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A Comparative Analysis of Asset Quality and Profitability between Public and Private Banks Listed in Nifty Bank Index in India

- Sumeet Agarwal[*]
- Aditya Rai[**]

Abstract

The financial domain between public and private banks has shifted, raising a fundamental question: Why are public banks lagging while private institutions succeed? This study analyses the comparative financial performance of public and private banks listed in bank nifty in terms of asset quality and profitability over the period of ten years (2014-2023) using the accounting ranking method and Analysis of Variance (ANOVA). In this study, three private sector bank (HDFC, AXIS, ICICI) and three public sector banks (SBI, BOB, PNB) has been selected based on market capitalization out of nine banks that was continued during study period. The findings reveal that private banks consistently outperform public banks. Analysis of Variance (ANOVA) results confirmed statistically significant differences in asset quality and profitability between the two sectors ($p < 0.05$). These results underscore the urgent need for public banks to enhance their risk management strategies, operational efficiency, and overall competitiveness in the banking sector. The insights provided are crucial for stakeholders and policymakers to strengthen resilience in public banking.

Keywords: Asset Quality, Profitability, Bank Nifty, Public Banks, Private Banks, Analysis of Variance
JEL Classification: G21

1. Introduction

Finance Minister of India (Press Information Bureau 2024, August 19) expressed a positive view of the performance of Public Sector Banks (PSBs), particularly regarding their asset quality and profitability. She also recognizes the improvement made by PSBs in a significant reduction in NPAs for the fiscal year 2023-24 during the review meeting of public sector banks on 19 AUG 2024 in New Delhi. As India strives to become the third-largest economy in the world, the banking industry is seeing a ten-year-high performance in financial measures,

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according to Deputy Governor of the Reserve Bank of India (Press Information Bureau 2024, August 19). As we are aware, the banking industry plays a vital role in shaping a country's economy. Hence, banks' financial health is of utmost importance, as it facilitates the flow of money, promotes savings, channelizes credit to individuals, businesses, and governments, and provides financial services to run the economy. After the 1990s, the Indian banking sector underwent meaningful change. Private banks started evolving as the main players, and among them, the competitive environment started alongside public-sector banks. "Researchers like Das and Ghosh (2006) have observed that after post-liberalization period private banks of their aggressive market strategies and technological adoption have frequently surpassed their public counterparts in terms of efficiency and profitability." As the banking industry continues to evolve, it is important to assess the performance of public and private sector banks to understand their relative strengths, weaknesses, and impacts on the overall financial system. Hence, it is important to assess banks' financial performance as they play a key role in shaping and contributing to economic growth. Asset quality shows the overall health and risk management of the assets they hold on to their balance sheet. It acts as an important indicator of a bank's understanding of financial stability and ability to endure potential losses. It is mandatory for banks to maintain high asset quality to understand and manage the quality of assets and to ensure their growth, financial stability, and compliance with regulatory requirements, not only for banking sector performance, but also for the economy. For instance, Non-performing Assets (NPA) are key indicators of bank asset quality. If a higher level of NPA persists for a longer period, it impacts profitability and increases potential risk, and banks need to increase provisioning, which affects their overall performance. Profitability in the banking sector refers to the banks' ability to generate profits from their operations, assets, and equity. This is an important indicator of banks' financial health. Banks want to maximize profitability by maintaining adequate capital levels and managing risk. However, in the last decade, the banking sector has witnessed both public and private banks take more risk by providing more loans to generate more profit. Consequently, asset quality has declined, although profitability is good. Hence, this study focuses on comparing both asset quality and profitability to understand

the actual performance of public and private banks and to provide insights into the competitive landscape of the Indian banking industry. This study is comprised of four sections. The first section presents a literature review of national and international studies that examine banks' asset quality and profitability. This section discusses the research methodology and the data collection. The third section of this paper dictates the research hypothesis, and the last section analyses the data by employing the accounting rank method and ANOVA.

2. Literature Review

2.1 Asset Quality

Mohanty and Mehrotra (2021) looked at how Non-performing Assets (NPAs) affected Indian banks' performance. For the years 2007–08 and 2017–18, they selected 21 private banks and 27 state banks. According to the study, NPAs had a negative effect on public banks' performance when compared to private banks. Tanted and Mathkari (2020) study five private and five public banks in India. Regression analyses were employed, and the results showed that public banks had higher levels of NPAs than private banks did. They also found that private banks set up new businesses compared to public banks, which also helps private banks perform well. The rising Non-performing Assets (NPA) of Indian commercial banks can be attributed to a combination of macroeconomic, industry, and bank-specific variables, according to Arrawatia et al. (2019) analysis of 47 commercial banks from 2000 to 2014.

2.2. Profitability

Pillai and Dam (2019) study 5 private banks and 5 public banks of India using panel data regression for the period of 10 years found that private banks earn higher profit than public banks and have perform good in terms of profitability than public banks. Poudel (2012) assessed the impact of loan management on bank financial performance in Nepal using time-series data spanning 2001 to 2011. The study's findings demonstrate the importance of credit risk management in forecasting bank financial success and profitability. As Fredrick (2010) finds, credit risk management significantly impacts banks' financial performance in Kenya. Jackson (2011) utilized return on equity as a stand-in for bank performance, and CAMEL

indicators were employed as independent variables. He discovered that these factors affected the financial performance of commercial banks. This study investigates the CAMELS criteria for commercial bank profitability, which none of the above conclusions truly address. Muneer et al. (2017) employed the panel data analysis on 25 Pakistani commercial banks for the period of 2006 to 2014 found that bank asset, cost of fund, credit to deposit ratio, bank lending has a significant impact on non-performing asset and capital adequacy ratio, GNPs also impact the profitability of the banks. Kakkar and Sharma (2016) use the financial ratio as a proxy for bank performance and profitability for the period 2010-11 to 2014-15 and a regression technique and selecting four public banks based on market capitalization. They found a significant relationship between bank performance and profitability.

3. Research Gap

A comparative analysis of asset quality and profitability between public and private banks over the last decade reveals several significant research gaps that warrant further investigation. First, while some studies have explored the financial performance of these banking sectors, there is a notable lack of comprehensive longitudinal analyses spanning a full decade. Many of the existing research on banking financial performance focuses on the brief time horizon as a result is failed to capture regulatory changes and economic instabilities. Furthermore, most of the studies focused on basic statistical method like simple t-test or averages rather than using the recent tools such as ANOVA. Additionally, the most important gap that how non-performing asset influence the performance of banks in terms of profitability. Finally, many studies employ ranking methods to assess the banks performance but fail to understand which sectors perform better in terms of asset quality and profitability. Hence, to address these gaps a comprehensive study employing accounting ranking methods and ANOVA test provide an in-depth understanding of how private and public sector banks have directed challenges over the past decade, resulting in offering the valuable insight for banking sector stakeholders.

4. Objectives

The objective is to evaluate the performance of private and public banks with respect to asset quality and profitability.

5. Hypothesis Statements

5.1 Asset Quality

H_{1a}: There is a significant difference between the non-performing asset ratio of private and public banks.

H_{1b}: There is a significant difference between the interest coverage ratio (ICR)of public and private banks.

H_{1c}: There is a significant difference between the provision coverage ratio (PCR) of public and private banks.

H_{1d}: There is a significant difference between the capital adequacy ratio (CAR) of public and private banks.

5.2 Profitability

H_{1a}: There is a significant difference between the Return on Assets (ROA) ratio of public banks and private banks.

H_{1b}: There is a significant difference between the Return on Equity (ROE) ratio of public and private banks.

H_{1c}: There is a significant difference between the Net Interest Margin (NIM) ratios of public and private banks.

H_{1d}: There is a significant difference between the Cost-to-Income Ratio (CIR) of public and private banks.

6. Data Source and Methodology

This study utilized secondary data sourced from the annual reports of the selected banks and the Reserve Bank of India. The analysis included three public banks and three private banks, all listed on the Bank Nifty Index, according to their

market capitalizations from 2014 to 2023. Specifically, the public banks selected were the State Bank of India (SBI), Bank of Baroda (BOB), and Punjab National Bank (PNB), whereas the private banks included HDFC Bank, Axis Bank, and ICICI Bank. This selection was made to provide a balanced and representative comparison of the Indian banking sector. By choosing an equal number of banks from both the public and private sectors, this study ensures fair representation and mitigates bias towards either sector. This approach also facilitates comparability and aids in drawing meaningful conclusions regarding their financial performance. The accounting ranking method and ANOVA were employed to analyse the variables.

7. Observed Results

a) Asset Quality

Table 1: Asset Quality and Group Ranking of Selected Banks for 2014-2023

	Provision Coverage Ratio				Interest Coverage Ratio			
Banks	**Mean (M)**	**MRANK**	**STDEV**	**STDEV-RANK**	**Mean(M)**	**MRANK**	**STDEV**	**STDEV-RANK**
SBI	75.70	2	12.06	4	1.61	4	0.10	2
PNB	68.62	5	12.76	5	1.54	6	0.07	**1**
BOB	74.75	3	11.21	3	1.59	5	0.16	5
HDFC	71.65	4	2.18	**1**	1.99	**1**	0.15	4
AXIS	79.286	**1**	10.15	2	1.75	3	0.13	3
ICICI	65.16	6	14.90	6	1.83	2	0.25	6

Source: Compiled by researchers from the annual report of banks

Table 1.1: Asset Quality and Group Ranking of Selected Banks for 2014-2023.

	Capital Adequacy Ratio				Non-Performing Asset Ratio					Group Rank		Group Rank
Banks	**Mean (M)**	**MRANK**	**STDEV**	**STDEV-RANK**	**Mean (M)**	**MRANK**	**STDEV**	**STDEV-RANK**	**Mean**	**Rank**	**STDEV**	**Rank**
SBI	13.13	5	0.78	**1**	2.64	4	1.51	3	3.75	4	2.50	**1**
PNB	12.40	6	2.13	6	6.02	6	2.66	6	5.75	6	4.50	5
BOB	13.60	4	1.50	4	3.08	5	1.60	4	4.25	5	4.00	4
HDFC	17.03	2	1.76	5	0.33	**1**	0.06	**1**	2.00	**1**	2.75	3
AXIS	16.66	3	1.47	3	1.28	2	0.99	2	2.25	2	2.50	**1**
ICICI	17.67	**1**	1.051	2	2.05	3	1.60	5	3.00	3	4.75	6

Source: Compiled by researchers from the annual report of banks

The average mean asset quality ratios of public and private banks from 2013 to 14 to 2022–23 is show in Tables 1 and 1.1, respectively, for the last ten years. In Table-1, Provision Coverage Ratio (PCR) indicates How many funds are set aside to cover potential losses from bad loans. The study shows that among both public and private banks, AXIS banks top the list with 79% and with Standard Deviation (STDEV) of 10%, which means that the banks maintain a healthy level of provision to cover their potential losses, and standard deviation of 10% suggests that some variation in the PCR over the years, but overall, it has remained relatively stable. However, on the other hand, ICICI banks bottom the list with 65% with standard deviation of 14% indicates its ability to cover potential losses from bad loans is not robust, as it ideally Should be, and standard deviation of 14% reflects significant fluctuations in PCR indicates inconsistency in managing stability.

Interest Coverage Ratio (ICR) is used to assess a bank's ability to meet its interest obligation on outstanding debts with its earnings. The study shows that HDFC tops the list with an ICR of approximately 2% (approx.) and a standard deviation of 0.15% indicates that it has enough earnings to cover its interest obligation, and a standard deviation of 0.15% indicates that banks' ability to cover their interest expenses has been relatively stable over the past decade. PNB Holds the lowest rank with an ICR of 1.5% and a standard deviation of 0.07%, indicating that it has insufficient earnings to cover its interest obligation, although the standard deviation is stable.

Likewise, as we observe in Table-1.1 Capital Adequacy Ratio (the CAR) determines the adequacy of their capital in relation to their risk-weighted assets. Here, HDFC ranks with a CAR of 17.67% and standard deviation of 1%, which indicates that a capital adequacy ratio of over 17% is significantly higher than the regulatory minimum (9%), showing that the bank is well capitalized and capable of absorbing losses. The low standard deviation of 1% suggests minimal fluctuations in CAR, which reflects consistent risk management practices. In contrast, Punjab Nation Bank (PNB) Holds the lowest rank with a CAR of 12.4% and a standard deviation of 2.13%. Even though PNB satisfies more than the regulatory requirement of 9%, a higher standard deviation affects its performance over time.

Table-1.1 shows the non-performing of individual banks, the prime objective of NPAR is to determine the asset quality and risk associated with credit management. HDFC bank ranked first with a minimum NPA of 0.33%, with a lower variation of 0.06% over the last decade and talked about its efficient management of credit risk compared to its counterparts. PNB ranked the lowest with an NPAR of 6.02%, with a variation of 2.66%. It means that PNB asset and credit risk management is not in good condition and signal bankruptcies in future years if it does not manage its non-performing asset. Its standard deviation is 2.66% highest among its counterparts, which means that the PNB fails to maintain stability in terms of the loan portfolio.

Table-1.1 also shows the group ranking of asset quality among the six banks listed in the bank nifty index over the ten years. With a mean score of 5.75 and a standard deviation of 4.5 for important metrics such as PCR, ICR, CAR, and NPA ratio, the Punjab National Bank (PNB) is ranked lowest. This suggests that PNB is not only a weaker asset quality but is also significantly volatile. This high mean and standard deviation points towards a troubling combination of inadequate provisioning, poor earning relationships to interest obligation, failing potential capital inadequacy, and high levels of non-performing assets. Such performance indicates that Punjab National Bank faces considerable financial distress, with high instability and risk asset management practices that could result in insolvency in the future. In contrast, the HDFC bank Holds the top position with a mean value of 2 and a standard deviation of 2.75, indicating excellent asset quality management with high PCR, strong ICR, over-compliance with CAR, and a minimal NPA ratio. HDFC banks reflect prudent lending, robust risk management, and financial stability, thereby providing confidence to investors, depositors, and regulators.

b) Profitability

Table 2: Profitability and Group Ranking of Selected Banks for 2014-2023

	Return on Asset				Return on Equity			
Banks	**Mean(M)**	**MRANK**	**STDEV**	**STDEV RANK**	**Mean(M)**	**MRANK**	**STDEV**	**STDEV RANK**
SBI	0.45	4	0.33	2	7.46	4	5.63	3
PNB	-0.15	6	0.75	6	-3.26	6	13.37	6

	Return on Asset				Return on Equity			
Banks	**Mean(M)**	**MRANK**	**STDEV**	**STDEV RANK**	**Mean(M)**	**MRANK**	**STDEV**	**STDEV RANK**
BOB	0.21	5	0.53	3	3.36	5	8.76	5
HDFC	1.97	**1**	0.07	**1**	17.78	**1**	1.56	**1**
AXIS	0.96	3	0.65	5	9.56	3	6.22	4
ICICI	1.40	2	0.56	4	11.13	2	4.37	2

Source: Compiled by researchers from the annual report of banks

Table 2.1: Profitability and Group Ranking of Selected Banks for 2014-2023

	Cost to Income Ratio				Net Interest Margin				Group Rank		Group Rank	
Banks	**Mean (M)**	**MRANK**	**STDEV**	**STDEV RANK**	**Mean (M)**	**MRANK**	**STDEV**	**STDEV RANK**	**Mean**	**Rank**	**STDEV**	**Rank**
SBI	51.77	6	2.58	**1**	3.05	4	0.25	3	4.50	4	2.250	2
PNB	47.53	5	4.60	6	2.71	5	0.42	6	5.50	6	6.000	6
BOB	47.15	4	2.63	2	2.58	6	0.39	5	5.00	5	3.750	4
HDFC	41.08	2	3.29	4	4.24	**1**	0.13	**1**	1.25	**1**	1.750	**1**
AXIS	43.29	3	3.38	5	3.67	2	0.22	2	2.75	3	4.000	5
ICICI	38.92	**1**	3.02	3	3.61	3	0.38	4	2.00	2	3.250	3

Source: Compiled by researchers from the annual report of banks

Table-2 shows the banks' profitability performance over the last ten years. Return of Asset (ROA) measures a bank's profitability relative to its total assets. HDFC bank topped the list with a mean value of 1.97% and standard deviation of 0.07%, which means that banks have consistently achieved a healthy level of profitability relative to their assets. The low standard deviation suggests that the bank has remained stable over time. On the other hand, Punjab national banks Hold the lowest rank, with a mean value of -0.15% and a standard deviation of 0.75%. A negative ROA suggests that banks have been unable to generate profits from their assets, leading to potential losses over a period of 10 years. A high standard deviation of .75% implies significant volatility in bank performance. Table 2 shows the (ROE) of banks over the period of 10 years. ROE refers to How efficiently a bank uses shareholder funds to generate profits. Here, HDFC ranks with a mean value of 17.78% and a standard deviation of 1.56%, indicating that the bank has consistently provided a good return to its investor. A standard deviation of 1.56% indicates that the ROE has been stable over the past decade. In contrast, PNB ranked last with -3.26 a mean value of and 13.37% standard

deviation. A negative ROE means that the bank has been losing, and it does not use shareholder funds to generate profit. Additionally, the high standard deviation of 13.37% implies financial performance instability.

Table-2.1 shows the cost-to-income ratio of banks for the last 10 years. The cost-to-income ratio is used to evaluate a bank's operational efficiency by comparing its operating costs to its income. Here, the ICICI bank ranks the highest among the other banks with a mean value of 38.92% and a standard deviation of 3.02, indicating that the bank can manage its operating costs effectively, and a standard deviation of 3% shows that bank cost management is relatively stable over the period. On the other hand, PNB ranks last with 47.53% mean value and standard deviation of 4.60%, which means that compared to other banks, PNB spends 47 paisa to earn one rupee, which is higher than other banks and standard deviations of 4.5% relative stable cost structure. Table-2.1 shows the Net Interest Margin (NIM) of banks over the last 10 years. NIM measures the difference between the income generated from interest-earning assets and the expenses related to interest-bearing liabilities. The HDFC bank tops the list with a 4.24% mean value and 0.13% standard deviation. This means that a bank shows effective management of its interest income with respect to its interest expenses, and a standard deviation of 0.13% suggests that this margin is reasonably stable. On the other hand, the Bank of Baroda (BOB) has a lower rank with 2 mean values of 2.58 % and a standard deviation of 0.39, indicating moderate profitability in its interest generation process. A standard deviation of 0.39% showed some variability over the years. Table-2.1 shows the group ranking of the profitability of public and private banks listed in the bank nifty index for the last 10 years. Within the group of six banks, Punjab National Banks Hold the last rank with 5.5 mean value and a standard deviation of 6. This implies that the PNB is concerned about instability and inefficiency in generating profit. A lower return on assets, potentially poor return on equity, high cost to income, and possibly a narrow net interest margin all suggests operational inefficiencies, higher costs, or ineffective asset utilization. In contrast, HDFC topped the position with a mean value of 1.25 and a standard deviation of 1.75. This indicates effective management with higher ROA, robust ROE, an optimized cost-to-income ratio, and healthy NIM, reflecting the efficient use of assets, better cost management, and a strong ability to generate profit from its operations and investment.

c) Asset Quality and Profitability

Table 2.2 Overall 10 Years of Asset Quality and Profitability and Ranking of Selected Banks

	Asset Quality				Profitability					
BANKS	**Provision Coverage Ratio**	**Interest Coverage Ratio**	**Capital Adequacy Ratio**	**Non-Performing Asset Ratio**	**Return on Asset**	**Return on Equity**	**Cost to Income Ratio**	**Net Interest Margin**	**Average or Mean**	**Rank**
SBI	2	4	5	4	4	4	6	4	**4.13**	**4**
PNB	5	6	6	6	6	6	5	5	**5.63**	**6**
BOB	3	5	4	5	5	5	4	6	**4.63**	**5**
HDFC	4	**1**	2	**1**	**1**	**1**	2	**1**	**1.63**	**1**
AXIS	**1**	3	3	2	3	3	3	2	**2.50**	**2**
ICICI	6	2	**1**	3	2	2	**1**	3	**2.50**	**2**

Source: Compiled by researchers from the annual report of banks

Table-2.2 shows the combined ranking of both asset quality and profitability of public and private banks listed on the bank nifty index over a period of 10 years. HDFC bank rank 1st among banks in terms of asset quality and profitability. This indicates strong overall financial health. It likely depicts a low NPA ratio, high PCR, ICR, and CAR, along with robust ROA, ROE, favourable cost-to-income ratio, and NIM, indicating effective management and efficient operation. On the other hand, Punjab National Bank Holds the last rank among other banks in both asset quality and profitability. This describes significant challenges, such as poor risk management and inability to maintain the quality of its assets, which depicts high NPA, struggling with a low PCR, inadequate ICR, possibly falling short on CAR, and inefficient profitability metrics such as low ROE, ROA, a high cost-to-income ratio, and a narrow NIM.

Table 3: Year-wise NPA Ratio for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	2.57	2.85	1.52	0.27	0.40	0.82	**2.31**	**0.50**
2015	2.12	4.06	1.89	0.25	0.44	1.40	**2.69**	**0.70**
2016	3.81	8.61	5.06	0.28	0.70	2.67	**5.83**	**1.22**
2017	3.71	7.81	4.72	0.33	2.11	4.89	**5.41**	**2.44**
2018	5.73	11.24	5.49	0.40	3.40	4.77	**7.49**	**2.86**
2019	3.01	6.56	3.33	0.39	2.06	2.10	**4.30**	**1.52**
2020	2.23	5.78	3.13	0.36	1.56	1.40	**3.71**	**1.11**
2021	1.50	5.73	3.09	0.40	1.05	1.10	**3.44**	**0.85**

2022	1.02	4.80	1.72	0.32	0.73	0.80	**2.51**	**0.62**
2023	0.67	2.72	0.89	0.27	0.39	0.50	**1.43**	**0.39**

Source: Compiled by researchers from the annual report of banks

Table 3.1: ANOVA of NPA Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	35.05636	1	35.05636	16.4287	0.000923	4.493998
Within Groups	34.14158	16	2.133849			
Total	69.19793	17				

As shown in Table-3.1, the P value is less than the significant level of 0.05 hence, there is a significant difference between public banks and private banks over the 10 years in the NPA ratio dimension. This means that the type of bank ownership (public vs. private) affects the NPA ratio. Private banks managed to keep their NPA ratios significantly lower, reflecting differences in credit risk management, lending policies, and recovery mechanisms.

Table 4: Year-wise Interest Coverage Ratio (ICR) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	1.57	1.60	1.44	1.82	1.64	1.59	**1.54**	**1.68**
2015	1.56	1.56	1.44	1.86	1.67	1.63	**1.52**	**1.72**
2016	1.54	1.48	1.41	1.85	1.70	1.67	**1.47**	**1.74**
2017	1.54	1.46	1.47	1.92	1.68	1.67	**1.49**	**1.76**
2018	1.51	1.45	1.55	2.00	1.69	1.72	**1.51**	**1.80**
2019	1.57	1.50	1.60	1.95	1.65	1.74	**1.56**	**1.78**
2020	1.62	1.48	1.57	1.96	1.67	1.80	**1.55**	**1.81**
2021	1.72	1.61	1.69	2.16	1.85	1.97	**1.67**	**1.99**
2022	1.78	1.62	1.88	2.29	1.97	2.22	**1.76**	**2.16**
2023	1.77	1.68	1.86	2.16	2.02	2.32	**1.77**	**2.17**

Source: Compiled by researchers from the annual report of banks

Table 4.1: ANOVA of ICR Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.382795	1	0.382795	17.05779	0.000785	4.493998
Within Groups	0.359057	16	0.022441			
Total	0.741853	17				

As shown in Table-4.1, the P value is less than the significant level of 0.05; hence, there is a significant difference between public banks and private banks over the 10 years in the interest coverage ratio dimension. This suggests that banks' ability to cover their interest expenses with their earnings varies, depending on whether they are publicly or privately owned. This difference could be due to different cost structures, interest rate environments, capital structures, etc.

Table 5: Year-wise Provision Coverage Ratio (PCR) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	62.86	59.07	65.45	72.57	78.10	68.60	**62.46**	**73.09**
2015	69.13	58.21	64.99	73.93	77.73	58.60	**64.11**	**70.09**
2016	60.69	51.06	60.09	69.94	72.27	50.60	**57.28**	**64.27**
2017	65.95	58.57	66.83	68.67	64.79	40.20	**63.78**	**57.89**
2018	66.17	58.42	67.21	69.78	65.05	47.70	**63.93**	**60.84**
2019	78.73	74.50	78.68	71.36	76.78	70.60	**77.30**	**72.91**
2020	83.62	77.79	81.33	72.00	86.29	75.70	**80.91**	**78.00**
2021	87.75	80.14	81.80	69.81	87.20	77.70	**83.23**	**78.24**
2022	90.20	81.6	88.71	75.76	90.94	79.18	**86.84**	**81.96**
2023	91.91	86.90	92.43	72.69	93.71	82.80	**90.41**	**83.07**

Source: Compiled by researchers from the annual report of banks

Table 5.1: ANOVA of PCR Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	23.44603	1	23.44603	0.203306	0.658116	4.493998
Within Groups	1845.177	16	115.3236			
Total	1868.623	17				

As in Table-5.1, the P value is greater than the significant level of 0.05; hence, there is no significant difference between public banks and private banks over the 10 years in the Provision coverage ratio dimension. The results show that both types of banks, whether public or private, have similar approaches and effectiveness in setting aside funds to cover potential loan losses.

Table 6: Year-wise Capital Adequacy Ratio (CAR) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	12.44	11.52	12.28	16.07	16.07	17.70	**12.08**	**16.61**
2015	12.00	12.21	12.61	16.79	15.09	17.02	**12.27**	**16.30**
2016	13.12	11.28	13.18	15.53	15.29	16.64	**12.53**	**15.82**
2017	13.11	11.66	12.24	14.55	14.95	17.39	**12.34**	**15.63**
2018	12.60	9.20	12.13	14.82	16.57	18.42	**11.31**	**16.60**
2019	12.72	9.73	13.42	17.11	15.84	16.89	**11.96**	**16.61**
2020	13.06	14.15	13.30	18.52	17.53	16.11	**13.50**	**17.39**
2021	13.74	14.32	14.99	18.79	19.12	19.12	**14.35**	**19.01**
2022	13.83	14.50	15.68	18.90	18.54	19.16	**14.67**	**18.87**
2023	14.68	15.50	16.24	19.26	17.64	18.34	**15.47**	**18.41**

Source: Compiled by researchers from the annual report of banks

Table 6.1: ANOVA of CAR Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	72.97662	1	72.97662	39.79808	1.04E-05	4.493998
Within Groups	29.33875	16	1.833672			
Total	102.3154	17				

As in Table-6.1, the P value is less than the significant level of 0.05; hence, there is a significant difference between public banks and private banks over the 10 years in terms of the capital adequacy ratio. This indicates that ownership structure plays an important role in influencing capital adequacy. Private banks usually maintain higher CAR due to regulatory norms whereas public banks depend more on government support to meet capital requirement.

Table 7: Year-wise Return on Asset Ratio (ROA) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	0.65	0.64	0.75	2.00	1.78	1.78	**0.68**	**1.85**
2015	0.68	0.53	0.49	2.02	1.83	1.86	**0.57**	**1.90**
2016	0.46	-0.61	-0.78	1.89	1.72	1.49	**-0.31**	**1.70**
2017	0.41	0.19	0.20	1.88	0.65	1.35	**0.27**	**1.29**
2018	-0.19	-1.60	-0.34	1.93	0.04	0.87	**-0.71**	**0.95**
2019	0.02	-1.25	0.06	1.90	0.63	0.39	**-0.39**	**0.97**
2020	0.38	0.04	0.06	2.01	0.20	0.81	**0.16**	**1.01**
2021	0.48	0.15	0.07	1.97	0.70	1.42	**0.23**	**1.36**
2022	0.67	0.26	0.60	2.03	1.21	1.84	**0.51**	**1.69**
2023	0.96	0.18	1.03	2.07	0.80	2.16	**0.72**	**1.68**

Source: Compiled by researchers from the annual report of banks

Table 7.1: ANOVA of ROA Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	7.355743	1	7.355743	39.94849	1.02E-05	4.493998
Within Groups	2.946091	16	0.184131			
Total	10.30183	17				

As shown in Table-7.1, the P value is less than the significant level of 0.05; therefore, we reject the null hypothesis and conclude that hence, there is a significant difference between public banks and private banks over the 10 years in the dimension of the return on asset ratio. The results also highlight that private banks effectively utilize their assets to generate income as compared to public banks.

Table 8: Year-wise Return on Equity Ratio (ROE) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	10.03	9.75	13.36	21.28	17.43	14.02	**11.05**	**17.58**
2015	10.62	8.17	8.96	19.37	17.75	14.55	**9.25**	**17.22**
2016	7.30	-10.27	-13.48	18.26	16.81	11.43	**-5.49**	**15.50**
2017	6.31	3.30	3.44	17.95	6.76	10.33	**4.35**	**11.68**
2018	-3.21	-29.54	-5.81	17.87	0.46	6.61	**-12.85**	**8.31**
2019	0.39	-23.24	0.97	16.50	7.19	3.15	**-7.29**	**8.95**
2020	6.40	0.63	0.84	16.40	2.15	7.05	**2.62**	**8.53**
2021	8.40	2.29	1.11	16.61	7.06	12.27	**3.93**	**11.98**
2022	11.86	3.71	8.93	16.66	12.02	14.68	**8.17**	**14.45**
2023	16.53	2.57	15.33	16.96	7.96	17.18	**11.47**	**14.03**

Source: Compiled by researchers from the annual report of banks

Table 8.1: ANOVA of ROE Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	517.2863	1	517.2863	13.0281	0.002352	4.493998
Within Groups	635.2867	16	39.70542			
Total	1152.573	17				

As in Table-8.1, P value is less than the significant level of 0.05, there is a significant difference between public banks and private banks over the 10 years in dimension of return on equity ratio. This difference might be because public banks are restricted by broader economic mandates or less aggressive profit-seeking behaviours leading to lower ROE.

Table 9: Year-wise Net Interest Margin Ratio (NIM) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	3.17	3.44	2.36	4.40	3.81	3.33	**2.99**	**3.85**
2015	3.16	3.15	2.31	4.40	3.92	3.48	**2.87**	**3.93**
2016	2.96	2.60	2.05	4.20	3.90	3.49	**2.54**	**3.86**
2017	2.84	2.38	2.19	4.30	3.67	3.25	**2.47**	**3.74**
2018	2.50	2.16	2.43	4.30	3.44	3.23	**2.36**	**3.66**
2019	2.95	2.41	2.72	4.30	3.43	3.42	**2.69**	**3.72**
2020	3.19	2.30	2.73	4.30	3.51	3.73	**2.74**	**3.85**
2021	3.26	2.88	2.71	4.10	3.53	3.69	**2.95**	**3.77**
2022	3.12	2.71	3.03	4.00	3.47	3.96	**2.95**	**3.81**
2023	3.37	3.06	3.31	4.10	4.02	4.48	**3.25**	**4.20**

Source: Compiled by researchers from the annual report of banks

Table 9.1: ANOVA of NIM Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	5.241602	1	5.241602	101.9847	2.4E-08	4.493998
Within Groups	0.822336	16	0.051396			
Total	6.063938	17				

As in Table-9.1, P-value is less than the significant level of 0.05 hence, we reject the null hypothesis and conclude that there is a significant difference between public banks and private banks over the 10 years in dimension of net interest margin ratio. The type of bank ownership appears to play a role in how effectively banks generate profits for their shareholders.

Table 10: Year-wise Cost to Income Ratio (CTIR) for Public and Private Banks

Year	SBI	PNB	BOB	HDFC	AXIS	ICICI	Public	Private
2014	52.67	45.06	43.44	45.60	40.82	38.20	**47.06**	**41.54**
2015	49.04	46.74	43.63	44.60	40.74	36.80	**46.47**	**40.71**
2016	49.13	46.79	50.30	44.30	38.55	34.70	**48.74**	**39.18**
2017	47.75	39.17	45.86	43.40	40.96	35.80	**44.26**	**40.05**
2018	50.18	56.75	45.84	41.00	47.29	38.83	**50.92**	**42.37**
2019	55.70	47.03	45.56	39.70	45.45	43.56	**49.43**	**42.90**
2020	52.46	44.82	49.97	38.60	42.47	43.50	**49.08**	**41.52**
2021	53.60	47.82	49.90	36.30	41.69	37.20	**50.44**	**38.40**

2022	53.31	49.38	49.24	36.90	48.83	40.51	**50.64**	**42.08**
2023	53.87	51.69	47.72	40.40	46.09	40.11	**51.09**	**42.20**

Source: Compiled by researchers from the annual report of banks

Table 10.1: ANOVA of CTIR Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	285.2599	1	285.2599	74.32596	2.07E-07	4.493998
Within Groups	61.40732	16	3.837958			
Total	346.6672	17				

As in Table-10.1, P value is less than the significant level of 0.05 hence, we reject the null hypothesis and conclude that there is a significant difference in ownership structure between public banks and private banks over the 10 years in dimension of cost to income ratio. This suggests that the operational cost relative to income generation is affected by the bank's ownership structure. Private banks are often driven by profit motives and shareholders scrutiny therefore they must maintain a lower cost-to-income ratio and public banks are often driven by social profit.

1. **Findings**: A comparative analysis of asset quality and profitability between public and private banks in India yields significant insights pertinent to the current regulatory and economic objectives. The performance of public banks is notably inferior in terms of asset quality and profitability. Among the six banks analysed, HDFC Bank demonstrated superior performance, exhibiting the lowest non-performing asset ratio of 0.33% and the highest return on assets at approximately 2% compared to its counterparts. Conversely, within the public banking sector, the Punjab National Bank (PNB) struggles to maintain asset quality and manage credit risk, as evidenced by a high non-performing asset ratio of 6%. Even when examining other metrics related to asset quality and profitability, public banks do not meet the standards set for private banks. This disparity raises questions regarding the operational efficiency and asset management strategies employed by private-sector banks. Notably, within the public banking sector, the State Bank of India outperforms the Punjab National Bank and Bank of Baroda in terms of asset quality and profitability. The Indian banking system is

currently undergoing several reforms initiated by the Central Bank (RBI) and the Finance Ministry to enhance the effectiveness and efficiency of public-sector banks. The current finance minister has acknowledged improvements in the asset quality of public banks in fiscal years 2023-24. However, this study presents a contrasting view of public sector banks' performance over the past decade, indicating that they continue to lag behind their private counterparts in terms of risk management and profitability. These findings underscore the need for public banks to align more closely with private banks to achieve economic objectives.

2. **Suggestion:** The aim of this study is to evaluate the asset quality and profitability of both private and public banks, as well as to assess the individual performance of these institutions. The findings indicate that private banks have outperformed public banks in the past decade. Several measures can be implemented to address the challenges faced by public sector banks and enhance their performance. First, public banks should invest more in advanced data analytics and digital platforms, such as artificial intelligence (AI), machine learning, and debt collection automation, to improve risk management and reduce non-performing assets (NPA). Second, streamlining operational processes and adopting a centralized management system can help reduce costs and increase profitability while maintaining high-quality customer service. Third, developing an efficient loan recovery mechanism is essential for the prompt recovery of distressed accounts, and digital communication tools should be employed to keep borrowers informed about their loan repayment schedules. Lastly, public sector banks should be monitored by regulatory bodies, such as the Reserve Bank of India, and undergo regular internal audits to ensure compliance with regulatory frameworks and the maintenance of asset quality standards. By implementing these recommendations, public banks can enhance their performance, improve asset quality and profitability, and thereby contribute more significantly to the economy, alongside private banks.

3. **Conclusion:** This study analyses the asset quality and profitability of three public banks and three private banks listed on a bank nifty as per market capitalization over a period of 10 years. In conclusion, this study reveals that private banks consistently outperform public banks in asset quality and profitability. Private banks better manage key financial indicators under asset quality, such as the Provision Coverage Ratio (PCR), Interest Coverage Ratio (ICR), Capital Adequacy Ratio (CAR), and non-performing assets (NPA). It also found that, under profitability, private banks outperform return on assets (ROA), Return on Equity (ROE), cost-to-income ratio (CIR), and Net Interest Margin (NIM). However, public banks struggled to match their performance because of inefficiencies and high-risk profiles. Public banks must implement better strategies to enhance their risk management, operational efficiency, and financial stability. This may also be the reason that public banks come under priority government banks, whose main objective is to develop the economy and not to focus on profit or commercial activities; However, private banks are open to doing business and their focus is on competing and engaging in commercial activities. The ANOVA results further confirm that ownership by private banks is a significant factor in superior performance. The actionable implication of this study stresses the urgent need for public banks in India to implement comprehensive reforms in risk management, operational efficiency and strategic planning to bridge the performance gap with private banks. The public banks must invest in technology and analytics to improve credit assessment processes to improve its operational efficiency and risk management.

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Exploring the Nexus between Financial Knowledge & Investment Behaviour: An Insight from Kolkata

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Abstract

This study employed a cross-sectional design to examine the relationships among Financial Knowledge, risk perception, and investment behaviour among urban residents of Kolkata. Data were collected through a primary survey of 384 respondents, determined using the Krejcie and Morgan (1970) formula based on the 2011 Census population of Kolkata. Structural Equation Modelling (SEM) was used to test the hypothesized relationships. The results indicated that Financial Knowledge had a significant standardized direct effect on investment behaviour ($\beta = 0.271$, 95% CI [0.004, 0.538]). Moderation analysis within the SEM displays that FK ✻ RP → IB ($\beta = 0.0793$, $p = 0.043$), which confirms that risk perception moderated (significant at the 1% level) the relationship between Financial Knowledge and Investment Behaviour.

Keywords: Financial Knowledge, Investment Behaviour, Risk Perception, Kolkata, Structural Equation Modelling
JEL Classification: G11, G53, D81, C10

1. Introduction

Financial Knowledge encompasses understanding fundamental economic and financial ideas, coupled with the skill of managing personal finances effectively (Deepak et al., 2015). Numerous experts have contended that achieving financial success and competitiveness necessitates a thorough understanding of financial concepts (Ghasarma et al., 2017). The concept of Financial Knowledge is commonly understood to have four interconnected aspects – financial knowledge and skills, which form the foundational levels,

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followed by financial attitude and behaviour, which represent progressive dimensions, ultimately leading to financial well-being, sometimes considered a fifth dimension. (Chaulagain, 2015). Constantly evolving developments in the field of Financial Knowledge are largely driven by the fluctuating global economy, mirroring the continuous development observed in all fields of expertise (Kovács & Terták, 2019). Financial education programs offered by employers, schools, credit advisors, or community groups have consistently demonstrated significant positive outcomes (Gale & Levine, 2011). While modern financial tools like bank cards, mobile banking, and insurance enhance our lives, a general lack of understanding and ability prevents people from using them effectively and responsibly (Sudakova, 2018). A lack of Financial Knowledge hinders individual well-being and household financial capacity, weakens financial institutions, highlighting the increasing importance of personal financial security for economic progress and public welfare. (Vovchenko et al., 2018). Financially educated consumers foster a more competitive financial market place by demanding fairly priced and clear services through comparison, informed questioning, and effective negotiation, while also encouraging governmental bodies to establish market standards and ensure proper financial system oversight, ultimately benefiting financial institutions through reduced risk and a stable customer base for long-term services (Kefela, 2011).

Unlike traditional finance theory, which posits that investors are consistently risk averse, the theory here suggests that investors are risk avoidant when anticipating gains to secure those profits but become risk-seeking when faced with potential losses. (Dar & Hakeem, 2015). Firstly, experience in investment amplifies the impact of accounting information on individuals' investment-related assessments, and secondly, Financial Knowledge further enhances the influence of these disclosures specifically on investors' judgments, but not on those without investment experience (Krische, 2019). Besides Financial Knowledge, investment decisions are also commonly influenced by demographic determinants (Senda et al., 2020). Rather than adhering to the assumptions of traditional finance, behavioral finance analyzes the actual behavior of investors, financial markets, and related professionals to derive its conclusions (Kumar et al., 2020). Throughout their lives, investors seekinvestment options that balance

minimizing risk with maximizing returns, though individual investment choices vary based on their risk tolerance and specific financial goals. (Mailcontractor & Ingalag, 2019). As global economic grow thin fluences the trajectory of financial markets, improving economic conditions have spurred a shift in investment from safer government bonds to stocks, which closely mirror economic expansion, indicating a growing risk appetite among global investors (Baihaqqy et al., 2020). Some researchers have investigated the connection between emotional intelligence and investment choices, suggesting that individuals or organizations capable of effectively managing their emotions are better equipped and make sound decisions (Hadi, 2017).

Risk perceptions in investment decisions involve physical responses, with emotions acting as the catalysts for action aimed at achieving the investor's goal of future financial improvement; among negative emotions, fear appears to be the primary driver of concerns about potential financial shortfalls, whereas anger and sadness are typically experienced after investment outcomes are known (Olsen, 2010). The inclination to feel more secure in familiar investment products as safer, even though traditional portfolio theory suggests that risk-averse investors should prioritize diversification to maximize their expected utility (Wang et al., 2011). Risk perception has a mediating role in how factors like aggression, positive mood etc. influence decisions of investment; however, social network's moderating effect does not extend to all tested psychological factors in the context of Indian investors' stock market choices (Chaitanya & Nordin, 2021). Behavioural biases contribute to limited rationality, causing investors to make suboptimal choices by failing to thoroughly assess available alternatives, as their decision-making is influenced by feelings, emotions, and intuition rather than purely rational analysis (Mallik et al., 2017). Investors who take more risks trade more, exhibiting greater portfolio turnover, demonstrate lower buy-sell ratios, and maintain portfolios with higher overall risk (Hoffmann et al., 2015).

As motivation for this research, it is posited that though financial knowledge significantly influence investment decisions, the interplay of risk perception moderates how financial knowledge influence investment choices (Ademola et al., 2019).

2. Survey of Literature

Financial Knowledge

A study on Financial Knowledge by Mandell (2008) show students from financially well-off families generally demonstrate greater levels of financial awareness than those from less affluent backgrounds. Another study by Lusardi & Mitchell (2011) show that older population overestimate their knowledge, being less informed than the general population. Selim & Aydemir (2014) found that risk averse people lack financial knowledge while some studies report that mother's education level affects the level of their Financial Knowledge. Garg & Singh (2018) demonstrate low Financial Knowledge among young people as a significant concern worldwide. This level of understanding is influenced and shaped by various social, financial, and individual attributes, including age, gender, relationship status and educational background. Rehman & Mia (2024) suggest that technology and religious aspects, particularly digital and Islamic Financial Knowledge, may influence Financial Knowledge and require more research.

Risk Perception

Gustafsod (1998) suggests that gender structures, encompassing both gender based ideologies and practices have lead to consistent gender differences in how risk is perceived. Exploring these varied differences necessitates employing both data driven and interpretative research strategies. Slovic (1987) shows regulators and promoters of health and safety must grasp how individuals perceive and react to risk. Without this insight, even well intentioned policies might fail. Wahlberg & Sjoberg (2000) assert that media exposure can influence risk perception through availability of information and greater access to information amplifies overall effect, thus making it simpler to alter general perception of risk than personal sense of risk.

While Sjöberg (2007) observe there is a direct relationship between having interest in a threat(a positive emotion) and a higher perceived risk, Nolte & Hanoch (2024) display how taskelements (e.g., supplied information, option framing) influence behavioural risk-taking inequality by age and also state that

the capacity to take meaningful risks may be limited by cognitive changes (e.g., in learning, risk/reward processing).

Investment Behaviour

Collard (2009) emphasises on age, income, and gender and asserts that young investors' investments are not impacted by these factors. Kaur & Kaushik (2016) found that how much investors knew about mutual funds differed based on socioeconomic factors such as age, gender, income, job, and education. Mak & Ip (2017) through the application of regression models, display that financial service providers can forecast their clients' investment behaviour and tastes and use that information to frame marketing and strategic choices, like customizing their clients' financial investment portfolios. Kappal & Rastogi (2020) argue that women entrepreneurs approach investments cautiously and are risk-averse when viewing them as long-term tools. However, this contrasts with their willingness to take chances in business endeavours. Yadav & Banerji (2024) show that both saving and investing behaviours are strongly favoured by higher levels of digital financial education.

Financial Knowledge, Risk Perception, and Investment Behaviour

Almansour et al. (2023) underscores that the risk perceiving capability of an individual impacts the ultimate success of his investment portfolio. Iram et al., (2023) indicate that Financial Knowledge is a crucial mediator between these heuristics and investment decision-making. According to their findings, women entrepreneurs should be better acquainted with finances to enhance decision making power. Suriyanti et al., (2024) in their study highlight how important it is to take emotional aspects into account while creating individualized financial interventions also educational efforts. Long-term investigations, cross-cultural comparisons, and methods from multiple disciplines combining information from psychology, economics, and finance are some possible fields for future study. Redawati & Hayat (2024) show financial expertise significantly and beneficially influences investment decisions, suggesting that experienced investors make more strategic and informed choices. This relationship is further mediated by risk perception and financial experience greatly affects how risk is perceived, which influences investment decisions. Almansour et al. (2025) in their results highlight how crucial it is for shareholders to recognize and deal with their

behavioural biases, therefore the legislators must develop strategies for reducing the effects of these biases. Despite numerous studies, there's a clear gap in research gap in research, particularly concerning Kolkata, regarding the role of risk perception in the nexus between Financial Knowledge and investment behaviour. This study aims to address this gap by pursuing the objectives outlined below.

3. Objectives & Hypothesis

3.1 Objectives

1. To explore whether Financial Knowledge influence Investment Behaviour of an individual or not.
2. To determine whether risk perception acts as a moderator in the association between Financial Knowledge and Investment Behaviour.

3.2 Hypotheses

Financial Knowledge and Investment Behaviour

Fixed deposits, mutual funds, stock market investments and bonds all have been found to have significantly different levels of awareness, although the mean score difference for post office savings was not statistically significant (Bhushan, 2014). IT professionals' investment behaviour shows that the majority of respondents only had modest savings (Shaik et al., 2022). According to contemporary finance theories, rational considerations do not guide investment decision-making, investors sometimes make impulsive judgments about their investments (Suresh, 2024). The respondents' age is significantly associated with his degree of financial understanding (Choudhary et al., 2021). Long-term financial planning requires an individual to be financially literate (Zulaihati et al., 2020). People who are not financially aware are inclined towards portfolios with conventional and low-risk routes (Rodrigues & Gopalakrishna, 2024).

H_1: Financial Knowledge affects Investment Behaviour

Role of Risk Perception and Financial Knowledge Towards Investment Behaviour

There is a mediating function of risk tolerance and the investors with more Financial Knowledge are more risk tolerant, which is associated with better and more

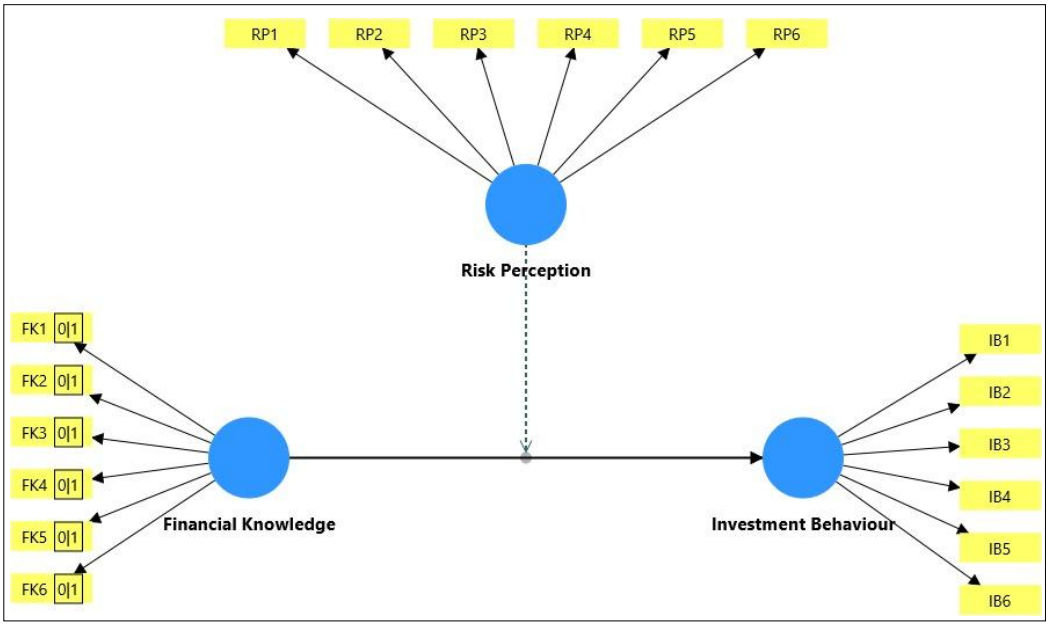
fulfilling investment performance (Kanagasabai & Aggarwal, 2020). Compared to an undiversified portfolio, a diversified portfolio can yield a greater return for investors (Sharma, 2020). Employee risk perception is strongly tied to investment behaviour, and there is a significant link between both. (Shafi et al., 2011). Understanding financial decisions requires taking into account psychological variables (Robba et al., 2024). Facts show that the perceived risk can be explained by the level of financial education and individual behaviour (Aren & Canikli, 2019). Men show a higher sense of self- credit, false sense of control, and bias in confirmation, females are substantially less probable to have regrets than males showing that financial education reduces gender inequalities in behaviour bias (Hsu et al., 2021).

H_2: Risk Perception acts as a moderator in the relationship between Financial Knowledge and Investment Behaviour.

Proposed Model

The model examines the relationships between Risk Perception (RP), Investment Behaviour (IB), and Financial Knowledg e (FK) using structural equation modelling.

Figure 1: Proposed Model



Source: Authors' own diagram

The proposed model considers the following variables:

- RP1 – Life Stage
- RP2 – Financial Dependents
- RP3 – Investable Income Percentage
- RP4 – Investment Knowledge
- RP5 – Investment Preference
- RP6 – Investment Experience
- IB1 – Investing Experience
- IB2 – Investment Independence
- IB3 – Investment Information Source
- IB4 – Investment Frequency
- IB5 – Investment Portfolio Size
- IB6 – Past Investment Returns
- FK1 – Interest Rate 1
- FK2 –Interest Rate 2
- FK3 – Inflation Impact
- FK4 – Time Value Money
- FK5 – Purchasing Power
- FK6 – Diversification & Risk

4. Data & Methodology

4.1 Data Collection

The questionnaire used to collect the responses comprised of questions regarding risk perception, financial knowledge and investment behaviour.

4.2 Sample Design

A primary survey of the people of Kolkata was carried out, focusing on the urban populace. The sampling frame for collection of responses was from January 2025 to March 2025. The questionnaire was sent to 500 respondents via mail and LinkedIn, out of which 384 responses were recorded.

The population size considered for sample size determination is the population of Kolkata as per the last census (Census, 2011). The sample size has been decided to be 384[1] with help of the formula devised by the National Educational Association (Krejcie & Morgan, 1970). The responses have been collected by employing a non-probability sampling method, specifically convenience sampling in public and commercial areas of Kolkata.

Table 1: Variables Considered

Construct	Description of Variable	Source
Risk Perception (RP)	RP1 – Life Stage	Sachse et al. (2012), Wang et al. (2011), Nguyen et al. (2019)
	RP2 – Financial Dependents	
	RP3 – Investable Income Percentage	
	RP4 – Investment Knowledge	
	RP5 – Investment Preference	
	RP6 – Investment Experience	
Investment Behaviour (IB)	IB1 – Investing Experience	Durand et al. (2008), Mayfield et al. (2008), Choi and Yoon (2020), Biais and Weber (2009)
	IB2 – Investment Independence	
	IB3 – Investment Information Source	
	IB4 – Investment Frequency	
	IB5 – Investment Portfolio Size	
	IB6 – Past Investment Returns	
Financial Knowledge (FK)	FK1 – Interest Rate 1	Van Rooij et al. (2011)
	FK2 – Interest Rate 2	
	FK3 – Inflation Impact	
	FK4 – Time Value Money	
	FK5 – Purchasing Power	
	FK6 – Diversification & Risk	

Source: Authors' own tabulation

[1] Using the Krejcie and Morgan (1970) formula,

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)},$$

the sample size for Kolkata was calculated based on the 2011 Census population of 4,496,694 (Kolkata Municipal Corporation area). Assuming a 95% confidence level, a 5% margin of error, and a population proportion (P) of 0.5, the resulting sample size is approximately 384.07, which is rounded up to 384 respondents.

4.3 Tools Used

The data was compiled, coded, and analysed using SPSS, Jamovi and SmartPLS. Descriptive Statistics has been employed at first. Harman's single factor test has been applied to examine the issue of common method bias. Thereafter, Fornell–Larcker criterion and HTMT ratio have been used to test discriminant validity. Latent correlation matrix is also used to measure the relationship between constructs at the latent (unobserved) level. The interrelationships between the variables have been checked by employing a structural equation model. The convergent validity has been checked using AVE. The association between the latent variables and the observed variables was explained using a measurement model. A path diagram has also been used to explore the association between the variables.

The following equations are framed for running structural equation modelling:

Latent Variables

RP=~RP1+RP2+RP3+RP4+RP5+RP6

IB=~IB1+IB2+IB3+IB4+IB5+IB6

FK=~FK1+FK2+FK3+FK4+FK5+FK6

5. Results & Discussions

Table 2 Descriptive Statistics

	RP Score	IB Score	FK Score
N	384	384	384
Mean	14.902	14.543	3.491
Median	15.001	15.002	4.002
Mode	15[a]	17	6
Std. Deviation	3.663	3.949	1.995
Range	20	20	6

Source: Authors' own tabulation

RP Score

The mean score is 14.902, with a median of 15 and mode of 15.001, indicating that most participants scored around 15. The standard deviation shows a fair amount of spread, meaning participants' scores varied moderately around the average.

IB Score

The mean is 14.543, and the median is 15.002, indicating that the majority of participants scored close to the midpoint of the range. The mode of 17 suggests that slightly higher scores occurred more frequently. The standard deviation of 3.949 indicates moderate variability among participants.

FK Score

The mean is 3.491, and the median is 4.002, within a total range of 6. This shows that participants' scores are mostly toward the upper middle of the scale. The standard deviation (1.995) indicates some variation, but most scores cluster around the mean.

Table 3: Frequencies

Age	Frequency	Percent
Less than 20	58	15.100
20-25	159	41.400
26-35	75	19.500
36-45	48	12.500
Above 45	44	11.500
Total	384	100.000

Source: Authors' own tabulation

The largest group of respondents (41.4%) are aged 20–25 years, followed by 19.5% in the 26–35 years range. 15.1% are below 20 years, while 12.5% are between 36–45 years and 11.5% are above 45 years. The sample is largely

composed of young adults, indicating that the majority of respondents are in the early stages of their careers or education.

Table 4: Frequencies

Gender	Frequency	Percent
Female	203	52.900
Male	181	47.100
Total	384	100.000

Source: Authors' own tabulation

Female respondents form the majority (52.9%) compared to males (47.1%). The gender distribution is nearly balanced, with a slight predominance of females in the sample.

Table 5: Frequencies

Marital status	Frequency	Percent
Unmarried	276	71.900
Married	104	27.100
Other	4	1.000
Total	384	100.000

Source: Authors' own tabulation

A significant majority (71.9%) of respondents are unmarried, while 27.1% are married and only 1% identified as other. The sample mainly consists of single individuals, which aligns with the younger age composition of respondents.

Table 6: Frequencies

Education	Frequency	Percent
Class 10	58	15.100
Class 12	159	41.400
Graduate	82	21.400
Post Graduate	70	18.200
Higher	15	3.900
Total	384	100.000

Source: Authors' own tabulation

The largest educational group is those who have completed Class 12 (41.4%), followed by graduates (21.4%) and postgraduates (18.2%). A smaller portion completed only Class 10 (15.1%) or attained higher degrees (3.9%). Most respondents have intermediate to undergraduate-level education, showing a moderately educated population.

Table 7: Frequencies

Profession	Frequency	Percent
Salaried	103	26.800
Self-employed	49	12.800
Student	202	52.600
Homemaker	19	4.900
Unemployed	11	2.900
Total	384	100.000

Source: Authors' own tabulation

Over half of the respondents (52.6%) are students, while 26.8% are salaried employees and 12.8% are self-employed. A small fraction are homemakers (4.9%) or unemployed (2.9%). The sample is student-dominated, consistent with the younger and unmarried profile observed earlier.

Table 8: Frequencies

Monthly Income		
	Frequency	Percent
Less than 20000	222	57.800
20000-40000	62	16.100
40000-60000	7	1.800
60000-80000	19	4.900
Above 80000	74	19.300
Total	384	100.000

Source: Authors' own tabulation

More than half of the respondents (57.8%) earn less than ₹20,000 per month, while 16.1% earn between ₹20,000–₹40,000. Only 1.8% fall in the ₹40,000–₹60,000 range, 4.9% in ₹60,000–₹80,000, and 19.3% earn above ₹80,000.

The income levels are generally low, which can be attributed to the high number of students and early-career individuals in the sample.

Table 9: Harman's Single Factor Test

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.392	24.400	24.400	4.392	24.400	24.400
2	2.476	13.754	38.154			
3	1.538	8.543	46.697			
4	1.392	7.736	54.433			
5	1.213	6.737	61.170			
6	1.015	5.637	66.807			
7	0.816	4.532	71.339			
8	0.755	4.193	75.532			
9	0.698	3.876	79.408			
10	0.659	3.661	83.069			
11	0.553	3.070	86.139			
12	0.494	2.745	88.884			
13	0.448	2.486	91.371			
14	0.392	2.180	93.551			
15	0.377	2.097	95.647			
16	0.312	1.735	97.382			
17	0.262	1.454	98.837			
18	0.209	1.163	100.000			

Source: Authors' own tabulation

The first component (factor) has an eigenvalue of 4.392, explaining 24.40% of the total variance. According to Harman's test, if a single factor accounts for more than 50% of the total variance, it suggests the presence of common method bias (CMB). If the first factor accounts for less than 50%, it indicates that CMB is not a major concern.

The first factor explains only 24.40% of the total variance. This is well below the 50% threshold, meaning no single factor dominates the variance structure.

Table 10: Fornell–Larcker Criterion Tests

	IB	FK	RP
IB	0.531	0.330	0.081
FK	0.330	0.690	0.086
RP	0.081	0.086	0.415

Source: Authors' own tabulation

The Fornell–Larcker criterion is used to test discriminant validity in a measurement model — that is, whether the constructs are truly distinct from each other. Here, the square root of AVE (diagonal values) of each construct should be greater than its correlations (off-diagonal values) with other constructs.

The square root of AVE (Diagonal) are

For IB (0.531) → greater than 0.331 and 0.082

For FK (0.690) → greater than 0.331 and 0.086

For RP (0.415) → greater than 0.082 and 0.086

All constructs satisfy the Fornell–Larcker criterion, meaning: Each construct shares more variance with its own indicators than with other constructs. There is good discriminant validity — the constructs IB, FK, and RP are distinct and measure different concepts.

Table 11: HTMT Tests

	IB	FK	RP
IB	1	0.376	0.840
FK	0.376	1	0.607
RP	0.840	0.607	1

Source: Authors' own tabulation

The HTMT ratio is another measure of discriminant validity, focusing on the ratio of correlations between constructs. HTMT values should generally be less than 0.85 for constructs to be considered distinct.

Check Off-Diagonal Values:

IB – FK: 0.376 (well below 0.85) → distinct

IB – RP: 0.840 (below 0.85 but approaching threshold) → borderline, but acceptable

FK – RP: 0.607 (below 0.85) → distinct

Most construct pairs are clearly below the 0.85 threshold, indicating good discriminant validity. The IB–RP pair (0.840) is close to 0.85, suggesting a slightly higher association, but still acceptable under common thresholds.

Table 12: Latent Correlations

Construct	Correlation	SE	95% CI Lower	95% CI Upper
FK	0.330	0.047	0.238	0.416
RP	0.081	0.036	0.014	0.153
IB	0.086	0.044	0.001	0.177

Source: Authors' own tabulation

Latent correlation measures the relationship between constructs at the latent (unobserved) level measures the relationship between constructs at the latent (unobserved) level, accounting for measurement error. If the CI does not include 0, the correlation is statistically significant.

The correlation between FK and the reference construct is 0.3307, with a 95% confidence interval ranging from 0.2384 to 0.4166, which does not include zero. This indicates that FK has a moderate, positive, and statistically significant correlation with the reference construct.

The correlation between RP and the reference construct is 0.0816, with a 95% confidence interval of 0.0140 to 0.1531, which also does not include zero. This suggests that RP has a weak, positive, but statistically significant correlation with the reference construct.

Another correlation of RP with the reference construct is 0.0860, with a 95% confidence interval of 0.0009 to 0.1778, which is barely above zero. This implies a very weak positive correlation, which is statistically significant but extremely close to zero.

All correlations are statistically significant because their 95% CIs do not include 0, though the strength varies.

Table 13: Indices Showing Reliability & Validity

Variable	α	ω	AVE
RP	0.827	0.853	0.545
IB	0.785	0.701	0.530
FK	0.783	0.748	0.619

Source: Authors' own tabulation

Cronbach's alpha of 0.7 or above indicates the acceptability of reliability (Cronbach, 1951). The reliability has been assessed for the following constructs, namely Risk Perception (RP), Investment Behaviour (IB), and Financial Knowledge (FK). Table-13 depicts that the Cronbach's alpha for RP, IB and FK are more than 0.7, which proves that these constructs are reliable. McDonald's omega of 0.70 or above indicates the acceptability of consistency (McNeish, 2018). The value of McDonald's omega is more than 0.7 for Risk Perception (RP), Investment Behaviour (IB), and Financial Knowledge (FK), indicating consistency for these constructs. As per Table-13, Average Variance Extracted (AVE) of more than 0.5 depicts convergent validity considering all variables (Fornell & Larcker, 1981).

Table 14: Fit Indices

Indices	Figures
Root Mean Square Error of Approximation (RMSEA)	0.077
Comparative Fit Index (CFI)	0.952
Tucker-Lewis Index (TLI)	0.951
Bollen's Incremental Fit Index (IFI)	0.953
Standardised Root Mean Squared Residual (SRMR)	0.078

Source: Authors' own tabulation

The Root Mean Square Error of Approximation (RMSEA) indicates how well a model fits the population covariance matrix. Values ≤ 0.05 represent a good fit, 0.06–0.08 an acceptable fit, and values above 0.10 a poor fit (Browne & Cudeck, 1993; Hu & Bentler, 1999).

The Comparative Fit Index (CFI) compares the proposed model with a null model. Values of ≥ 0.90 indicate acceptable fit, while ≥ 0.95 indicate a good fit (Bentler, 1990; Hu & Bentler, 1999).

The Tucker–Lewis Index (TLI), also known as the Non-Normed Fit Index, adjusts for model complexity. Values of ≥ 0.90 show an acceptable fit, and ≥ 0.95 a good fit (Tucker & Lewis, 1973; Hu & Bentler, 1999).

The Bollen's Incremental Fit Index (IFI) measures model improvement over a null model, with values ≥ 0.90 considered acceptable and ≥ 0.95 good (Bollen, 1989).

The Standardized Root Mean Square Residual (SRMR) reflects the average standardized residuals between observed and predicted correlations. Values ≤ 0.05 indicate a good fit, and up to 0.08 are acceptable (Hu & Bentler, 1999; Kline, 2016).

The proposed model is assessed using following indices.

- RMSEA= 0.077 and SRMR= 0.078 fall within the acceptable range, which portray a reasonable model fit.
- CFI = 0.952, IFI = 0.953 and TLI= 0.951 exceed the threshold, confirming a good model fit.

Table 15: Direct Effects Model

Dep	Pred	Estimate	SE	β (Unstandardised)	z	p
IB	FK	0.271	0.147	0.271	2.005	0.045

Source: Authors' own tabulation

Table-15 displays the path coefficients (β values), standard errors (SE), and significance levels (p-values), which discusses the mediation set up between the variables.

- FK → IB (β = 0.271, p = 0.045) indicates a direct effect. Financial Knowledge significantly influences Investment Behaviour at the 5% level. This result confirms that Financial Knowledge impacts Investment Behaviour to a great extent.

Table 16: Measurement Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
FK1 <- Financial Knowledge	0.708	0.702	0.043	16.425	0
FK2 <- Financial Knowledge	0.611	0.612	0.054	11.261	0
FK3 <- Financial Knowledge	0.683	0.677	0.049	13.991	0
FK4 <- Financial Knowledge	0.662	0.655	0.05	13.257	0
FK5 <- Financial Knowledge	0.639	0.631	0.057	11.308	0
FK6 <- Financial Knowledge	0.771	0.768	0.032	23.901	0
IB1 <- Investment Behaviour	0.695	0.694	0.037	18.625	0
IB2 <- Investment Behaviour	-0.487	-0.485	0.076	6.414	0
IB3 <- Investment Behaviour	-0.296	-0.295	0.088	3.354	0.001
IB4 <- Investment Behaviour	0.705	0.703	0.04	17.533	0
IB5 <- Investment Behaviour	0.831	0.83	0.021	40.24	0
IB6 <- Investment Behaviour	0.839	0.838	0.016	53.331	0
RP1 <- Risk Perception	0.43	0.425	0.079	5.432	0
RP2 <- Risk Perception	0.189	0.189	0.094	2.015	0.044
RP3 <- Risk Perception	-0.443	-0.44	0.076	5.83	0
RP4 <- Risk Perception	-0.616	-0.613	0.061	10.059	0
RP5 <- Risk Perception	0.378	0.376	0.081	4.657	0
RP6 <- Risk Perception	0.828	0.825	0.037	22.253	0

Source: Authors' own tabulation

Table-16 displays the following observations with regards to the aforementioned variables.

Factor loadings (β values) for all observed variables are statistically significant ($p < 0.05$), ensuring construct validity. A crucial finding in the measurement model is the negative sign on the standardized loadings for RP3 (Investable Income Percentage) and RP4 (Investment Knowledge). These negative signs are conceptually acceptable and do not indicate a measurement error because a higher score on RP4 (higher Investment Knowledge) is expected to reduce the Perceived Risk (RP), and similarly, a higher RP3 (higher Investable Income relative to total income) may be associated with a lower perception of risk, given the context of the RP construct.

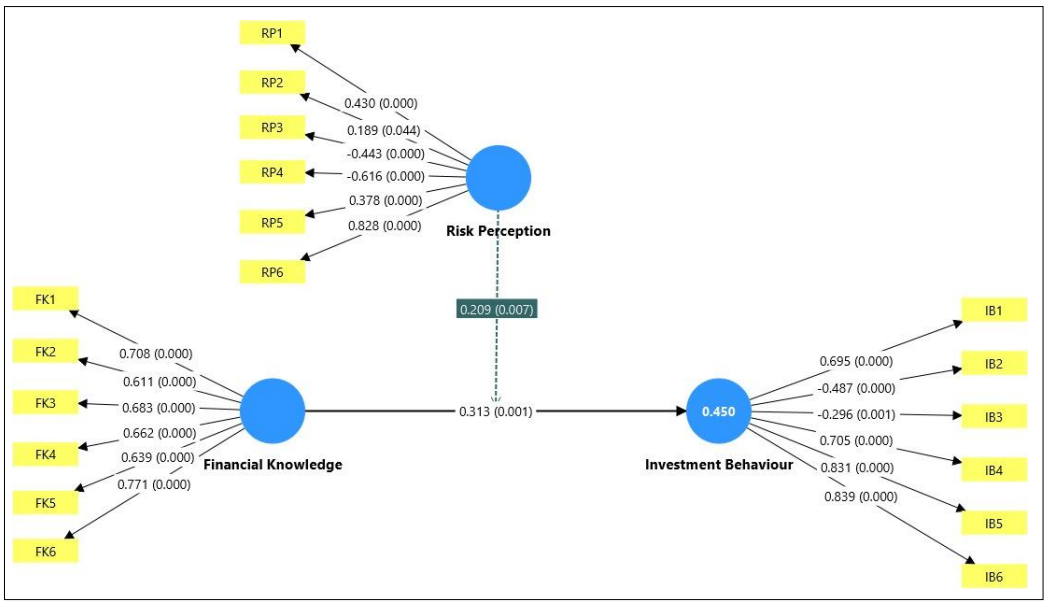
A heavy reliance on unvetted or generalized external sources (IB2) (e.g., social media tips, casual friends' advice, conflicted salespersons) may lead to poor, impulsive, or inappropriate investment decisions that don't align with an individual's personal financial goals, risk tolerance, or knowledge level. Making completely independent decisions while lacking financial knowledge or skill (IB3) can also lead to faulty investment behaviour.

The strong factor loadings validate the measurement model and confirm that the proposed constructs are well-defined.

Path Diagram

Arrows between latent variables represent hypothesized causal relationships in the model. Path coefficients (β values) indicate the extent of these associations.

Figure 2: Path Diagram



Source: Authors' own diagram

Figure-2 portrays the moderation effect of risk perception on the relationship between financial knowledge and investment behaviour.

- FK → IB (p = 0.001) suggests that Financial Knowledge directly influences Investment Behaviour, and to a great extent. Thus, H_1 is accepted.

- RP moderates the relationship between FK and IB significantly, which is clearly evident from the path diagram and also from the p value of 0.007.

Table 17: Moderation Estimates

(The role of Risk Perception (RP) is analysed below)

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Financial Knowledge -> Investment Behaviour	0.313	0.331	0.09	3.47	0.001
Risk Perception x Financial Knowledge -> Investment Behaviour	0.209	0.217	0.078	2.676	0.007

Source: Authors' own tabulation

Table-17 implies the test for moderation of Risk Perception in the relationship between Financial Knowledge and Investment Behaviour. A separate moderated regression was used for Hypothesis 2. The interaction term (FK ✻ RP → IB, p = 0.007) is significant at the 1% level, indicating that Risk Perception significantly acts as a moderator in strengthening the nexus between Financial Knowledge and Investment Behaviour. The direct influence of Financial Knowledge on Investment Behaviour ($p<0.001$) is highly significant.

This implies that that financially literate people are more inclined in using their risk perception effectively when making investment choices. Thus, H_2 is accepted.

The key relationships to be claimed (based on objectives and confirmed hypotheses):

1. **FK→ IB** (Direct effect, H_1 accepted)
2. **RP Moderates the FK→ IB relationship** (H_2 accepted)

5. Conclusion, Policy Implications & Scope of Further Research

Investors' behaviour is greatly influenced by desire to become more financially literate (Suresh, 2021). The findings of this research portray a strong direct connection between Financial Knowledge and investment behaviour (Bhushan, 2014; Adil et al., 2022). Thus, H_1 is accepted. Therefore, it can be asserted that financially literate people possibly make more rational investment decisions. It is significant to note that risk perception acts as a moderator which further strengthens the association between Financial Knowledge and Investment Behaviour (Ademola et al., 2019), which confirms H_2.

This research has many policy implications. It is necessary to stimulate financial education campaigns for improving investment capabilities of individuals as well as help them become financially better off. Banks, schools, and employers can cooperate to design specialized financial education programs for individuals. Policymakers must campaign to incorporate Financial Knowledge into the secondary and tertiary curriculum. This study also yields utilitarian benefit to individual investors by encouraging them to take personal investment choices based on self-assessment rather than others' views. Proper training and education can also mitigate behavioural biases. Investors should also educate themselves with regard to related information and market news concerning the stocks owned to enhance the understanding of market movements and trends.

The study has few unfathomed areas. The sample size could have been more in order to get a more transparent picture. A sample of 384 might not represent entire city of Kolkata. In future, the sample size can be increased by including the rural population also in order to get a more transparent picture. Furthermore, the sample could not have been restricted to Kolkata only. Further studies could be conducted incorporating responses from all over India so that we can get a larger picture as the policy implications will be for the entire country and not for a single city. Thirdly, the impact of Financial Knowledge on investment behaviour could have been analysed from the perspective of different generations, which is an unexplored area.

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Shariah Supervisory Committees in Bangladesh: Practices, Issues, and Policy Recommendations

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Abstract

This paper evaluates the effectiveness of Shariah Supervisory Committees (SSCs) in Islamic Banks and Finance Companies (IBFCs) in Bangladesh, including full-fledged Islamic banks as well as Islamic branches and windows of conventional banks. SSCs are mandated to ensure Shariah compliance; however, recent crises among several IBFCs have raised questions about whether they are effectively fulfilling this role. Using content analysis of regulatory requirements from Bangladesh Bank and semi-structured interviews with SSC members, boards of directors (BoD), Shariah secretariat officials, senior bankers, and regulators, the study benchmarks practices against international standards (AAOIFI and IFSB) and triangulates findings with feedback from seminars and peer discussions. The research focuses on SSC composition, independence, meeting frequency, Shariah audit coverage, remuneration, disclosure practices, and member contributions. It finds that while SSCs are formally embedded in governance structures, significant variations and challenges persist, including limited independence and weak deliberations and disclosures. Theoretically, the study contributes by applying agency theory and institutional theory to explain how board oversight, independence, and regulatory pressures shape SSC effectiveness. Empirically, it documents gaps that may undermine Shariah compliance and stakeholder trust. Policy recommendations are provided, including independence safeguards, structured remuneration, external Shariah audit, centralized guidance, and Continuous Professional Development (CPD), to align Shariah governance of IBFCs in Bangladesh with international best practices and strengthen their credibility. Given the evolving nature of the Shariah governance framework (SGF) in Bangladesh, the data collection, findings, and analysis reflect the institutional and regulatory context up to March 10, 2025.

Keywords: Islamic Bank, Shariah Governance, Shariah Supervisory Committee (SSC)
JEL Classification: G21, G28, K23

1. Introduction

Islamic Banks and Finance Companies (IBFCs) operate under Shariah principles, which prohibit interest (Riba), excessive uncertainty (Gharar),

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gambling (Maysir), and dealings in unethical or harmful products and services, and require adherence to Shariah principles in contract execution. To ensure compliance with these principles, IBFCs establish Shariah Supervisory Committees or Councils (SSCs), also referred to as Shariah Supervisory Boards (SSBs), Shariah Advisory Committees or Councils (SACs), or simply Shariah committees. This governing body plays a crucial role in ensuring that all financial transactions, products, and services align with Shariah. SSCs are involved in both pre-operational and post-operational stages. As a mandatory component of the Shariah Governance Framework (SGF), SSCs serve as a key pillar of IBFCs' overall corporate governance structure.

The effectiveness of SSCs is critical in maintaining the integrity and ethics of IBFCs. They are regarded as the highest authority at the institutional level concerning Shariah-related decisions. Their primary function is to provide guidance on Shariah compliance, review Product Program Guidelines (PPGs) and other documents, and oversee the implementation of Shariah in financial transactions. Given their authoritative role, SSCs significantly influence the strategic direction of IBFCs, ensuring that business operations align with Islamic ethical and legal standards.

A well-structured and effective SGF is essential for sustaining the growth and stability of IBFCs. Proper governance mechanisms not only enhance credibility but also build public trust, which is vital for an institution's long-term success. However, ensuring the effectiveness of SSC functions requires several key factors: appropriate committee composition, adequate authorization from the board of directors (BoD), strong management support, and a well-defined operational framework. The absence of these elements may result in inefficiencies, non-compliance risks, and reputational damage for the respective institution.

Despite the significant role of SSCs in IBFCs, questions remain about their effectiveness in ensuring compliance with Shariah. The effectiveness of SSCs depends on their independence, expertise, decision-making power, and ability to address contemporary financial challenges while adhering to Islamic values. In Bangladesh, where Islamic banking has been expanding over the years,

evaluating the effectiveness of SSCs is particularly important. As demand for Shariah-compliant financial products increases, a robust and functional SSC becomes essential to upholding the credibility of Islamic finance practices.

The primary objective of this study is to evaluate the role of SSCs in IBFCs in Bangladesh. This research aims to assess their role in governance, identify key challenges they face, and explore ways to enhance their performance. By examining their operational structures, decision-making processes, and impact on Shariah compliance, this study provides insights into how SSCs contribute to the stability and growth of IBFCs. The findings are instrumental in shaping policies that strengthen Shariah governance in the country's Islamic banking and finance sector.

1.2 Research Methodology

The study adopts a qualitative, multi-source research design. First, a content analysis of international and domestic Governance Standards (GSs), namely AAOIFI GSs, IFSB 10, IFSB 30, and Bangladesh Bank guidelines, is conducted to develop the assessment benchmark. Second, semi-structured interviews are conducted with a cross-section of stakeholders, including SSC members, BoD members, Shariah secretariat officers, senior Islamic bankers, academics, and central bank officials, to capture practices, constraints, and enabling factors.

Participants are selected through purposive sampling based on the relevance of their roles, with a minimum of three years of experience in Shariah governance, and representation from full-fledged Islamic banks, Islamic windows and branches, and finance companies. The interviews follow a structured guide aligned with the assessment benchmark, covering key dimensions such as composition, independence, meeting practices, Shariah audit, disclosure, remuneration, and CPD. Third, the study triangulates findings through peer feedback from a national seminar and an academic conference where earlier versions of the paper were presented. Additionally, secondary data are collected from national and international publications, including the IBFC Islamic Banking and Finance Report Bangladesh (IiBFRBD), central bank publications, and relevant institutional websites. Given the evolving nature of the SGF in

Bangladesh, the data collection, findings, and analysis reflect the institutional and regulatory context up to March 10, 2025.

To preserve confidentiality, findings are reported in aggregated form. The study is primarily descriptive and interpretive and does not aim to establish causal relationships. Key limitations include: (i) incomplete public disclosures in some institutions, (ii) potential response bias in interviews, and (iii) the absence of formal inferential statistical analysis. To mitigate these limitations, the study employs cross-verification from multiple sources, document triangulation, and seeks convergent validity across different stakeholder groups.

Future research may extend this work through quantitative analysis using advanced analytical tools and by incorporating stakeholder perceptions through survey-based approaches. Further studies could also explore other segments of Islamic finance, including takaful, Islamic funds, sukuk, and Islamic social finance.

2. Conceptual Framework and Literature Review

2.1 Theoretical Framing and Recent Evidence

The agency theory predicts that when SSC monitoring is weak or compromised by conflicts of interest, managers may underinvest in Shariah compliance; therefore, stronger board oversight and an independent SSC should improve outcomes (Safiullah et al., 2024). Conversely, institutional theory posits that regulatory, normative, and mimetic pressures shape how SSC practices are adopted and enacted, with the strength and coherence of these pressures explaining cross-bank variation. Islamic banks face pressures from administrations, regulators, and government in carrying out their activities and functions (Alam & Miah, 2024). Empirically, SSC attributes, including size, expertise, and multiple appointments, have been linked to risk-taking. However, SSCs appear less effective in reducing IBFCs' risk-taking in Bangladesh (Islam et al., 2021). Educational backgrounds in economics or finance and Islamic law, as well as the experience of SSC members, are associated with lower risk; however, higher levels of education may also encourage directors to take on more risk (Mukhibad & Setiawan, 2022).

SSCs can promote social reporting practices among Islamic banks and enhance accountability and transparency through disclosure, as they are central to Islamic governance (Wijayanti & Setiawan, 2022). An Islamic bank's level of Shariah compliance depends on its governance structure. Rahman et al. (2024) show that there is no significant difference in Shariah compliance levels between full-fledged and non-full-fledged Islamic banks. Similar to the BoD, SSCs play a crucial role in overseeing and monitoring Islamic bank management, making them an integral part of good corporate governance in Islamic banks (Simanjuntak et al., 2025). The Shariah governance system in Bangladesh is largely voluntary rather than regulatory, highlighting the need for regulatory strengthening (Alam et al., 2019).

SSCs play a crucial role in ensuring the credibility of Islamic banks by overseeing Shariah compliance. According to AAOIFI GS 1, Para 2, an SSC is an independent body of specialized jurists in fiqh al-muamalat (Islamic commercial jurisprudence). As per the AAOIFI standard, SSCs are responsible for directing, reviewing, and supervising the activities of Islamic financial institutions (IFIs) to ensure compliance with Shariah principles and rules (AAOIFI, 1998). Similarly, IFSB 10 defines the Shariah governance system as a set of institutional and organizational arrangements through which an institution offering Islamic financial services (IIFS) ensures Shariah compliance. SSCs typically consist of a panel of Shariah scholars who serve as special advisers to IFIs (IFSB, 2009).

There is no direct equivalent of an SSC within Western governance structures; some comparisons are made to non-executive directors or external auditors due to their independent role in validating Shariah compliance. At the level of individual Islamic banks, these committees oversee micro-level Shariah governance processes, including ex ante (pre-approval) and ex post (post-approval) responsibilities. In contrast, their macro-level responsibilities include developing Shariah standards and promoting uniformity in regulatory governance practices.

SSC members are expected to remain independent, but their financial ties with the institution may compromise objectivity. As noted in a World Bank

Policy Research Working Paper (Working Paper 4054), where SSC decisions may limit profitability, management may attempt to influence them, leading to practices such as 'fatwa shopping' (Grais & Pellegrini, 2006).

The establishment of SSCs has become a normative practice for Islamic banks globally, although this practice has evolved over time. For instance, the Islamic Development Bank (IsDB) and Dubai Islamic Bank (DIB), both founded in 1975, initially lacked formal SSCs and instead consulted Shariah scholars until their committees were formally established in 2003 and 1999, respectively (INCEIF University, 2023). Faisal Islamic Bank of Egypt is notable for being the first Islamic bank to institutionalize a formal SSC comprising Shariah scholars in 1976, paving the way for others, such as Jordan Islamic Bank and Kuwait Finance House, to follow. Notably, SSCs operate not only in Islamic jurisdictions but also in secular environments such as the UK and the US, where each Islamic bank typically establishes its own committee. In the US context, some institutions consult the Assembly of Muslim Jurists of America or similar bodies, and the appointment of Shariah advisory firms is also common, particularly for Islamic capital market products (INCEIF University, 2023).

2.2 Functions and Responsibilities of SSC

SSCs serve two primary functions: advising Islamic banks on Shariah compliance and supervising the practical application of Shariah principles. The specific roles may differ depending on the responsibilities assigned by relevant regulatory standards. In some regions, advisory roles may take precedence over supervisory ones, particularly where SSCs lack strong regulatory support. IFSB 30 classifies SSC activities into two parts: ex ante and ex post.

In the ex ante phase, the core responsibilities of an SSC include approving all documentation related to products and services, such as contracts, agreements, and promotional materials, to ensure alignment with Shariah principles. In addition, all internal policies and procedures must be reviewed and approved for Shariah compliance. In the ex post phase, oversight of profit and loss calculations and distributions to Investment Account Holders (IAHs) is essential to ensure fairness and transparency. The committee also reviews and approves, from a

Shariah perspective, the accounting treatments for products and services, verifies zakat calculations on behalf of shareholders annually, and examines reports from the Shariah compliance function, as well as internal and external audits, where applicable, to provide constructive feedback. Finally, the committee specifies how to manage earnings derived from prohibited sources, ensuring that these funds are directed toward appropriate charitable purposes while systematically working to minimize noncompliant income in future operations.

2.3 Appointment of SSC Members

The appointment of SSC members varies considerably across jurisdictions, reflecting diverse regulatory requirements. The process typically involves the BoD or shareholders at the Annual General Meeting (AGM), in accordance with local legislation and regulations. The BoD may appoint SSC members; alternatively, shareholders may approve them at the AGM on the BoD's recommendation. Such appointments often require prior approval from relevant regulatory authorities, such as central banks. According to AAOIFI GS 1, Para 3, these appointments should be ratified by shareholders at the AGM, taking into account local customs and regulations.

In Malaysia, the Bank Negara Malaysia (BNM) Shariah Governance Policy Document (BNM-SGPD) empowers the BoD to appoint SSC members, subject to the submission of a written application to BNM at least three months before the anticipated commencement of a candidate's duties. For reappointments, the application must be submitted three months before the incumbent's term expires, and written approval from BNM is required for the board's appointment of committee members.

In Pakistan, the State Bank of Pakistan (SBP)'s SGF (SGF-SBP) mandates that the BoD appoint the SSC, which provides guidance on Shariah matters and assists in establishing a robust compliance framework. The board is also responsible for approving the committee's terms of reference and remuneration. For foreign banks operating Islamic banking branches, the authority to appoint the committee rests with the country manager or chief executive officer (CEO), subject to prior written approval from the SBP.

In Saudi Arabia, the Saudi Central Bank's SGF (SCB-SGF) stipulates that the BoD is responsible for forming the SSC and appointing its members based on recommendations from the nomination and remuneration committee. This process requires obtaining a written non-objection from the Saudi Central Bank. In addition, internal bank policy may allow the general assembly to approve the appointment of SSC members.

2.4 Composition of SSC

The composition of the SSC is governed by AAOIFI GS 1 and the IFSB 10. The committee must consist of at least three specialized jurists in Islamic commercial jurisprudence. While the inclusion of other relevant experts from fields such as finance, banking, accounting, economics, and law is permissible, specialized jurists must constitute the majority, and the chairman must also be a specialized jurist. Independence is a critical requirement; hence, directors, significant shareholders, or employees of the Islamic Financial Institution (Islamic bank) are not eligible for membership. Furthermore, diversity is encouraged, suggesting that members should represent different schools of thought and possess a range of expertise, including both senior and junior scholars.

In Malaysia, an SSC must consist of at least five members, predominantly Shariah-qualified, while Islamic windows require at least three members. Each member may serve on only one institution within the same industry segment for a maximum of nine years. Additionally, committee members are prohibited from holding substantial shareholdings or serving as executive directors or senior officers of the Islamic financial institution (Islamic bank) or its affiliates. Active politicians are also excluded from membership. It is advisable for a member of the SSC to also serve on the BoD to enhance Shariah governance in business and risk strategies.

In Pakistan, the SSC must consist of at least three Shariah members, while expert members, such as legal and accounting professionals, serve in advisory roles without voting rights. One member is designated as the Resident Shariah Board Member (RSBM), who is employed full-time. Members may hold positions on up to three SSCs of Islamic banking institutions; however, the RSBM and at least two

other members must not serve on any other committees to ensure distinct memberships. Importantly, members are prohibited from engaging in the operational management of the Islamic bank, and each is appointed for a three-year term, with appointments requiring approval from the SBP.

In Saudi Arabia, the SSC must consist of a minimum of three and a maximum of five members, with the chairman being an independent member and at least two-thirds of the committee composed of independent members. Members may serve on only one SSC for Islamic banks in the country, and they must possess sufficient Shariah knowledge and the ability to understand financial statements.

2.5 Resident Shariah Board Member (RSBM) in Pakistan

The RSBM has several responsibilities, including providing clarifications to management and staff on operational Shariah issues and products, drawing on previous SSC rulings. This role ensures that management disseminates comprehensive information to foster a clear understanding of the Shariah permissibility of the Islamic bank's offerings. Additionally, the RSBM guides the compliance department in reviewing key business areas in accordance with Shariah standards and oversees responses to client inquiries about Shariah compliance submitted by the compliance department. The RSBM is also responsible for supporting training related to Shariah compliance, promoting developmental activities, and submitting quarterly reports to the SSC on operational Shariah matters for ratification.

2.6 SSC Meeting

In an SSC meeting, members discuss various Shariah issues related to new and existing financial products, investment portfolios, operational documentation, compliance matters, and other critical aspects relevant to their roles within the Islamic financial institution. These discussions are essential to ensure that all activities comply with Islamic law and ethical standards. Governance frameworks established by regulatory authorities prescribe different minimum requirements for the frequency of these meetings, emphasizing the importance of regular oversight.

According to the BNM-SGPD, Islamic banks are required to hold SSC meetings at least once every two months. This requirement ensures ongoing oversight and the timely adaptation of Shariah-compliance policies. Islamic windows and foreign branches must hold meetings at least twice a year. Additionally, the SBP-SGF and SCB-SGF specify that these meetings should occur at least quarterly. Despite variations in minimum frequency across frameworks, regular meetings remain essential. The SSC should convene as needed to make critical decisions and effectively fulfill its responsibilities while adapting to emerging issues and market conditions.

To facilitate effective decision-making, SSC members should receive all relevant documents at least one week prior to the scheduled meeting. This preparation includes financial reports, compliance updates, and proposals for new or modified products. Allowing sufficient time for review enables members to analyze information thoroughly and prepare for informed discussions.

Ideally, decisions made during these meetings are reached unanimously to reflect collective agreement. However, in cases of dissent, resolutions are determined by majority vote, ensuring that diverse perspectives are considered. Voting requirements vary across frameworks; some require votes only from Shariah scholar members, while others permit voting by all committee members. For example, the BNM-SGPD, Para 11.8, states that decisions should be made by a simple majority without distinction among member types. In contrast, the BNM-SGF requires a majority of votes from members with recognized Shariah backgrounds, underscoring the importance of expertise in sensitive decisions.

The deliberations, key rationales, and any dissenting opinions are carefully documented in the meeting minutes. These minutes are critical as they serve as a reference for future discussions and decisions. They are subsequently submitted to the BoD to inform management and relevant divisions within the organization of necessary actions. In accordance with BNM-SGPD Para 10.8, Islamic financial institutions are required to submit records of SSC decisions, including any dissenting views, to BNM. Similarly, the SBP-SGF mandates the submission of meeting minutes to the SBP within 15 days after the meeting, thereby ensuring accountability and transparency.

Physical attendance at SSC meetings is typically required to facilitate open discussions and dynamic exchanges of ideas. However, virtual attendance is permitted under certain circumstances, particularly given evolving business practices. The BNM-SGF recognizes the need for temporary virtual participation through video or telephone conferencing, allowing greater flexibility in attendance.

The COVID-19 pandemic significantly altered traditional business practices, including SSC meetings. The requirement for physical presence shifted from the standard to an exception as members adapted to prolonged virtual meetings. This shift highlighted the need for flexibility in participation methods, enabling the committee to continue its essential functions despite restrictions. It also emphasized the importance of maintaining confidentiality and ensuring the smooth conduct of meetings.

2.7 Independence of the SSC

The discourse on the independence of SSCs is characterized by potential conflicts of interest, primarily because Islamic banks remunerate committee members. This situation raises concerns regarding the legitimacy of their rulings. Despite these concerns, many argue that SSC members are guided by Islamic principles that emphasize honesty and truthfulness. These members consider themselves accountable to Allah (SWT) and adhere to the Islamic code of ethics. There is a need to establish regulations to enhance professionalism and integrity within SSCs.

The credibility of Islamic banks depends heavily on the perceived independence of their SSCs. To ensure genuine independence, members should not hold managerial responsibilities within Islamic banks and should not be closely related to employees of the same institution. Furthermore, AAOIFI GS 5 requires the ongoing assessment of relationships to confirm independence.

2.8 Time Commitment of SSC Members

SSC members often hold permanent positions in other institutions, raising concerns about their time commitment and ability to manage multiple responsibilities. Additionally, these members may face conflicting regulatory obligations due to their various roles. In Malaysia, SSC members must comply with

the IFSA 2013 and BNM-SGPD, as well as the Companies Act 2016, in their capacity as board members. Legal implications arising from breaches of duty could affect their ability to fulfill responsibilities across different roles, particularly when a breach under one legal framework impacts their position on the SSC.

Historically, it has been common for scholars to serve on multiple SSCs across different Islamic banks, often with minimal restrictions. In some countries, such as Saudi Arabia, Kuwait, and the UAE, there are no limits on memberships, creating potential conflicts of interest. In contrast, Malaysia and Oman have introduced limitations on membership to mitigate such risks; for example, Malaysia prohibits members from serving on competing Islamic banks. The pressure to serve multiple institutions may compromise the depth and quality of Shariah rulings, raising concerns about due diligence and the risk of superficial evaluations when managing multiple roles.

2.9 Performance Assessment of SSC

The BNM-SGPD advocates annual performance assessments of both the committee and individual members. Key areas of assessment include organizational accountability, communication with governance bodies, and the identification and evaluation of Shariah compliance risks. Key performance indicators for committee members include attendance, meaningful contributions, and overall integrity. There is a strong emphasis on continuous self-improvement and contextual awareness in decision-making. IFSB 10 also requires a systematic assessment of the SSC's performance and the contributions of its members separately.

2.10 Competency Requirements for SSC

Members must possess comprehensive knowledge of both Shariah principles and the operational aspects of Islamic banks. Regulators have established frameworks outlining the required competencies for directors and SSC members. To support these competencies, the BNM-SGPD mandates ongoing professional development for directors, emphasizing targeted training on the dynamics of Islamic finance to enhance their understanding of Shariah principles and their practical implications for business. IFSB 10 also emphasizes continuous professional development (CPD) and training.

2.11 Legal Status of Shariah Pronouncements

The binding nature of rulings issued by SSCs varies significantly across jurisdictions. In some regions, regulators enforce these rulings within Islamic banks. For instance, in Malaysia, the BNM-SGPD requires board members to ensure compliance with Shariah rulings. In addition, certain jurisdictions, such as Kuwait, provide explicit legal frameworks for centralized decision-making, granting final authority on Shariah matters.

To improve the enforceability of these rulings, arbitration is often recommended as an alternative to traditional court systems. Legislative measures should strengthen the binding nature of Shariah rulings to enhance the governance of Islamic finance.

3. SSC within Corporate and Shariah Governance

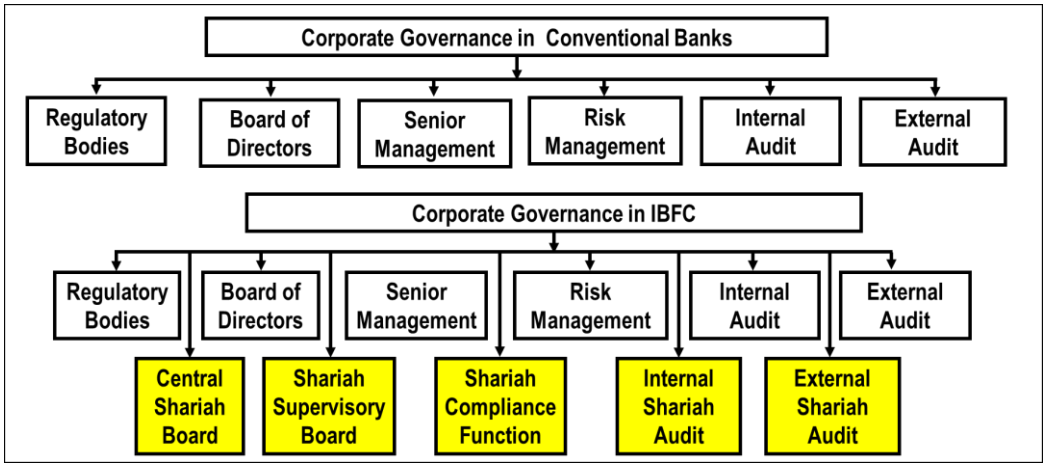
In an IBFC, corporate governance serves as a robust framework essential to ensuring ethical, sound operations. Vigilant regulators play a pivotal role in overseeing adherence to rules and regulations and safeguarding stakeholders' interests. An active BoD provides strategic direction and oversight, fostering accountability and transparency in decision making. The senior management team ensures compliance by translating board directives into actionable strategies that align with corporate objectives, regulatory requirements, and Shariah. Risk management plays a crucial role in ensuring that the IBFC effectively identifies, assesses, and mitigates risks while adhering to Shariah principles.

Independent internal audits, as a third line of defense, play a key role in evaluating internal controls, identifying risks, and enhancing operational efficiency. They serve as an additional layer of oversight for stakeholders. Rigorous external audits further reinforce transparency and accountability by validating financial statements and ensuring compliance with auditing standards. Together, these corporate governance components function cohesively to uphold the principles of good governance, strengthen stakeholder confidence, and promote the long-term sustainability of IBFCs.

Beyond the corporate governance structure, specific components ensure Shariah compliance within IBFCs. At the national level, the Central Shariah Board (CSB) provides guidance and oversight, ensuring that financial activities align with Shariah. At the institutional level, the SSC oversees and guides IBFC operations to maintain adherence to Shariah. Internally, IBFCs establish functions such as internal Shariah audit and Shariah compliance units, which are responsible for monitoring operations and ensuring Shariah compliance at every stage of decision making and implementation. In addition, external Shariah audits serve as independent verification mechanisms, assuring stakeholders that the institution's practices comply with Shariah requirements. Collectively, these components form a comprehensive governance framework that fosters trust among stakeholders and ensures Shariah compliance within IBFCs.

A collaborative effort among all corporate and Shariah governance organs is essential for achieving good governance in any IBFC. Each component plays a critical role, and inefficiencies in any one of them can compromise the institution's sustainability. Therefore, effective coordination among regulators, boards of directors, management teams, internal auditors, external auditors, and Shariah compliance functions is imperative. Figure-1 summarizes the key components of corporate and Shariah governance in IBFCs.

Figure 1: Key Components of Corporate and Shariah Governance

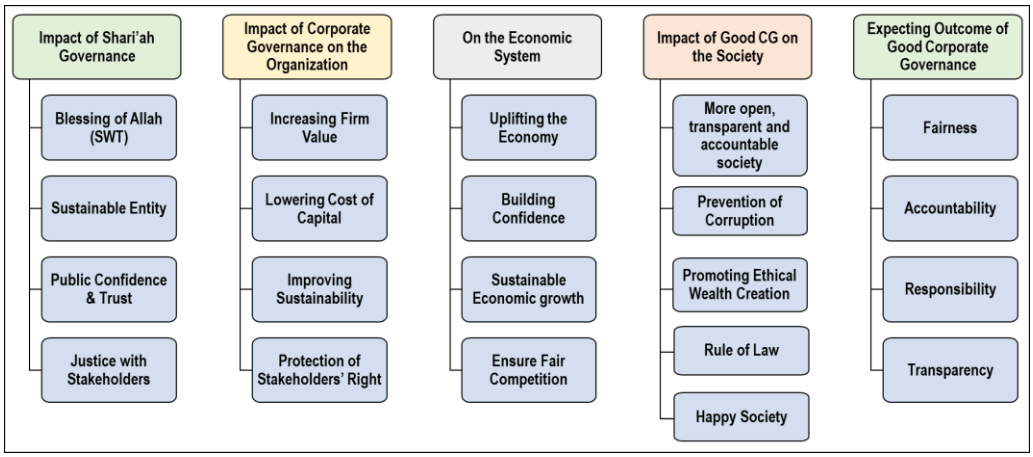


***Source*:** Compilation by the authors

The importance of sound Shariah governance in IBFCs cannot be overstated. It is essential for attaining the blessing of Allah (SWT), as adherence to Shariah principles is fundamental to Islamic finance. This compliance not only ensures religious adherence but also enhances public confidence and trust in IBFCs, as stakeholders can be assured that financial practices are conducted in accordance with Shariah.

Furthermore, strong Shariah governance safeguards the interests of all stakeholders, including depositors, investors, customers, and employees, by promoting fairness and equity. It also reinforces the role of corporate social responsibility, ensuring that IBFCs contribute positively to society by addressing social, economic, and environmental concerns in line with Islamic values. In addition, it fosters a culture of ethics and values within the institution, guiding decision-making and overall conduct. Figure-2 presents the impact of good corporate and Shariah governance on IBFCs.

Figure 2: Importance and Impact of Good Shariah Governance



***Source*:** Compilation by the Authors

3.1 International Governance Framework: AAOIFI Standards

Shariah governance, according to AAOIFI standards, encompasses various dimensions to ensure compliance with Islamic principles. The SSC is integral to this framework and oversees the institution's adherence to Shariah. The SSC must consist of at least three members. Its comprehensive report, signed by all

members, should be included in the annual report, along with an annual fatwa to inform stakeholders about compliance.

The Shariah review process involves examining documents and activities such as contracts, agreements, policies, and financial statements. The review must have unrestricted access to records to ensure thorough oversight. While management holds primary responsibility for compliance, the SSC reviews and verifies this compliance, documenting its findings in a report presented at the AGM to maintain transparency and inform shareholders.

An internal Shariah review, conducted by an independent department or the internal audit function, assesses adherence to Shariah and the rules set by the SSC. This review, which requires proficiency in Shariah and Islamic commercial jurisprudence, is conducted under SSC supervision and in accordance with the AAOIFI Code. The findings are reported to the BoD, SSC, and management. The appointment of reviewers requires SSC consent, and their responsibilities must be clearly separated from operational roles.

The Audit and Governance Committee (AGC) plays a key role in corporate governance by ensuring the integrity of financial reporting and protecting shareholder interests. It is responsible for reviewing internal controls, including Shariah audit, and should possess an adequate understanding of Shariah. The AGC reports to the BoD and management, supporting transparency and accountability.

Independence in Shariah governance is critical. SSC members should not be employees of the institution or involved in managerial decision-making. A cooling-off period of three years is required for former officers or employees. Continuous assessment of relationships is necessary to safeguard independence. Any issues relating to independence should be documented and reviewed internally, with unresolved matters leading to resignation and notification to the general assembly.

Robust governance structures are essential for maintaining customer trust, ensuring Shariah compliance, and protecting stakeholder interests. Effective compliance frameworks, clear leadership criteria, strong oversight mechanisms, sound risk management practices, avoidance of conflicts of interest, fair

compensation policies, transparent public disclosures, and adherence to ethical standards are all critical for accountability and transparency.

AAOIFI also recommends establishing a CSB for Islamic finance. The CSB, composed of scholars in Islamic commercial jurisprudence and banking experts, provides Shariah guidance to promote uniformity in financial products and practices. The CSB typically serves a term of three to five years and includes diverse membership, primarily Shariah scholars. Its responsibilities include advisory functions, issuance of fatwas, and regulatory support, with decisions that may be applied across jurisdictions. There are both national and regulatory CSBs, with membership requirements varying across industry segments.

3.2 International Governance Framework: IFSB Guidelines

The IFSB has established a governance framework for IBFCs to ensure effective Shariah compliance and corporate governance. This framework emphasizes tailoring the governance structure to the IBFC's size and complexity, with clear terms of reference and operating procedures for the SSC. It also highlights the need for competence among individuals overseeing the system, requiring them to meet fit-and-proper criteria and advocate for CPD. A formal assessment of SSC effectiveness is recommended to ensure overall efficacy.

The IFSB standards stress the importance of SSC independence, ensuring its ability to make objective judgments without undue influence. Timely and comprehensive information is essential for the SSC to perform its oversight role effectively. The standards also emphasize the need for SSC members to maintain confidentiality regarding internal information and highlight the importance of understanding and adhering to the legal and regulatory frameworks governing Shariah pronouncements, promoting consistency and alignment within the IBFC's operating jurisdiction.

The IFSB guidelines for performance measures outline several key criteria to assess the effectiveness of the SSC within an IBFC. These include evaluating organizational accountability, communicating with other governance bodies such as the BoD, management, and auditors, and identifying and assessing exposure to Shariah noncompliance and reputational risks. Additionally, the guidelines

emphasize promoting appropriate ethics and values within the organization and fostering continuous improvement in Shariah control processes. These measures aim to ensure the SSC's central role in upholding Shariah compliance and ethical standards within the IBFC.

The guidelines also assess the individual contributions and conduct of each SSC member. Members are evaluated based on their ability to actively contribute to discussions during meetings, demonstrating integrity, honesty, and a commitment to continuous self-improvement. They are expected to discharge responsibilities with diligence, maintain a diplomatic and culturally sensitive approach, and consider contextual factors in decision-making. Rational and logical reasoning, openness to learning, and an inquisitive mindset that raises relevant questions are emphasized as essential qualities. These criteria collectively aim to ensure the SSC's competence, integrity, and effectiveness in fulfilling its responsibilities within the IBFC.

3.3 SGF: Bangladesh Perspective

The Bangladesh Securities and Exchange Commission (BSEC) introduced a Corporate Governance Code in 2018. It requires a BoD comprising 5 to 20 members, with at least one-fifth serving as independent directors, and mandates separate roles for the Chairperson and the managing director (MD) or CEO. Key appointments, including the MD, chief financial officer (CFO), and Company Secretary, must be clearly defined. The Board is also required to establish an Audit Committee with at least three members and an independent chair, responsible for overseeing internal controls and audits. The committee reports to the Board, BSEC, and shareholders, ensuring transparency and compliance with governance standards. However, this code does not address Shariah compliance aspects of IBFCs.

On February 11, 2024, Bangladesh Bank issued BRPD Circular No. 02/2024, outlining policies on the formation, composition, and responsibilities of banks' BoDs. In addition, Bangladesh Bank introduced the Prudential Regulation for Banks: Selected Issues (2024) and a Code of Conduct for Banks and Non-Bank Financial Institutions in 2017. Earlier, Bangladesh Bank issued the Guidelines on Internal Control and Compliance (ICC) in Banks (2016) and corporate governance guidelines

in 2013 (BRPD Circular No. 11 dated October 27, 2013). The ICC Guidelines 2016 include a requirement for internal Shariah audit in Islamic banks.

The responsibilities of the BoD include overseeing the Internal Control System (ICS). The Audit Committee of the Board (ACB) must consist of at least five members, including two independent directors. Members of the ACB should possess qualifications that enable them to make effective contributions. The ACB's role covers internal control, financial reporting, internal audit, external audit, and ensuring compliance with applicable laws and regulations. However, these regulations do not include specific provisions related to a Shariah governance framework.

Guidelines for Islamic Banking were issued by Bangladesh Bank in 2009 (BRPD Circular No. 15 dated November 09, 2009). These guidelines include certain provisions related to Shariah governance in Islamic banks, including the requirement to establish an SSC. However, overall responsibility for Shariah compliance remains vested in the BoD. The guidelines also specify the fit-and-proper criteria for selecting SSC members.

Box-1 provides a compilation of AAOIFI governance standards, selected IFSB standards, and other relevant regulations, which serve as benchmarks for assessing the effectiveness of the governance framework in IBFCs.

Box 1: List of International Governance Standards

AAOIFI Governance Standards
GS #1: Shariah Supervisory Board- Appointment, Composition and Report
GS #2: Shariah Review
GS #3: Internal Shariah Review
GS #4: Audit and Governance Committee for IFIs
GS #5: Independence of Shariah Supervisory Board
GS #6: Statement on Governance Principles for IFIs
GS #7: CSR, Conduct, and Disclosure for IFIs
GS #8: Central Shariah Board
GS #9: Shari'ah Compliance Function
GS #10: Shari'ah Compliance and Fiduciary Ratings for Islamic Financial Institutions
GS #11: Internal Shari'ah Audit
GS #12: Sukuk Governance

GS #13: Waqf Governance and Guidance Note on Waqf Governance

GS #14: Islamic Crowdfunding Governance

GS #15: Syndicated Financing

GS # 16: Institutional framework for implementation of ethics

GS # 17: Shari'ah Compliance and Fiduciary Ratings of Sukuk and Other Islamic Finance Instruments

Selected IFSB Governance Standards

IFSB 1: Guiding Principles of Risk Management for Institutions (other than Insurance Institutions) offering only Islamic Financial Services (IIFS).

IFSB 3: Guiding Principles on Corporate Governance for Institutions offering only Islamic Financial Services (Excluding Islamic Insurance (Takâful) Institutions and Islamic Mutual Funds), Replaced by IFSB 30.

IFSB 6: Guiding Principles on Governance for Islamic Collective Investment Schemes.

IFSB 9: Guiding Principles on Conduct of Business for Institutions offering Islamic Financial Services.

IFSB 10: Guiding Principles on Sharî`ah Governance Systems for Institutions offering Islamic Financial Services.

IFSB 16: Revised Guidance on Key Elements In The Supervisory Review Process of Institutions Offering Islamic Financial Services (Excluding Islamic Insurance (Takāful) Institutions and Islamic Collective Investment Schemes).

IFSB 17: Core Principles for Islamic Finance Regulation (Banking Segment).

IFSB 22: Revised Standard on Disclosures to Promote Transparency and Market Discipline for Institutions Offering Islamic Financial Services [Banking Segment].

IFSB 30: Revised Guiding Principles on Corporate Governance for Institutions Offering Islamic Financial Services (Banking Segment).

Other Governance Standards

Internal Control–Integrated Framework (2013) of the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

G20/OECD Principles of Corporate Governance (2023) of the Organisation for Economic Co-operation and Development (OECD).

Corporate Governance Principles for Banks (2015) of the Basel Committee on Banking Supervision (BCBS).

The internal audit function in banks (2012) of BCBS.

Global Internal Audit Standards (2024) of the Institute of Internal Auditors (IIA).

International Code of Ethics for Professional Accountants (ICEPA) of the International Federation of Accountants (IFAC®).

Guidelines on Internal Control & Compliance in Banks (2016) of Bangladesh Bank.

Prudential Regulation for Banks: Selected Issues (2024) of Bangladesh Bank.

Corporate Governance Code (2018) of BSEC.

Guidelines for Islamic Banking (2009) of Bangladesh Bank.

***Source*:** Compilation by the Authors

4. Findings of the Study

This section presents the study's findings based on secondary data from publicly available sources, primary data collected through interviews, and insights from the seminar. The findings reveal that, despite the existence of SSCs within IBFCs in Bangladesh and adherence to regulatory requirements, there remain areas for improvement to enhance their effectiveness.

4.1 SSC in Full-Fledged Islamic Banks

Table-4.1 presents basic information on SSCs in 10 full-fledged Islamic banks in Bangladesh. All banks have an SSC, although a few are designated as Shariah Boards. Some banks include expert members in the SSC, while others do not. In some cases, the Chairman of the BoD, Managing Director, or Chief Executive Officer, and/or Deputy Managing Director are included as members of the SSC. The number of SSC members in full-fledged Islamic banks ranges from 4 to 10.

Table 4.1: SSC in Full-Fledged Islamic Banks of Bangladesh

Islamic Banks	Year of Establishment	IB Starting	No. of SSC Members	Business Expert
Islami Bank Bangladesh PLC	1983	1983	10	N/A
ICB Islamic Bank Ltd.	1987	1987	4	2
Social Islami Bank PLC	1995	1995	8	2
Al-Arafah Islami Bank PLC	1995	1995	7	1 (Chairman of BoD)
Shahjalal Islami Bank PLC	1997	1997	5	N/A
Export Import Bank of Bangladesh PLC	1999	2004	8	3 (Including CEO)
First Security Islami Bank PLC	1999	2009	8	1
Union Bank PLC	2013	2013	5	N/A
Standard Bank PLC	1999	2021	7	3 (Including CEO and DMD)
Global Islami Bank PLC	2013	2021	6	N/A

***Source*:** Based on the websites of the respective banks, accessed on March 10, 2025

4.2 SSC in Islamic Banking Branches and Windows of Conventional Banks

Table-4.2 highlights the composition of SSCs in conventional banks offering Islamic banking services through dedicated branches or windows in Bangladesh.

While these banks have established SSCs, some committees include both Shariah scholars and business experts, whereas others do not. In certain cases, non-Faqih members have been appointed as chairpersons, and in some banks, the proportion of Faqih members is lower than that of non-Faqih members. The number of SSC members ranges from 4 to 8. Additionally, some banks fail to disclose detailed information about SSC members, including their names. Owing to limited disclosure, it was not possible to compile a complete dataset for the table.

Table 4.2: SSC in Dual Banks of Bangladesh

No.	Banks with Islamic Branches &/ Windows	Type of IB	Year of Estab.	IB Starting	No. of SSC Members	Business Expert
1	United Commercial Bank PLC	Branch+ Window	1983	2020	5	N/A
2	ONE Bank PLC	Branch+ Window	1999	2020	7 (A Non-Faqih Chairman)	5 (Including Chairman of BoD and MD)
3	The Premier Bank PLC	Branch+ Window	1999	2003	5	2
4	Prime Bank PLC	Branch	1995	1995	7	4 (Including Chairman of BoD, MD, and Head of IB)
5	Dhaka Bank PLC	Branch	1995	2003	7 (A Non-Faqih Chairman)	4 (Including MD and Head of IB)
6	Southeast Bank PLC	Branch	1995	2003	8	5 (Including Chairman and Members of BoD, and MD)
7	Jamuna Bank PLC	Branch	2001	2003	7	2 (Including MD and Head of IB)
8	City Bank PLC	Branch+ Window	1983	2003	8	N/A
9	Bank Alfalah	Branch	2005	2005	5	N/A
10	AB Bank PLC	Branch+ Window	1982	2006	6 (A Non-Faqih Chairman)	2 (Including MD)
11	NRB Bank PLC	Branch+ Window	2013	2021	5	N/A
12	National Credit and Commerce Bank PLC	Branch	1993	2022	5	N/A
13	Standard Chartered Bank	Window	1948	2004	4	N/A

No.	Banks with Islamic Branches &/ Windows	Type of IB	Year of Estab.	IB Starting	No. of SSC Members	Business Expert
14	Trust Bank PLC	Window	1999	2008	5	2 (Including MD and Head of IB)
15	Bank Asia PLC	Window	1999	2008	5	N/A
16	Pubali Bank PLC	Branch+ Window	1983	2010	7	2
17	Sonali Bank PLC	Window	1972	2010	7	4 (Including Member of BoD and MD)
18	Agrani Bank PLC	Window	1972	2010	6	3 (Including Head of IB)
19	Meghna Bank PLC	Window	2013	2020	5	2
20	Mutual Trust Bank PLC	Window	1999	2020	8	3 (Including MD and Head of IB)
21	Mercantile Bank PLC	Branch+ Window	1999	2020	6	N/A
22	Midland Bank PLC	Window	2013	2020	5	3 (Including Member of BoD and MD)
23	NRBC Bank PLC	Window	2013	2020	8	6 (Including Chairman and Members of BoD)
24	SBAC Bank PLC	Window	2013	2021	8	N/A
25	Bangladesh Commerce Bank	Branch	1998	2022	N/A	N/A
26	Padma Bank PLC	Window	2019	2023	2	N/A
27	Rupali Bank PLC	Window	1972	2023	8	2 (Including MD and DMD)
28	Bengal Commercial Bank PLC	Branch	2020	2021	7	4 (Including Chairman, Members of BoD, and MD)
29	IFIC Bank PLC	Branch	1983	2024	7	N/A
30	Eastern Bank PLC	Window	1992	2024	3	N/A

Source: Based on the websites of the respective banks, accessed on March 10, 2025

4.3 SSC in Finance Companies of Bangladesh

Table-4.3 presents the status of SSCs in Islamic finance companies in Bangladesh. The data reveal that all finance companies have established SSCs. The number of members in these committees ranges from 4 to 8. In one instance, a non-Faqih member serves as the chairman of an SSC.

Table 4.3: SSC in Finance Companies of Bangladesh

No.	Institution Name	Type	Year of Establishment	IB Starting	No. of SSC Members	Business Expert
1	Islamic Finance and Investment PLC	Full-Fledged	2001	2001	8	2 (Including MD and Head of Shariah)
2	Hajj Finance Co. Ltd.	Full-Fledged	2006	2006	7 (A Non-Faqih Chairman)	3 (Including Chairman of BoD and MD)
3	Aviva Finance Co. Ltd.	Full-Fledged	1996	2020	5	1
4	DBH Finance PLC	Window	1996	2023	7	5 (Including MD and Head of IF)
5	Bangladesh Finance Ltd.	Window	1996	2021	6	3 (Including MD and Head of IF)
6	SFIL Finance PLC	Window	1999	2022	5	2 (Including Chairman and Member of the BoD)
7	IDLC Finance PLC	Window	2020	2024	5	2
8	Bangladesh House Building Finance Corporation, a Specialized Financial Institution	Products	1952 (1973)	2021	4	1 (Head of the Unit)

Source: Based on the websites of the respective institutions, accessed on March 10, 2025

4.4 Meeting of SSC and Shariah Awareness Program SSC in Full-Fledged Islamic Banks

Table-4.4 highlights the varying levels of activity among full-fledged Islamic banks regarding SSC meetings and Shariah awareness programs in 2023. Some banks demonstrate a proactive approach by holding multiple SSC meetings and organizing regular Shariah awareness programs for both employees and clients. However, others exhibit limited engagement, with instances of missing or incomplete data on their activities. Additionally, they typically hold quarterly SSC meetings. Due to limited disclosure, it was not possible to compile a complete dataset for the table.

Table 4.4: Meetings of SSC in Full-Fledged Islamic Banks in 2023

Name of the Bank (Alphabetical order)	No. of Meetings of SSC	No. of Shariah Awareness Programs
Al-Arafah Islami Bank PLC	04	-
EXIM Bank Ltd.	06	-
First Security Islami Bank PLC	Data not found	
Global Islami Bank PLC	05	-
ICB Islamic Bank Ltd.	Data not found	
Islami Bank Bangladesh PLC	10	16
Shahjalal Islami Bank PLC	05	-
Social Islami Bank PLC	07	04
Standard Bank PLC	08	-
Union Bank PLC	Data not found	

Source: IBFC-Thrive with Shari'ah. (2024)

4.5 SSC Meeting Fees of Full-Fledged Islamic Banks

As illustrated in Table-4.5, there is a noticeable variation in the growth rates of SSC fees and expenses among full-fledged Islamic banks in Bangladesh during 2022 and 2023. Some banks recorded significant increases in their SSC fees, with one bank reporting an exceptional growth rate of 95%. On the other hand, several banks experienced declines in SSC expenses of up to 38%, potentially indicating cost-cutting measures. Overall, the growth rates for SSC fees and expenses range from a 38% decrease to a 95% increase, reflecting the diverse strategies and approaches adopted by different banks in managing their Shariah compliance costs.

Table 4.5: SSC Fee and Expense of Full-fledged Islamic Banks

Bank Name	2023	2022	Growth
Al-Arafah Islami Bank PLC	491,793	455,970	8%
EXIM Bank Ltd.	624,600	640,100	(2%)
First Security Islami Bank PLC	307,000	466,000	(34%)
Global Islami Bank PLC	338,653	278,760	21%
ICB Islamic Bank Ltd.	152,000	96,000	58%
Islami Bank Bangladesh PLC	15,56,000	17,13,265	(9%)
Shahjalal Islami Bank PLC	10,73,245	619,587	73%
Social Islami Bank PLC	867,376	444,666	95%
Standard Bank PLC	562,824	492,085	14%
Union Bank PLC	334,800	541,800	(38%)

Source: IBFC-Thrive with Shari'ah. (2024)

4.6 Shariah Audit in Full-Fledged Islamic Banks

In 2023, the Shariah audit activities of full-fledged Islamic banks reveal significant differences in audit coverage across branches, sub-branches, and agent outlets. While some banks have achieved complete Shariah audit coverage for their branches, notable gaps persist in the auditing of sub-branches and agent outlets. Additionally, instances of insufficient information regarding Shariah audit activities suggest potential shortcomings in reporting or disclosure practices. These inconsistencies underscore that, although branch audits are generally thorough, there is an urgent need to expand Shariah audit practices to ensure more comprehensive coverage of all operational units. Table-4.6 provides an overview of the Shariah audit activities of full-fledged Islamic banks. It is noted that some data were missing from the original source.

Table 4.6: Shariah Audit Activities of Full-fledged Islamic Banks

Name of the Bank (Alphabetical order)	No. of working units as of 31.12.2023			No. of working units covered under the Shariah audit		
	Branch	Sub Branch	Agent Outlets	Branch	Sub Branch	Agent Outlets
Al-Arafah Islami Bank PLC	215	18	100	215	Data not found	
EXIM Bank Ltd.	151	68	10	137	Data not found	
First Security Islami Bank PLC	205	172	105	Data not found		
Global Islami Bank PLC	101	136	20	Data not found		
ICB Islamic Bank Ltd.	33	0	0	Data not found		
Islami Bank Bangladesh PLC	394	237	2,771	394	16	192
Shahjalal Islami Bank PLC	140	4	119	140	Data not found	
Social Islami Bank PLC	179	236	0	179	10	-
Standard Bank PLC	138	0	26	Data not found		
Union Bank PLC	114	54	0	Data not found		

Source: IBFC-Thrive with Shari'ah. (2024)

4.7 Summary Outcome of Interviews and Seminar

To achieve the study's objectives, semi-structured interviews were conducted with various stakeholders, including SSC members, BoD members, Shariah secretariat officials, academics, senior Islamic bankers, and central bank officials.

In addition, insights were gathered from presenting the draft paper at a national seminar. This section of the paper summarizes the outcomes of these interviews and the views expressed.

Presence of Governance Components

The governance framework for IBFCs comprises various components, all of which are essential for ensuring effective Shariah compliance and operational integrity. As highlighted in AAOIFI GS 6 and IFSB 30, these components must be fully operational and integrated into the governance structure. In Bangladesh, most of these governance components are present in IBFCs. However, one critical element—external Shariah audit—has yet to be established in the country. This gap has been widely recognized, and most respondents have expressed strong support for introducing an external Shariah audit mechanism in Bangladesh to enhance transparency, accountability, and compliance.

Appointment and Dismissal of SSC Members

According to AAOIFI GS 1, SSC members should be appointed at the AGM upon the recommendation of the BoD. In Bangladesh, however, SSC members are appointed by management or the board, rather than in accordance with AAOIFI standards. Most respondents believe that practices in Bangladesh should align with international best practices, particularly by elevating the SSC's status within the organizational structure. That said, a small number of respondents do not view the current practice as problematic.

Naming of the SSC

In line with international standards, the apex Shariah governance body is referred to as the SSB. However, in Bangladesh, it is commonly termed the SSC. Some Shariah scholars argue that the term SSB carries greater authority and aligns more closely with global best practices, as outlined in AAOIFI GS 1 and IFSB 30. They recommend renaming the SSC to SSB to better reflect its importance and ensure consistency with international standards. However, some respondents do not consider this naming distinction to be a significant issue.

Shariah Review of Documents and Contracts

The scope of responsibilities of SSCs encompasses both ex-ante and ex-post activities, as outlined in AAOIFI GS 2 and IFSB 30. This includes the thorough review and vetting of all documents, contracts, and advertising content to ensure compliance with Shariah principles and prevent violations. However, it has been observed that certain contract forms, PPGs, and advertising materials are sometimes published without proper vetting by the SSC, leading to Shariah non-compliance. To address this issue, respondents strongly recommend that bank management ensure all documents and materials undergo a detailed review and approval by the SSC before being made public.

Independence of SSC

Ensuring the true independence of the SSCs is crucial for their effectiveness, as outlined in AAOIFI GS 5 and IFSB 10. However, evidence suggests that some IBFCs have included members of the BoD, senior management, or heads of Islamic banking and finance within their SSCs. Both the central bank and Islamic finance professionals strongly oppose this practice, as it undermines the SSC's independence. Nevertheless, a small number of respondents argue that including the chairman or MD in the SSC could facilitate the timely and smooth implementation of SSC decisions. It is important to recognize that mere independence on paper is insufficient; de facto independence must be ensured, whereby all SSC members have the freedom to make decisions solely on the basis of Shariah compliance, without external influence.

Composition of SSC Confirming Fit and Proper Criteria

Both domestic regulations (e.g., Bangladesh Bank guidelines) and international standards, such as AAOIFI GS 1 and GS 6, and IFSB 10 and IFSB 30, provide criteria for selecting SSC members. These criteria emphasize the importance of expertise, integrity, and independence in ensuring effective Shariah governance. It is widely recognized that a deep understanding of business processes is essential for making informed and prudent Shariah decisions. Therefore, a competent SSC should comprise a majority of Shariah experts alongside business professionals to ensure a balanced and effective decision-

making process. Such a composition would enable the SSC to perform its duties more effectively and contribute significantly to the institution's Shariah compliance. However, in Bangladesh, many IBFCs do not constitute their SSCs with an appropriate combination of expertise. This issue has been highlighted as a serious concern by several Islamic finance professionals, who stress the need for greater adherence to fit-and-proper criteria in the selection of SSC members.

Composition of BoD with Proper Knowledge of Islamic Finance

The effectiveness of the SSC is heavily dependent on the support and cooperation it receives from the BoD. To ensure this, the BoD should be composed in a balanced manner, with members possessing relevant knowledge of Islamic financial services. Both the BCBS Corporate Governance Principles (2015) and IFSB 30 emphasize the importance of a well-composed BoD. In line with these standards, Bangladesh Bank has issued guidelines requiring IBFCs to include members with Shariah knowledge on their BoDs. In line with international standards and local regulations, the BoD is responsible for ensuring Shariah compliance within the institution. Therefore, it is argued that the effectiveness of the SSC largely depends on the proper composition and relevant expertise of the BoD in an IBFC. A well-informed and supportive BoD can significantly enhance the SSC's ability to fulfill its responsibilities.

The tone at the top, as well as the perception and support of the BoD and Senior Management Team (SMT) toward the SSC, may be influenced by their level of knowledge. A similar observation applies to the composition of the Audit and Governance Committee (AGC) of the BoD and its support for Shariah compliance, as outlined in AAOIFI GS 4.

Adequate and Proper Disclosure and Transparency

The importance of adequate disclosure and transparency is strongly emphasized in international standards, including AAOIFI GS 1, GS 2, and GS 6, IFSB 30, the BCBS Corporate Governance Principles (2015), the OECD Principles of Corporate Governance (2015), and the Internal Control–Integrated Framework (2013) of the Committee of Sponsoring Organizations of the Treadway Commission (COSO). These frameworks highlight that a proper and

timely flow of accurate information is a fundamental prerequisite for an effective governance system.

In the context of IBFCs, it is essential to ensure that SSC fatwas and decisions are regularly published and made accessible to stakeholders. This practice aligns with the recommendations of AAOIFI GS 1 and GS 2, which advocate transparency in Shariah governance to build trust and credibility. By adhering to these principles, IBFCs can enhance accountability, foster stakeholder confidence, and ensure compliance with both Shariah principles and regulatory requirements. However, the regular publication of fatwas remains uncommon in practice. Therefore, most respondents strongly emphasize the need to address this issue.

Objective Assessment of the Performance of SSC and Its Members

Every governance component must be accountable for its activities and responsibilities to ensure the institution's overall benefit. The contributions of SSCs and their members to their respective entities are crucial in this regard. To establish a structured evaluation framework, IFSB 10 outlines objective criteria for assessing the effectiveness of both SSCs as a whole and their individual members. This approach is strongly supported by the central bank and the respondents, as it promotes transparency, accountability, and improved governance within IBFCs.

CPD and Training of SSC Members

The requirement for CPD and training of SSC members is emphasized in IFSB 10. Without up-to-date knowledge and ongoing training, SSC members may struggle to make meaningful contributions to Shariah governance and compliance. Recognizing its importance, Bangladesh Bank is planning to introduce CPD requirements in its upcoming SGF. This practice is already well established in Malaysia, ensuring that SSC members remain informed about the latest Shariah rulings, regulatory updates, and industry best practices, thereby enhancing the effectiveness of Islamic financial institutions.

Internal Shariah Review (Audit) and Its Reporting Line

An independent internal Shariah audit is a critical component of an effective SGF, serving as the 'third eye' of the SSC. The internal Shariah audit conducts ex-post reviews of activities within IBFCs to assess Shariah compliance. As stated in AAOIFI GS 3 and IFSB 30, the internal Shariah audit should maintain clear reporting lines with the SSC, BoD, and SMT. However, in Bangladesh, the BoD often shows limited interest in leveraging this mechanism to address Shariah-related issues. As a result, the SMT faces minimal pressure from the BoD to act on the internal Shariah audit's observations. Consequently, there is no direct communication channel between the internal Shariah audit and the BoD. To address this gap, some stakeholders advocate for establishing a direct reporting line between the internal Shariah audit and the BoD, thereby ensuring greater accountability and a more effective resolution of Shariah compliance concerns.

Regular Interaction among BoD, SMT and SSC

Regular interaction among the BoD, SMT, and SSC is a highly effective practice for ensuring the SSC remains vibrant and impactful. As recommended in IFSB 30, such interactions enable the BoD and SMT to assess whether the SSC is operating in a conducive environment. Additionally, they provide the SSC with an opportunity to communicate key messages, recommendations, and concerns directly to the BoD, thereby facilitating prompt decision-making and corrective actions. However, respondents have noted that such structured interactions are not practiced in Bangladesh, highlighting a significant gap in the governance framework that needs to be addressed to strengthen Shariah compliance and oversight.

SSC Roles, Engagement, and Remuneration

It is widely argued that the remuneration package for SSC members should align with their roles and responsibilities, a principle strongly emphasized in AAOIFI GS 1 and GS 6. In line with international best practices, SSC members are expected to perform both ex-ante and ex-post responsibilities within the IBFC. In some jurisdictions, SSC members receive a regular monthly honorarium in addition to meeting attendance fees. However, in the current context, SSC

members in Bangladesh are compensated only through meeting attendance fees (approximately BDT 8,000 per meeting), which is considered inadequate. To address this, market participants and the central bank are exploring introducing a separate monthly remuneration package, in line with the provisions applicable to independent directors on the board. That said, without enhancing SSC members' capacity and expertise, merely increasing the honorarium will not yield meaningful benefits.

Limiting the Maximum Number of Engagements for SSC Members

In some jurisdictions, regulatory restrictions limit the number of SSCs an individual can join to ensure quality engagement. However, no such restrictions exist in Bangladesh, leading to a common practice of overlapping SSC memberships. When an individual serves on multiple SSCs, their ability to dedicate sufficient time and contribute effectively to each committee may be significantly compromised. Recognizing this issue, Bangladesh Bank is considering introducing a regulatory provision to cap the maximum number of SSCs an individual can join, aligning with international best practices. However, some Shariah experts oppose this move, arguing that the total number of SSC meetings held annually is relatively low, making it feasible for members to manage multiple engagements effectively.

Frequency and Duration of SSC Meetings in Relation to Agenda

In some IBFCs, the number of SSC meetings held annually is severely limited, sometimes as few as 1 or 2. In certain instances, an excessive number of agenda items is covered in a single meeting, with insufficient time for thorough discussion. Observations indicate that limited time is devoted to meaningful deliberations, as substantial portions of meetings are taken up by prayer breaks, lunch breaks, or social interactions. Additionally, some SSC members regularly arrive late to meetings and, in some cases, do not fully engage in discussions.

These inefficiencies severely undermine the SSC's effectiveness. A lack of adequate preparation by SSC members further diminishes the quality of discussions and decision-making. Given these challenges, several respondents suggest adopting international best practices regarding the frequency and

structure of SSC meetings. Ensuring that all members participate actively and allocating sufficient time for each agenda item would significantly enhance the SSC's effectiveness in maintaining Shariah compliance within IBFCs.

Meeting Minutes and Reporting to Bangladesh Bank

Maintaining detailed records of SSC meeting minutes is crucial for transparency and accountability. However, in current practice, individual members' opinions are not recorded with attribution, making it difficult to assess individual contributions. Additionally, some SSC members do not actively participate in discussions, and there is no formal mechanism to evaluate their contributions.

Several respondents and central bank officials support adopting a system of submitting SSC meeting minutes to the central bank to enhance oversight and governance. Ensuring a conducive environment for active participation in SSC meetings is also essential for improving their effectiveness and upholding Shariah compliance within IBFCs.

5. Conclusion and Way Forward

The role of SSCs in IBFCs in Bangladesh is influenced by multiple governance factors, regulatory frameworks, and institutional practices. While the presence of key governance components ensures a structured approach to Shariah compliance, critical gaps remain, particularly in SSC independence, competency, and regulatory alignment with international standards.

The study highlights the need to strengthen SSCs by ensuring their de facto independence, aligning appointment processes with international best practices, and enhancing the knowledge base of both SSC and BoD members. A well-composed and knowledgeable BoD is essential to support SSC functions and ensure Shariah compliance.

Furthermore, the study underscores the importance of transparency and accountability in Shariah governance. The publication of fatwas and decisions, structured performance evaluations of SSC members, and improved disclosure practices are vital to fostering trust and regulatory compliance. Additionally, CPD

and structured training programs are necessary to keep SSC members informed of evolving Shariah and financial regulations.

To enhance SSC contributions, it is recommended to ensure adequate time allocation for meetings. Strengthening internal Shariah audits and establishing direct reporting lines with the BoD would further reinforce governance and compliance frameworks.

Several recommendations and ways forward are presented below:

- Establish a Central Shariah Supervisory Board (CSSB) under Bangladesh Bank to issue binding guidance, harmonize practices, and review institutional SSC minutes and fatwas.
- Prohibit CEOs/BoD members from serving on SSCs, require conflict-of-interest declarations, and limit multiple concurrent SSC appointments.
- Mandate internal Shariah audit reporting to the BoD or audit committee and introduce external Shariah audit for independent assurance.
- Ensure at least quarterly SSC meetings, pre-circulation of papers (≥7 days), recording of dissenting opinions, and regular publication of fatwas and decisions.
- Strengthen fit-and-proper criteria with periodic assessments, mandate CPD hours, and introduce performance evaluations of SSCs and their members.
- Adopt a mixed remuneration structure (meeting fees plus monthly retainers) tied to role scope and performance, benchmarked to independent directors.
- Include standardized SSC disclosures in annual reports (charter, composition, attendance, key rulings, audit coverage, and handling of non-compliance).
- Encourage practitioner-academic collaborations and develop datasets to evaluate links between SSC attributes and outcomes.

In conclusion, addressing existing challenges through regulatory enhancements, governance reforms, and capacity-building initiatives will be crucial to ensuring the long-term effectiveness of SSCs. By aligning with global best practices and reinforcing independent oversight mechanisms, Bangladesh can significantly strengthen the Shariah governance landscape in its Islamic banking and finance sector.

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What Causes Non-performing Loans to Soar? Empirical Evidence from An Emerging Economy

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Abstract

This paper empirically investigates firm specific factors as well as board structure that cause non-performing loans to rise in Bangladesh. It is conducted on an unbalanced panel dataset of 22 listed commercial banks for the period of 2010-2022. Using robust bank clustered standard errors, Pooled OLS, Fixed Effect as well as Random Effect Model are applied and results indicate that profitability, capital adequacy and asset growth of banks reduces NPLs while higher inefficiency increases NPLs. While corporate governance features like board size and female representation of board have no effect, higher independent directors reduce NPL. Subsample analysis indicates that the effect varies between different (High vs Low) risk and growth categories. Furthermore, interaction term show that during pandemic, larger board size and increased female directors reduce NPL. System GMM controls for reverse causality and confirms baseline findings. While majority literature focuses on country specific factors such as economic growth, employment, inflation etc., this paper investigates bank specific determinants of NPLs in context of an emerging economy using hand collected datasets.

Keywords: Non-performing Loans, Listed Banks, Emerging Economy, Bangladesh
JEL Classification: G21; G30

1. Introduction

Banks play an integral role in channeling small and discrete savings to profitable investment segments (Prochniak & Wasiak, 2017). A stable banking industry is critical to a country's economic growth and financial system resilience. To ensure the flow of fund efficiently, banks screen and monitor borrowers and enforces credit agreements (Choudhary & Jain, 2021). Despite these measures, several macro-economic as well as bank-specific factors can contribute to a high level of loans that are in nonpayment or about to default - also stated as

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Non-Performing Loans (NPLs) (Cerulli *et al.*, 2020). The International Monetary Fund describes NPL as the amount of principal and interest that is overdue by no more than three months or 90 days (IMF, 2005). NPLs pose several challenges for banks including reduced profitability, capital erosion, increased operational costs, lower liquidity, higher credit risks, all of which contribute to the financial instability of the bank (Konstantakis *et al.*, 2016). Additionally, NPLs represent the bad credit quality of bank loan portfolios, cumulatively, they represent bad credit quality of the country's banking industry (Ozili, 2019). Moreover, high NPL ratio can be considered as an early indicator of banking crises because they restrict growth in the economy by reducing credit development (Reinhart & Rogoff, 2010; Ivanović, 2016). Therefore, NPLs have become a hazardous threat to the banking industries, particularly among emerging economies where often banking sector is controlled by tycoons or politically influential families (Morck *et al.*, 2011). Consequently, it is crucial for banks to identify the factors contributing to rising non-performing loan levels in order to promptly control them.

An extensive body of empirical studies have examined the variables that influence Non-Performing Loans (NPLs) using macroeconomic or bank-specific explanatory (Louzis *et al.*, 2012). One stream of studies investigates macroeconomic determinants comprising GDP, inflation rate, interest rate, unemployment (Louzis *et al.*, 2012; Dimitrios *et al.*, 2016; Ghosh, 2017; Ari *et al.*, 2021). Another stream of research highlighted the impact of bank-specific factors on the non-performing loan levels in particular ROA, ROE, capital, size, efficiency, asset quality, profitability, credit growth, and corporate governance factors while a few studies uses both macroeconomic as well as bank-specific variables to examine bank NPLs (Louzis *et al.*, 2012; Ekanayake & Azeez, 2015; Dimitrios *et al.*, 2016; Tarchouna *et al.*, 2017; Khan *et al.*, 2020; Choudhary & Jain, 2021). Moreover, volatile periods including the European sovereign debt crisis, the global financial crisis, and the recent COVID-19 pandemic exacerbate the stresses on bank asset quality and increase the risk of high NPLs (Konstantakis *et al.*, 2016; Ari *et al.*, 2021). However, the results varies depending on the country of the sampled banks and the duration of the sample (Ari *et al.*, 2021). Given the pronounced connection between NPL and the

economic development, it is perhaps even more vital now to comprehend the determinants of NPL in region specific research.

Bangladesh, an emerging country in Asia is an ideal setting for this research. Despite many hurdles like Global Financial Crisis, COVID-19, political turmoil, Bangladesh economy has been experiencing rapid expansion with averaged 6.4% GDP growth between 2012-2022 (Mahbub & Chung, 2024; World Bank Group, 2024). Bangladesh currently has 62 schedule banks which are serving the large population by pooling savings and channeling savings toward profitable investments; among these 6 are state owned commercial banks, 43 are private commercial banks (out of which 33 are conventional interest based and 10 are founded on Islami Shariah), 3 are specialized banks, 1 is digital commercial bank and 9 are foreign commercial banks (Rashid *et al.*, 2020; Bangladesh Bank, 2024). With this astounding economic growth, however, Bangladesh also experienced growth of highest NPLs rate in the region, its NPL rates were 7.7% and 8.0% in 2020 and 2021, respectively (World Bank Group, 2024). Compare to other Asian countries, the banking industry in Bangladesh experiences a high NPL rates where default loans reached an all-time high of Tk 182.30 billion in the year 2024 (Rehman *et al.*, 2024; Asian Development Bank, 2025). According to the central bank in Bangladesh, NPLs are grouped according to their quality and repayment status. For example, a loan is classified as "Substandard" if it is past due by three to nine months, "Doubtful" if it is past due by nine to twelve months, and "Bad or loss" if it is past due by more than 12 months (Bangladesh Bank, 2019). Furthermore, the recent high NPL rates in this country exist owing to lenders face multiple barriers, including fraud, higher import costs, poor payment discipline of borrowers, poor corporate governance and weak regulatory enforcement (Akhter, 2023).

The banking sector performs a highly significant part in Bangladesh, as it provides both short- and long-term capital in lack of a dynamic and efficient capital market (Mahbub & Chung, 2024; Rehman *et al.*, 2024). High rate of NPLs is a critical issue for an emerging economy like Bangladesh as it poses significant challenges not only to the banking sector but also to the economic stability, and overall financial growth (Adhikary, 2006; Rehman *et al.*, 2024). It further

heightens the importance to study NPL as Bangladesh is a bank centered financial system (Akhter, 2023). Bangladeshi banks must thus determine the root cause of the rising percentage of non-performing loans and implement corrective steps to resolve them. In this paper, we present empirical evidence from bank-specific factors that cause non-performing loans (NPLs) to rise in Bangladesh.

Our study aims to provide several contributions to the NPLs literature. Extant literature mostly analyzes the relation between macro-economic variables and with NPL. However, macro-economic variables are standardized across regions and time period (Louzis *et al.*, 2012). Whereas we analyze a panel dataset of 22 listed commercial banks between the period of 2010-2022, contributing to the existing literature by examining the correlation of bank-specific factors that determine shifts in NPLs. In absence of a national accessible database, we source data directly from annual reports and Dhaka Stock Exchange website which minimizes data errors. Our analysis could serve as a framework for evaluating bank vulnerabilities to reduce NPL in future. Finally, the study focuses on the banking system in Bangladesh, where despite an upward trajectory in economy, banks deal with a large volume of default loans and have lower asset quality than other nations in the region (Mahbub & Chung, 2024). Compared to previous studies on Bangladesh (Rashid *et al.*, 2020; Akhter, 2023), our sample is larger with a wider time frame which increases the reliability of this study. As a result, our findings will assist banks and policymakers in responding to the considerable risk factors associated with NPLs aggregation which can increase the sustainability of the banking sector in Bangladesh and other emerging economies such as India, Pakistan, Sri Lanka, Vietnam etc.

The rest of the sections of this research paper are arranged as follows: review of relevant literature for the study included in Section-2. A description of research methodology can be found in Section-3. Furthermore, Section-4 presents results as well as discussions. Section-5 provides a final summary of the paper's key findings, implications, limitations and direction for future research.

2. Literature Review

2.1 Theoretical Background

In order to understand the drivers of NPL, we must look at the theoretical foundation which indicates that bank specific determinants may play a crucial role in the loan quality of banks. For example, "Moral hazard hypothesis" states that when one transacting party engages in dubious acts and thus incurs risk thinking that it is under protection, and another entity will bear the cost, moral hazard occurs (Gupta & Jain, 2022; Fu & Trigilia, 2024). Managers may involve in risky lending behavior given that banks are often considered "too big to fail" and government ultimately rescue troubled banks with taxpayers' money (Gupta & Jain, 2022). This theory can be attributed to banks' ill intention managers who intensifies the riskiness of banks' loan portfolio when the bank has lower capital base (Berger & DeYoung, 1997) and can be used to interpret why banks with small capitalization are likely to have an increase in NPLs. Another seminal theory which can be applied to understand the drivers of NPLs is "Agency theory" where managers (agent) and shareholders (principal) holds conflicting interest and bank managers may put their own incentives over maximizing shareholder's wealth (Eisenhardt, 1989; Darayseh & Chazi, 2018). Under agency theory perspective, managerial excessive Risk taking can be mitigated by an effective board which is responsible for monitoring managerial actions (Fama & Jensen, 1983; Abou-El-Sood, 2021).

In addition, "Bad management hypothesis" can be applied to this scenario to explain that banks with poor management skills will fail to effectively control non-interest income (Podpiera & Weill, 2008). Bank manager with poor skills will end up creating lower quality of loans and gain low-cost efficiency or high inefficiency (Berger & DeYoung, 1997). Therefore, banks suffering from bad management will face deteriorations in cost efficiency which in turn will increase non-performing loans and the likelihood of bank failures (Podpiera & Weill, 2008). Finally, "Diversification hypothesis" demonstrates that income diversification and efficiency enables banks to exploit the probable benefits of income diversification and risk reduction which ultimately may reduce NPLs (Alhassan, 2015). Moreover, diversification of banking functions optimizes

managerial efforts across various dimensions (Gambacorta *et al.*, 2014). Although all the aforementioned theories have merit, empirical evidence can corroborate which one explains this phenomenon best.

2.2 Prior Studies and Hypothesis Development

Amid a variety of measures to inspect the factors affecting NPLs in literature, no standardized approach can be extrapolated. Data availability constitutes a significant barrier, greatly restricting the methodological alternatives in this context (Louzis et al., 2012; Khairi et al., 2021). Nonetheless, Louzis et al. (2012) show that drivers of NPLs can come from bank specific factors as macroeconomic factors can be exogenous to banks. Nevertheless, empirical evidence suggests that adequate profitability is essential for the sustainability of commercial banks and thus, profitability has been considered heavily in banking literature (Boudriga et al., 2010; Darayseh & Chazi, 2018; Khan et al., 2020). Bank starts to invest in high risky project to combat low profitability which in turns increases NPL (Boudriga et al., 2010).This has been echoed by the negative connotation found between Return on Assets (ROA) and bank non-performing loans in developing economies (Khan et al., 2020). Thus, our first hypothesis is constructed as follows:

H1: Return on assets has a negative effect on listed banks' NPL.

Following the "Bad management hypothesis" and "Agency theory", it can be argued that bad managers in banks are likely to be inefficient and poor management is likely to be reflected in the higher cost function or lower operating efficiency. On a similar note, Berger and DeYoung (1997) drew attention to the relationship between cost efficiency and problem loans. Empirical studies find that operating efficiency of commercial banks is be an important determinant of NPLs and inefficient banks are found to have higher NPLs in developing economies like Czech Republic, Pakistan and Sri Lanka (Podpiera & Weill, 2008; Ekanayake & Azeez, 2015; Khan *et al.*, 2020). Hence, the second hypothesis of our paper is constructed as follows:

H2: Inefficiency has a positive effect on listed banks' NPL.

In addition, young and old firms tend to differ in how they operate and deserve separate consideration (Coad et al., 2018). The age of the commercial bank can be linked to the experience of the bank in handling crisis. Moreover, Partovi and Matousek (2019) find a statistically significant positive association between banks' age and technical efficiency in Turkey. When banks are operating for a long time, they tend to mature and gain experience in banking operations, which ultimately rises the possibility s of minimizing NPL by functioning effectively (Ayayi & Sene, 2010). Therefore, our third hypothesis is formulated as follows:

H3: Banks' age has a negative effect on listed banks' NPL.

Furthermore, Capital Adequacy Ratio (CAR) is another common determinant variable used in the extant literature. CAR is set by global bank supervisory board, The Basel Accord in order to manage bank's risk and to defend them from insolvency (ElBannan, 2017). Capital reduces financial distress and enables a bank to absorb abnormal losses which is crucial for the survival of a bank (Diamond & Rajan, 2000). Interestingly, Gambacorta and Mistrulli (2004) show that bank capital is linked to its lending behavior. Consistent with moral hazard hypothesis, managers of low capitalized banks are inclined to provide high risk loans that lack proper credit rating and monitoring in order to boost income. Our fourth hypothesis is formulated as follows:

H4: Bank capital has a negative effect on listed banks' NPL.

Finally, boards plays a crucial part in the corporate governance of a commercial bank (García-Meca et al., 2015). Empirical studies report that board diversity such as board size, female percentage and board dependences influences bank level outcomes like performance, risk and lending behavior (García-Meca et al., 2015; Arnaboldi et al., 2020; Issa et al., 2021). In addition, banking industry is found to be more sensitive to poor corporate governance practices than any other sectors (Rehman et al., 2016). Although there is no consensus in the extant literature about the optimal board size that can enhance board's monitoring ability, board size is found to increase firm performances in Bangladesh (Rashid, 2018). However, Rehman et al. (2016) find that board size is positively linked

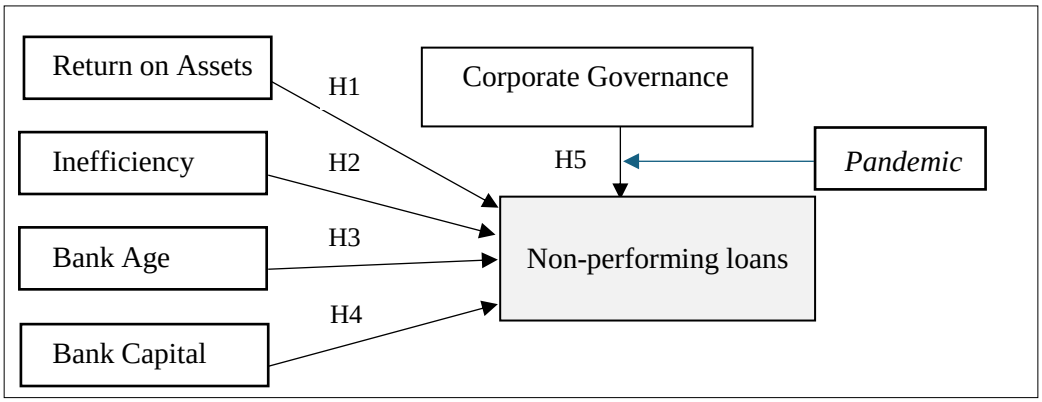
with Non-performing loans in banks during 1998-2009. In addition, women directors are good at monitoring and managing risk (Sattar et al., 2022) and thus, are found to increase bank level outcome such as performance (García-Meca et al., 2015). Furthermore, using a cross-country sample of large banks, Vallascas et al. (2017) show that in the aftermath of the 2007–2009 crisis, an increase in percentage of independent directors on board is linked to more prudent bank risk-taking as independent directors exercise a stringent risk oversight and monitoring of bank executives. Following the extant literature, our last hypotheses are formulated which are shown below along with our conceptual framework:

H5a: Board size has a positive effect on listed banks' NPL.

H5b: Female representation on board has a negative effect on listed banks' NPL.

H5c: Board independence has a negative effect on listed banks' NPL.

Figure 1: Conceptual Framework of the Study



Source: Authors' own work

3. Methodology

3.1 Sources of Data

Our panel dataset includes 261 bank-year observations from 22 listed commercial banks during the period of 2010-2022. Islamic banks are excluded from our sample as these banks functions as per Islamic Shariah (binding code of life stated in Islam) rather than conventional interest-based mechanism (Abdul-Majid et al.,

2010). Data used in this research is collected from respective banks' annual reports as well as from the website of Dhaka Stock Exchange. Microsoft Excel and STATA software have been used for data collection and statistical analysis.

The yearly average NPL of all sampled banks shows an upward trend as evidenced by Figure-1. The lowest NPL (3.00%) was in the year 2010 while the highest NPL (7.00%) was at the end of the sampled period, year 2022. Nevertheless, the graph shows some ups and downs over the observed period. Meanwhile, Table-1 states the name of the 22 sampled banks, their stock exchange listing year as well as their average NPL over the sampled period. From the table, it is evident that the oldest banks as per listing year are AB Bank PLC. (1983), National Bank Ltd. (1984) and Uttara Bank PLC. (1984). Despite being the oldest, the highest average NPL belongs to the same banks such as AB Bank PLC. (10.267%), National Bank PLC. (9.490%), and Uttara Bank PLC. (7.1333%). Whereas the youngest three banks i.e. BRAC Bank PLC., Premier Bank PLC. and Trust Bank Ltd. have less than 5% average NPL. Figure-2 demonstrates this graphically by plotting a bar chart of each sampled banks' average NPL during the period of 2010-2022.

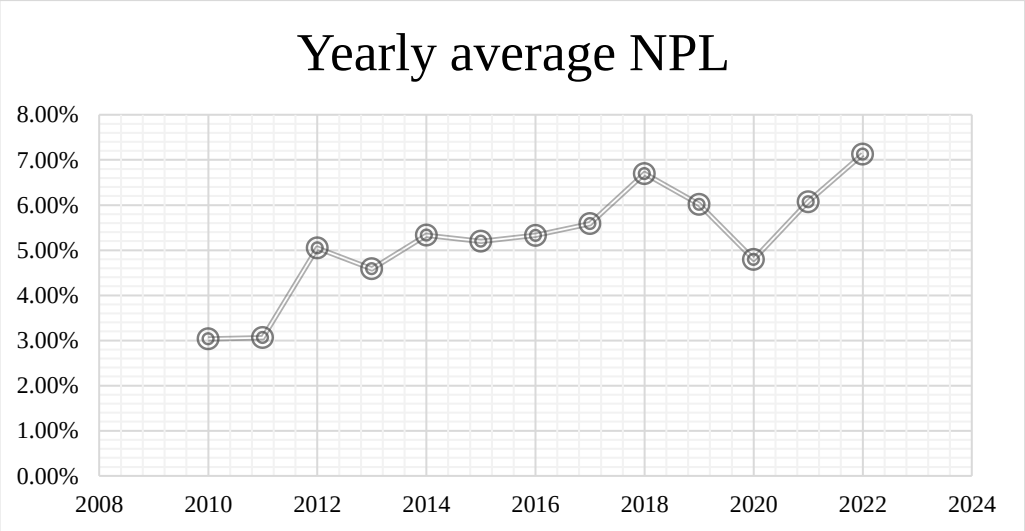
Table 1: Bank Name, Listing Year and Corresponding Average NPL

Sl.	Bank Code	Bank Name	Listing Year	Avg NPL
1	11101	AB Bank PLC.	1983	10.267%
2	11102	City Bank PLC.	1986	5.554%
3	11103	IFIC Bank PLC	1986	5.247%
4	11105	National Bank Ltd.	1984	9.490%
5	11108	United Commercial Bank (UCB) PLC.	1986	4.556%
6	11109	Uttara Bank PLC.	1984	7.133%
7	11112	Eastern Bank PLC.	1993	2.952%
8	11116	Prime Bank PLC.	2000	4.684%
9	11117	Southeast Bank PLC.	2000	4.626%
10	11118	Dhaka Bank PLC.	2000	4.604%
11	11119	National Credit and Commerce (NCC) Bank PLC.	2000	5.313%
12	11121	Dhaka Bank PLC.	2001	3.745%

Sl.	Bank Code	Bank Name	Listing Year	Avg NPL
13	11123	Mutual Trust Bank PLC.	2003	4.070%
14	11125	Standard Bank PLC.	2003	4.466%
15	11126	One Bank PLC.	2003	6.734%
16	11127	Bank Asia PLC.	2004	4.381%
17	11128	Mercantile Bank PLC.	2004	4.502%
18	11129	Export Import (Exim) Bank of Bangladesh PLC.	2004	3.976%
19	11134	Jamuna Bank PLC.	2006	5.052%
20	11138	BRAC Bank PLC.	2007	4.692%
21	11140	Premier Bank PLC.	2007	4.958%
22	11145	Trust Bank Ltd.	2007	3.878%

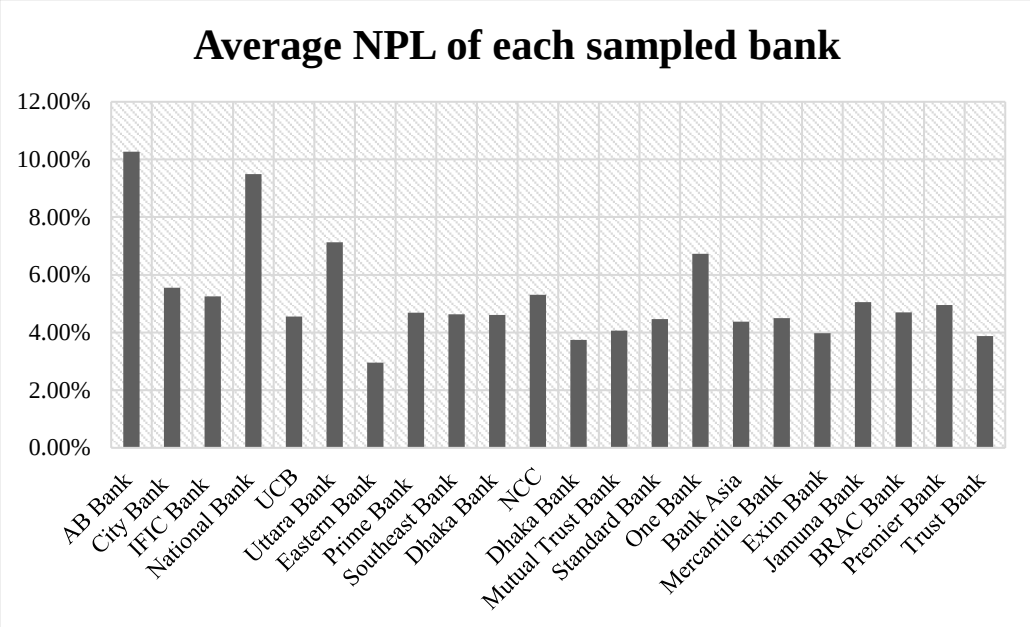
Source: Authors' calculation using data from Annual Reports of selected banks

Figure 2: Yearly Average NPL of All Sampled Banks



Source: Authors analyzed data from Annual Reports of selected banks

Figure 3: Overall Average NPL of Each Sampled Bank during 2010-2022



Source: Authors analyzed data from Annual Reports of selected banks

3.2 Model Specification

Table-2 shows the variables and acronyms used in this paper. The baseline model uses the Pooled OLS method. The regression equation is given below:

$$NPL_{i,t} = \alpha + \beta_1 ROA_{i,t} + \beta_2 INEFFICNCY_{i,t} + \beta_3 FIRMAGE_{i,t} + \beta_4 CAR_{i,t} + \beta_5 ASSTGRWTH_{i,t} + \beta_6 BOARD_{i,t} + \beta_7 FEMPCT_{i,t} + \beta_8 INDPCT_{i,t} + \sum_{t=1}^{n} \Omega_t YEAR_DUMMY_t + \varepsilon_{i,t} \quad (1)$$

The dependent variable, NPL is non performing loan as a percentage of total loan for bank *i* in the period *t*. We use multiple independent variables as per the existing literature. Table-2 mentions the variable names and definition. *YEAR_DUMMY* is incorporated in the regression to account for yearly variation and it represents twelve years' dummy variables for each corresponding year (from 2010 to 2022).

Table 2: Variable Definition and Acronyms

Abbreviation	Definition
Dependent variables	
NPL	Non performing loan divided by total loan
Independent variables	
ROA	Profit after tax divided by total assets
INEFFICNCY	Operating expense divided by operating income
FIRMAGE	Years since stock exchange listing
ASSTGRWTH	Growth of total assets compared to previous year
CAR	Capital adequacy ratio
BOARD	Natural log of the number of directors on board
FEMPCT	Number of female directors divided by total number of directors
INDPCT	Number of independent directors divided by total number of directors
YEAR_DUMMY	Dummy variables for each year which are equal to one if the observation belongs to corresponding year

4. Findings and Analysis

4.1 Descriptive Statistics

Table-3 shows the descriptive statistics of the dependent as well as independent variables over the period of 2010-2022. For 261 bank -year observations, we report average, standard deviation, minimum, 25th percentile, 50th percentile, 75th percentile and maximum values for each of the variables. The dependent variable, NPL has 5.54% mean. While the lowest value is 1.4% the highest value is 33.1%. Average profitability (ROA) of the sampled firms is 9% and average age is 18.67 years (since the listing year). Operating expense as a percentage of operating income (INEFFICNCY) is 89.6% on average. Nonetheless, the capital adequacy ratio is 12.8% with only 1.7% standard deviation. The corporate governance variables show that on average listed banks have 13 directors on board. Female participation is 12.3% while the 50th quartile value (median) is only 10%. Meanwhile, board independence is 17.9% on average.

Table 3: Descriptive Statistics

VARIABLE	N	MEAN	SD	MIN	P25	P50	P75	MAX
NPL	261	0.054	0.034	0.014	0.037	0.048	0.060	0.331
ROA	261	0.009	0.005	0.000	0.006	0.009	0.011	0.034
INEFFICNCY	261	0.896	6.336	0.247	0.427	0.482	0.550	102.817
FIRMAGE	261	18.663	9.178	4.000	12.000	16.000	27.000	39.000
ASSTGRWTH	261	0.136	0.078	-0.093	0.087	0.128	0.184	0.432
CAR	261	0.128	0.017	0.088	0.115	0.126	0.140	0.179
DIR NUM	261	13.448	4.016	6.000	11.000	13.000	16.000	26.000
BOARD	261	2.552	0.315	1.792	2.398	2.565	2.773	3.258
FEMPCT	261	0.123	0.107	0.000	0.048	0.100	0.182	0.429
INDPCT	261	0.179	0.103	0.000	0.118	0.167	0.214	0.700

4.2 Correlation Matrix

Table-4 shows correlation matrix to depict the strength as well as the direction of the relationship among variables used. Correlation coefficient ranges from 1 to -1 which shows whether the variables are positively or negatively correlated and if so to what extent (Steiger, 1980; Hassan *et al.*, 2023). None of the variables are highly positively correlated. From the table it is eident that the likelihood of multicollinearity being present in the sampled dataset is minimal. Yet, the significance of the most pairwise correlation values indicate a possible meaningful relationship among them which is further explored in regression analysis.

Table 4: Pairwise Correlation Matrix

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) NPL	1.000								
(2) ROA	-0.391***	1.000							
(3) INEFFICNCY	0.360***	-0.111*	1.000						
(4) FIRMAGE	0.404***	-0.236***	0.129**	1.000					
(5) ASSTGRWTH	-0.327***	0.349***	-0.183***	-0.242***	1.000				
(6) CAR	-0.110*	-0.240***	-0.122**	0.142**	-0.238***	1.000			
(7) BOARD	-0.204***	0.157***	-0.053	-0.073	-0.045	-0.007	1.000		
(8) FEMPCT	-0.050	-0.014	0.045	0.015	-0.034	0.205***	-0.171***	1.000	
(9) INDPCT	0.012	-0.219***	0.021	0.062	-0.058	0.241***	-0.534***	0.221***	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

4.3 Regression Analysis

In order to comprehend how NPL is being determined by the multiple independent factors we use three types of regression analysis suitable for Panel data. Table-5 (Panel-A) demonstrates results of three models such as Pooled OLS (Model-1), Fixed Effect (Model-2), and Random Effect (Model-3). The adjusted *R*-square values for these models are 0.471, 0.450 and 0.437 respectively. Using robust firm clustered standard errors, Model-1 shows that highly profitable firms have lower NPL as evidenced by significantly negative coefficient (-1.170). This is similar to the findings in literature review (Godlewski, 2005; Khan *et al.*, 2020). As expected, the more operating inefficiencies banks have, the higher are their NPL as inefficient banks are unlikely to provide quality loans nor do proper credit monitoring (Berger & DeYoung, 1997; Ekanayake & Azeez, 2015; Khan *et al.*, 2020). This is also congruent with the "Bad management hypothesis". Moreover, older firm tends to have higher NPLs which is consistent with findings of Table 1 but inconsistent with findings of study done by Partovi and Matousek (2019) in Turkey. This sharp contrast may be due to the older banks often face the influence of the borrowers' political, economic and other lobbies in Bangladesh (Rehman *et al.*, 2024). Thus, we reject H3 hypothesis. Furthermore, Capital Adequacy Ratio (CAR) is significantly negatively linked to NPLs indicating the possibility that banks with comparatively little capital may participate in risky lending behavior which can ultimately increase the amount of NPLs (Gambacorta & Mistrulli, 2004; Khan *et al.*, 2020). This negative association is also congruent with the findings of Ozili (2017) who studied African banks. This finding is consistent with the "Moral hazard hypothesis".

Table 5: Panel A - Pooled OLS, Fixed Effect and Random Effect Model

	(1)	(2)	(3)
VARIABLES	NPL	NPL	NPL
	Pooled OLS	Fixed Effect	Random Effect
ROA	-1.170***	-1.371***	-1.271***
	(0.373)	(0.279)	(0.282)
INEFFICNCY	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
FIRMAGE	0.001**	0.005	0.001**
	(0.000)	(0.006)	(0.000)

VARIABLES	(1) NPL	(2) NPL	(3) NPL
	Pooled OLS	Fixed Effect	Random Effect
CAR	-0.546**	-0.645**	-0.598**
	(0.241)	(0.252)	(0.245)
ASSTGRWTH	-0.104***	-0.053**	-0.078***
	(0.032)	(0.023)	(0.026)
BOARD	-0.022	-0.054*	-0.031*
	(0.015)	(0.030)	(0.018)
FEMPCT	-0.010	-0.021	-0.012
	(0.022)	(0.051)	(0.030)
INDPCT	-0.051	-0.070*	-0.066**
	(0.031)	(0.036)	(0.034)
CONSTANT	0.191**	0.207	0.237***
	(0.068)	(0.127)	(0.091)
Year Dummy	Yes	Yes	Yes
Adjusted *R*-Sq	0.471	0.450	0.4369
F-STAT/ Wald Chi Sq	4467.47	191993.19	501688.57
Observations	261	261	261
Number of firms		22	22

Note: These models are assessed by applying robust firm-clustered standard errors as stated inside parentheses. ***, ** and * specify significance at the 1%, 5% and 10% level, correspondingly.

Table 5: Panel B - VIF

VARIABLE	VIF
CAR	1.88
ASSTGRWTH	1.72
ROA	1.64
INDPCT	1.63
BOARD	1.53
FIRMAGE	1.21
INEFFICNCY	1.16
FEMPCT	1.12
Mean VIF	1.49

In addition, we find growth of total assets (ASSTGRWTH) reduces NPL. This can be due to the fact that high growth banks need external funding to grow and are subject to more prudent external monitoring (Cyree *et al.*, 2000) which can ensure higher quality of loans and lower NPLs. However, the corporate

governance variables like board size, female participation and board independence do not have significant effect in the Pooled OLS regression. This result is not surprising given that in Bangladesh, board diversity is often argued to be ineffective as directors are often allies of the large loan defaulters (Rashid, 2018; Rashid *et al.*, 2020; Rehman *et al.*, 2024). Female directors are often the wives or daughters of the owners which is merely used as token female representation and does not bring any qualitative change on the board functionality. Moreover, lack of variation in the percentage of women on boards can also be a primal reason for the insignificant role of women directors (Sattar *et al.*, 2021). Thus, based on our empirical results, we accept hypotheses 1, 2, as well as 4 but fail to accept hypothesis 3, 5a, and 5b. We have found that Variance Inflation Factor (VIF) is lower than 3 which reconfirms that multicollinearity is not present in the dataset. This means the variance of calculated regression coefficients are not overstated as there are low correlations among the ROA, asset growth, CAR, and other independent variables. The VIF values are reported in Table 5 Panel B which shows the Mean VIF of the explanatory variables is 1.49.

Furthermore, empirical studies frequently applies the Fixed-Effects (FE) regression to cater for time-invariant omitted variable bias which can cause endogeneity (Hill *et al.*, 2020). One of the primary purposes of using fixed effects model is to control for unobserved factors that vary across entities but remain constant over time (Borenstein *et al.*, 2010). By focusing only on within-bank variations, we eliminate the bias caused by these unobserved factors. Thus, fixed effect model reduces possibility of endogeneity as it caters firm specific characteristics (Borenstein *et al.*, 2010). We, therefore, estimate our baseline regression after including bank Fixed Effect (Model-2) and our results remain qualitatively similar. Given the panel structure of our sample, we also applied Random Effects (RE) models following Khan *et al.* (2020). A random effects model is a popular statistical approach used in panel data analysis when the data consists of multiple observations for each entity (e.g., individuals, firms, countries, or time periods). The random effects model is typically applied when the assumption is that the unobserved factors affecting the dependent variable are not constant across entities but instead vary randomly (Borenstein *et al.*, 2010). The results are presented in Model-3 of Table-5 and remain mostly consistent

with the baseline model. However, in both FE and RE models, greater percentage of independent directors are reducing NPLs unlike the pooled OLS.

4.4 Subsample Analysis

In order to gain deeper insights into data, Table-6 divides the sample into subsamples based on Risk (Model 1-2) and Growth (Model 3-4) in order to examine the effect of the independent variables in different groups of banks. The sample is divided into two groups where High Risk group comprises sample observations with more than median risk while the rest is included in Low Risk group. Results show that for low risk group the effect of profitability is higher. However, higher capital adequacy only reduces NPL in high risk banks. On a similar note, the sample is divided into two groups where High Growth group comprises observations which have more than median asset growth and rest is included in Low Growth group. Here, findings indicate that the effects of ROA, inefficiency and CAR are higher for banks falling to the Low Growth category. This depicts the effect of the drivers depending on which category the bank belongs to.

Table 6: Subsample analysis

	(1)	(2)	(3)	(4)
VARIABLES	NPL	NPL	NPL	NPL
	High Risk	Low Risk	High Growth	Low Growth
ROA	-1.077*	-2.260**	-0.735***	-1.658**
	(0.583)	(0.908)	(0.209)	(0.656)
INEFFICNCY	0.001**	-0.003	-0.005	0.001***
	(0.000)	(0.003)	(0.024)	(0.000)
FIRMAGE	0.001**	0.001	0.001*	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
CAR	-0.750**	-0.385	-0.305*	-0.674**
	(0.339)	(0.247)	(0.166)	(0.311)
ASSTGRWTH	-0.143*	-0.078***	-0.041	-0.165***
	(0.070)	(0.022)	(0.032)	(0.056)
BOARD	-0.027	-0.020	-0.005	-0.029*
	(0.021)	(0.015)	(0.010)	(0.016)
FEMPCT	-0.007	-0.045	0.017	-0.012
	(0.027)	(0.036)	(0.016)	(0.029)

VARIABLES	(1) NPL	(2) NPL	(3) NPL	(4) NPL
	High Risk	Low Risk	High Growth	Low Growth
INDPCT	-0.060	-0.003	-0.032	-0.046
	(0.040)	(0.032)	(0.024)	(0.038)
CONSTANT	0.246**	0.188***	0.105**	0.231***
	(0.102)	(0.062)	(0.046)	(0.068)
Year Dummy	Yes	Yes	Yes	Yes
Adjusted *R*-Sq	3299.89	60.59	204.28	3444.68
F-Stat	120	119	130	131
Observations	0.528	0.422	0.360	0.561

Note: These models are assessed by applying robust firm-clustered standard errors as stated inside parentheses. ***, ** and * show significance at the 1%, 5% and 10% level, correspondingly.

4.5 Role of Corporate Governance during Pandemic

COVID-19 has triggered an unprecedented financial crisis in the global economy and heighted the weakness in the banking landscape which affected developed as well as developing countries alike (Cevik & Miryugin, 2021; Sattar & Jalal, 2024). Therefore, we further want to investigate whether the pandemic has any moderating or indirect effect influencing the aforementioned relationship. Table-7 looks at the link between NPL and key independent variables while tailoring for moderation effect of corporate governance factors such as board size, female directors and independent directors. Here, the variable PANDEMIC is a dummy variable which is equal to one if year is 2020 and zero otherwise. Results show that the interaction term between pandemic and board size and female directors is negative and significant. However, the interaction term with independent directors and pandemic is not significant. This means that during pandemic large board size and increased number of female directors reduced NPL in banks. Kara *et al.* (2022) find that board gender diversity has a noteworthy impact in banks' primary responses to the pandemic by supporting their customers, governments and communities. Moreover, women on board are traditionally found to be risk averse and their monitoring role might be beneficial in terms of reducing NPL during pandemic (Chen *et al.*, 2019; Sattar *et al.*, 2022; Khan *et al.*, 2024).

Table 7: Role of Corporate Governance during Pandemic

VARIABLES	(1) NPL	(2) NPL	(3) NPL
ROA	-1.306***	-1.315***	-1.299***
	(0.378)	(0.369)	(0.378)
INEFFICNCY	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
FIRMAGE	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)
CAR	-0.453*	-0.446*	-0.461*
	(0.242)	(0.241)	(0.244)
BOARD	-0.020	-0.021	-0.022
	(0.014)	(0.014)	(0.014)
FEMPCT	-0.008	-0.002	-0.009
	(0.023)	(0.023)	(0.024)
INDPCT	-0.059*	-0.057*	-0.061*
	(0.032)	(0.032)	(0.034)
PANDEMIC	0.019	-0.005	-0.020**
	(0.020)	(0.006)	(0.007)
PANDEMIC*BOARD	-0.015*		
	(0.008)		
PANDEMIC*FEMPCT		-0.085***	
		(0.023)	
PANDEMIC*INDPCT			0.011
			(0.028)
CONSTANT	0.181**	0.179**	0.185**
	(0.073)	(0.073)	(0.075)
Year Dummy	Yes	Yes	Yes
Adjusted *R*-Sq	0.445	0.449	0.444
F-Stat	8760.8	31987.48	11063.14
Observations	283	283	283

Note: These models are assessed by applying robust firm-clustered standard errors as stated inside parentheses. ***, ** and * show significance at the 1%, 5% and 10% level, correspondingly.

4.6. Endogeneity Corrections

Despite the interesting results from baseline estimates, the possibility of NPL being correlated with past values can not be ruled out. In banking literature, endogeneity often creates problems by biasing the estimates (Ghosh, 2015). Understanding how a change in profitability impacts the NPL of banks requires careful analysis to separate the direct effects from potential reverse causality or other confounding factors. Reverse causality or unobserved heterogeneity can cause spurious results in pooled OLS models (Khatib, 2024). For example, bank capital can have negative effect on NPL as banks with inadequate capital might be tempted to provide high risk dubious loans. Nonetheless, it can also be the case that banks facing capital shortfalls will be forced not to provide risky loans as high level of NPLs can erode a bank's capital over time by reducing its profitability and raising loan loss provisioning. Correcting for endogeneity will allow to confidently infer causal relationships of the base estimates, which is essential for building robust economic models. Thus, we applied two step System GMM model which uses lagged values of dependent variable as exogenous instruments and report the results in Table 8. Our findings indicate that lagged value of NPL has a significant positive coefficient which confirms that this is a dynamic panel dataset and firms having higher value of NPL last year have more NPL in the current year. Arellano-Bond (AR2) test for autocorrelation is not significant, showing that there is no serial order autocorrelation in the dataset. Hansen test for overidentifying restrictions is also insignificant, which confirms validity of the instruments. Similar to our baseline findings, ROA, inefficiency, firm age, and Capital adequacy ratio have significant coefficients. Thus, after addressing potential endogeneity, the aforementioned key drivers of NPL are corroborated.

Table 8: Baseline Estimation using System GMM

VARIABLES	(1) NPL
L.NPL	0.243**
	(0.091)
ROA	-1.285***
	(0.278)
INEFFICNCY	0.001***

	(1)
VARIABLES	NPL
	(0.000)
FIRMAGE	0.001**
	(0.000)
CAR	-0.447*
	(0.228)
BOARD	-0.021
	(0.015)
FEMPCT	-0.009
	(0.021)
INDPCT	-0.052*
	(0.029)
CONSTANT	0.151*
	(0.079)
YEAR DUMMY	YES
ARELLANO-BOND TEST FOR AR (1)	-1.86*
ARELLANO-BOND TEST FOR AR (2)	1.61
HANSEN TEST	0.02
F-STATISTIC	2.39E+06
OBSERVATIONS	261
NUMBER OF BANKS	22

Note: These models are assessed using robust firm-clustered standard errors as stated inside parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

5. Conclusion, Policy Implications and Recommendations

A stable banking sector ensures smooth flow of funds, expedites crisis recovery, fuels economic growth and maintains financial system resilience in a country. The banking sector's role is more significant for emerging economy like Bangladesh, as it provides both short- and long-term capital in the absence of a vibrant capital market. In addition, an active banking system makes substantial use of the resources available through proper allocation. Subsequently, high levels of NPLs can possibly lead to a lack of confidence in the banking industry and undermine the stability of the financial system as capital will be locked in unproductive assets. In emerging economies, where financial institutions may already face structural weaknesses, NPLs can significantly strain the system. Thus, it is imperative that Bangladeshi banks identify the factors of the growing percentage of non-performing loans and take corrective measures to address

them. In this paper, we present empirical evidence from bank-specific factors that cause Non-performing Loans (NPLs) to rise in Bangladesh. Our findings will assist banks and policymakers in responding to the considerable risk factors associated with NPLs aggregation.

In this study we analyzed panel data of 22 listed commercial banks during 2010-2022 to examine the bank-specific factors that cause NPLs to rise in Bangladesh. Our findings confirm the hypothesis that profitability, capital adequacy and asset growth of banks are negatively associated with NPLs. Additionally, we report evidence that higher inefficiency increases NPLs in banks consistent with "Bad management hypothesis". In other words, by increasing bank efficiencies and controlling expenses, banks can effectively reduce NPLs. However, corporate governance factors comprising board size and female representation of board have no impact on NPLs. However, the percentage of independent directors reduces NPL as they are likely to be effective in monitoring loans. According to subsample study, the impact of determining factors differs for distinct risk and growth categories (High vs. Low). Furthermore, the size of board and female participation on board play a significant part in reducing NPLs during pandemic.

Our study makes several contributions to the existing banking literature and provides important policy implications. Instead of using macro-economic determinants which are largely standardized and exogenous to the banking industry, we use bank specific drivers of NPLs. We include diverse determinants including corporate governance factors. The wide range of time period (13 years) of the sample also increases the reliability of the study. Our findings highlight the importance of maintaining high profitability, ensuring there is additional capital available to absorb any unanticipated losses, investing in assets with greater projected returns and focusing on board structure. Besides, banks need robust processes for screening and monitoring borrowers along with enforcing credit agreements in order to reduce NPLs. In addition, our findings of inverse relationship between independent directors and NPL signifies that independent directors may be able to reduces politically motivated or insider lending, a major driver of NPLs in Bangladesh. Thus, policymakers must strictly enforce

Corporate Governance Code so that banks increase the number of independent directors who can push for stricter credit risk assessments and prevent loans being approved on the basis of favoritism or pressure. Finally, proactive measures can be implemented to recover from high NPL levels during exogenous shock like pandemic; for instance, larger board and higher representation of female directors on board can lower NPL ratios during exogenous crisis.

The availability of data is one of the limitations in this study since unobserved heterogeneity resulting from political connections, family ownership, corruption, etc. could be present in the dataset which can bias the outcome of the research. For example, political influence can significantly shape borrower selection, loan recovery processes, and regulatory oversight. Directors with strong political ties may secure favorable treatment in loan approval or restructuring, which directly affects the level of NPLs. However, due to the difficulty of systematically observing or measuring such political connections, these variables could not be included in this research. Moreover, family-owned banks often face ownership concentration which can sturdily impact risk-taking behavior and credit allocation of the banks. Such limitations suggest that the findings of this research should be interpreted with caution. Future researchers may run robust endogeneity tests such as Heckman Selection Model, Two Stage Least Square, Three Stage Least Square which could not be applied here in absence of exogenous instruments. Furthermore, the examined models could be applied to unlisted private commercial banks, state-owned banks, multinational banks, and Islami Shariah based commercial banks in order to provide an expanded overview of the variables influencing the NPL rate in the Bangladeshi banking industry.

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