ownership restructuring and instead emphasize profitability-focused reforms, particularly for SOCBs, which continue to face governance and efficiency challenges. For regulators, the emphasis should shift towards monitoring performance indicators like EPS that capture earnings efficiency, rather than relying solely on traditional prudential measures such as CAR and NPL ratios. For banking practitioners, the study highlights the importance of revenue diversification, cost optimization, and digital innovation in strengthening earnings capacity and, in turn, improving asset profitability.

By situating these findings within the ESH framework, this study contributes to the ongoing discourse on banking performance in emerging economies. It suggests that sustainable improvements in profitability require banks to enhance internal operational efficiency and earnings quality rather than depend on institutional form or capital adequacy measures alone. In doing so, Bangladesh's banking sector can achieve greater competitiveness, resilience, and alignment with global best practices.

CONCLUSIONS

This study examined the determinants of bank profitability in Bangladesh by analyzing the impact of financial indicators on ROA and EPS grounded in the ESH, the findings confirm that efficiency-related factors particularly EPS play a decisive role in shaping bank performance. A one-unit increase in EPS was found to significantly raise ROA, highlighting earnings quality as the most reliable indicator of profitability. By contrast, traditional variables such as ROE, NPL, and CAR, though relevant for regulatory oversight and financial stability, did not significantly influence profitability once efficiency was considered. Similarly, ownership structure (SOCBs, PCBs, and Islamic banks) exhibited no significant impact, indicating that institutional form alone does not guarantee superior performance.

These results carry important implications for policymakers, reforms targeting operational efficiency such as digital transformation, cost management, and innovation will likely prove more effective than ownership restructuring in improving profitability, especially within SOCBs. For regulators, monitoring efficiency-linked indicators like EPS can provide deeper insights into bank performance than reliance on traditional prudential ratios. For practitioners, the evidence highlights the importance of strengthening earnings capacity through diversified revenue streams, enhanced governance, and technological adoption.

Overall, the study underscores that sustainable improvements in bank profitability in Bangladesh must be anchored in efficiency rather than institutional form, thereby reinforcing the ESH perspective. By prioritizing strategies that enhance earnings quality and asset utilization, Bangladesh's banking sector can build greater competitiveness, resilience, and alignment with international standards, supporting long-term economic growth and financial stability.

ACKNOWLEDGEMENTS

This research is self-funded, and no acknowledgment is necessary.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORS CONTRIBUTION

Shuvo Saha.: Conceptualization, Methodology and Data curation. **Md Rizaur Rahman.**: Software, Visualization and Writing-Original draft preparation. **Ratan Kumar Saha.**: Supervision, Writing-Reviewing and Editing.

AVAILABILITY OF DATA AND MATERIALS

Data is openly available in a public repository, with a permanent identifier (such as a DOI).

DECLARATION OF GENERATIVE AI

During the preparation of this work, the authors used Grammarly to enhance the clarity of the writing. After using the Grammarly, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

ETHIC STATEMENTS

Not applicable

REFERENCES

- Alshammari, T. (2022). State ownership and bank performance: conventional vs Islamic banks. *Journal of Islamic Accounting and Business Research*, 13(1), 141-156. <https://doi.org/10.1108/JIABR-06-2021-0161>
- Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121–136. <https://doi.org/10.1016/j.intfin.2006.07.001>
- Beck, T., Demircuc-Kunt, A., & Levine, R. (2005). Bank concentration and fragility: Impact and mechanics. *National Bureau Of Economic Research*. Retrieved from https://www.nber.org/system/files/working_papers/w11500/w11500.pdf
- Berger, A. N. (1995). The profit-structure relationship in banking: Tests of market-power and efficient-structure hypotheses. *Journal of Money, Credit and Banking*, 27(2), 404-431. <https://doi.org/10.2307/2077876>
- Berger, A. N., & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking & Finance*, 21(7), 895-947. [https://doi.org/10.1016/S0378-4266\(97\)00010-1](https://doi.org/10.1016/S0378-4266(97)00010-1)
- Gordon, E., & Natarajan, K. (2024). *Banking Theory, Law & Practice*
- Jaafar, M. N., Muhamat, A. A., Basri, M. F., & Alwai, S. F. (2020). Determinants of systematic risk: Empirical evidence from shariah compliant firms listed on Bursa Malaysia. *International Business Education Journal*, 13(1), 71-82. <https://doi.org/10.37134/ibej.vol13.1.6.2020>

- Mallik, K. S. (2024). Financial institutions in Bangladesh: Assessing performance, risk, and sectoral contributions in 2023. *Journal of Production, Operations Management and Economics*, 5(1), 15-26. <https://doi.org/10.55529/jpome.51.15.26>
- Mushafiq, M., Sindhu, M. I., & Sohail, M. K. (2023). Financial performance under influence of credit risk in non-financial firms: evidence from Pakistan. *Journal of Economic and Administrative Sciences*, 39(1), 25-42. <https://doi.org/10.JEAS-02-2021-0018>
- Nabi, M. G., Islam, M. A., & Bakar, R. (2019). Do private commercial banks outperform state-owned commercial banks? Empirical evidence from Bangladesh. *Journal of Applied Finance and Banking*, 9(5), 167-186.
- Rahman, M. B., & Chowdhury, N. (2022). Determinants of professional's bank choice: Empirical evidence from Bangladesh. *International Business Education Journal*, 15(1), 57-72. <https://doi.org/10.37134/ibej.vol15.1.5.2022>
- Rahman, M. R., Rahman, M. M., & Subat, A. (2020). Measuring financial distress of non-bank financial Institutions of Bangladesh using Altman's z-score model. *International Business Education Journal*, 13(Special Issue), 15-28. <https://doi.org/10ibej.vol13.sp.2.2020>
- Srairi, S. A. (2009). Cost and profit efficiency of conventional and Islamic banks in GCC countries. *Journal of Productivity Analysis*, 34, 45-62. <https://doi.org/10.1007/s11123-009-0161-7>
- Sufian, F., & Habibullah, M. S. (2010). Does economic freedom foster banks' performance? Panel evidence from Malaysia. *Journal of Contemporary Accounting and Economics*, 6(2), 77-91. <https://doi.org/10.1016/j.jcae.2010.09.003>
- Tahir, S. H., Moazzam, M. M., Sultana, N., Ahmad, G., Shabir, G., & Nosheen, F. (2020). Firm's risk and capital structure: An empirical analysis of seasonal and non-seasonal businesses. *The Journal of Asian Finance, Economics and Business* 7(12), 627-633.
- Tekatel, W. L., & Nurebo, B. Y. (2019). Comparing financial performance of state-owned commercial bank with privately owned Commercial Banks in Ethiopia. *European Journal of Business Science and Technology*, 5(2), 200-217.
- Ullah, M. H., & Rahman, M. (2022). Financial performance comparison between state-owned commercial banks and Islamic banks in Bangladesh. *Journal of International Business and Management*, 5(3), 01-14. <https://doi.org/10.37227/JIBM-2022-01-5295/>